Waterloo Region
District School Board

REQUEST FOR TENDER

24-7550-RFT

Tait St Public School
Classroom Ceilings and Washroom Renovation

ISSUE DATE: April 4, 2024

ELECTRONIC SUBMISSIONS will be received by the Bidding System no later than **2:00 p.m. local time, on April 24, 2024.**

DIVISION 00 – BIDDING AND CONTRACT DOCUMENTS

DIVISION 02 – EXISTING CONDITIONS

DIVISION 03 – CONCRETE

DIVISION 04 – MASONRY

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: ward99 architects inc.

1.1.2 Structural: VX Engineering Inc.

DIVISION 00 – BIDDING AND CONTRACT DOCUMENTS

00 21 13 Instructions to Bidders

1. Designated Contact

To contact the Board or ask questions in relation to this Procurement, bidders must initiate the communication electronically through the Bidding System. The Board will not accept any respondent's communications by any other means, except as specifically stated in the Procurement. Bidder's must not communicate in any manner with anyone other than the Designated Contact.

For the purposes of this procurement process, the Designated Contact will be:

Procurement Lead: Ardith Inapan

Title: Junior Buyer

Waterloo Region District School Board

Email: ardith_inapan@wrdsb.ca

2. Consultant (Applicable)

The Board has hired the following architect/consultant to assist in the preparation of this Tender: ward99 architects inc.

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

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

3. Blackout Period

A black out period shall exist between the deadline for questions and the date of award. During this period, there shall be no communication between the Bidders, the Board, or any Board consultants or employees, unless initiated by the Board's Designated Representative, noted above.

4. Communication and Question Protocol

Bidders and their representatives are NOT permitted to contact WRDSB Project Managers/Leads, or agents of the Board; any member of the Board's governing body (such as Board of Trustees, or advisors); any employee, consultant, or agent of the Board's Clients, other than the Designated Contact 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 Board will not be responsible for any verbal statement, instruction, or representations. In case of difference between any verbal information and written document, the written document shall govern. Information obtained from any source, other than the Designated Representative, noted above in writing, shall not be relied upon.

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

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.

5. Doing Business with the Waterloo Region District School Board

The Waterloo Region District School Board is a provincially funded institution reporting to the Ministry of Education of Ontario and is one of the larger school boards in Ontario, operating 121 school locations and serving approximately 64,000 students in the Region of Waterloo.

The Waterloo Region District School Board's Vendor Registration program is transitioning to a fully integrated online eProcurement tool for bid opportunities through the electronic bidding system: bids&tenders.

Bid opportunities may be posted as Public or by Invitation only and are based on dollar thresholds outlined in WRDSB Administrative Procedure 4570 Procurement.

The Board utilizes prequalified Roster Lists for specific categories/commodities awarded through a competitive process.

Competitive opportunities including Requests of Prequalification (RFPQ) are posted on the Electronic Bidding System, bids&tenders/wrdsb.

6. 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 Board at any time.

DESCRIPTION	DATE
Issue Date of Tender	April 4, 2024
Non-Mandatory Pre-Bid Site Examination	Date: Friday, April 12, 2024 Time: 8:30 AM Address: 184 Tait St., Cambridge, N1S 3G3 Meeting Area: School Front Entrance.
Deadline for Questions	April 17 2024
Closing Date and Time	April 24, 2024, 2:00 pm local time
Anticipated Contract Start / Work begins	July 4, 2024
Substantial Completion Date	August 30, 2024
Ready for Takeover	August 30, 2024
Deemed Complete Date	September 13, 2024

7. Pre-Bid Site Examination

Bidders are strongly encouraged to attend the non-mandatory pre-bid site examination and sign the attendance sheet. Date, time and location are provided above in the Anticipated Project Schedule. The Board may not provide another opportunity to visit the site. However, absence from this site meeting will not disqualify any Bidder.

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

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.

8. Secondary Site Examinations

Bidder 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 and email 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 damages arising out of their attendance of the site meeting.

Bidders not in attendance of a Mandatory Pre-Bid Site Examination meeting will not be provided an opportunity to a secondary stie examination visit.

Bidders must adhere to all communication protocols, as describe in Section 1.0, Sub Section 4. 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.

9. Examination of Bid Documents and Work and Submitting Questions

i. 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.

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

iii. 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.

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

v. The Board has endeavored to provide complete, correct information and estimates to enable Bidders to properly assess and determine the scope and complexity of the Work prior to submitting a Bid.

vi. 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 Bid Solicitation document, unnecessary restrictions in the terms of reference, or should they be in doubt as to the meaning of any part of this document.

vii. Written responses or clarifications to issues of substance will be shared with all Bidders in the form of an Addendum.

10. Electronic Bid Submission Only / Electronic Bidding System

Competitive opportunities including Requests of Prequalification (RFPQ) are posted on the Electronic Bidding System, bids&tenders/wrdsb.

The Bidder must submit their bid through the Bidding System 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.

i. In order 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 and Tenders including but not limited to plan taker contact information, categories, and agency.

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

iii. If the 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

iv. 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 bid solicitation. Only the plan takers will have access to download bid documents, receive addenda email notifications, download addenda and to submit their bid electronically through the Bidding System.

v. The onus is on the Bidder to ensure that the Bid is received in the Bidding System on or before the Closing Time. The Closing Time shall be determined by the Bidding System's web clock. The timing of the Bid submission shall be based on when the Bid is received by the Bidding System, not when a Bid is submitted by a Bidder.

vi. 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

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

viii. The Owner reserves the right to accept or reject any or all provisional bid prices submitted, and such prices shall remain in effect for the duration of the Contract. Failure to submit provisional prices where required may result in the Bid being declared non-compliant.

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

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

xi. The Board hereby consent to the use of an Electronic Signature for the signing of all documents requested hereunder. Acceptable forms of signatures include, but are not limited to, the typing of the Bidder's authorized signing officer's name or the inclusion of an image of the Bidder's authorized signing officer's signature, so long as the electronic signature is sufficient to identify the Bidder's authorized signing officer. The Bidder's authorized signing officer agrees that whatever form of electronic signature is provided constitutes a signature for the purpose of executing all documents requested hereunder.

xii. 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

xiii. There will be no public opening for this Bid.

xiv. 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 Bid Solicitation, they shall decide between them who is to be the Bidder, without any involvement of the Board.

xv. 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 Bid Solicitation document, including Board'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.

xvi. 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.

11. Bid Prices

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

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

iii. HST is extra and shall not be included in Bid prices.

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

v. Quantities may be estimated, and therefore the Board, at its discretion, may purchase more or less of the commodity based on the unit price bid.

vi. 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 nominated subcontractors after the closing of the Bid, must have prior written approval of the Board's Single Point of Contact.

vii. All price(s) submitted shall be a reasonable price for each particular item as determined by the Board 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 Board adversely will be clarified and may be rejected.

viii. Unit prices and/or provisional/supplementary 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 Bid Solicitation document.

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

12. References (Not Applicable)

Bidders must provide a minimum of three (3) references for work of comparable size and scope that has been successfully completed within the last five (5) years. One (1) reference must be from the WRDSB, if you've done previous work, otherwise one (1) reference must be of a government entity of similar size, scope, and complexity.

References must contain information about your clients including a complete organization name, contact person's names, title, telephone number and/or email address, details of the work provided, start and end dates of the work, and total cost of the work. Bidders cannot use references that pertain to another Vendor/Contractors' work.

The Board reserves the right to contact the clients noted to verify information provided

and assess overall client experience. Bidders should ensure that their references are prepared to provide a response if contacted by the Board. If the Board is unable to obtain a satisfactory reference, or if the reference does not respond to the reference call (after Board's best efforts), or if the reference chooses not to comment, the reference will be deemed unsatisfactory, and the Board may ask the Bidder for additional references. Unsatisfactory references may result in the Bidder's submission being rejected.

13. Addenda

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

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

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 Bid Solicitation Document will be addressed in the form of an Addendum.

It is understood and acknowledged that while the Bid Solicitation 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 Bid Solicitation 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 Board 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.

14. Edit and Withdrawal of Bid Submission

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

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

iii. 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.

15. Irrevocable Period

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

16. 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).

17. 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 Bid Solicitation Document.

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

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

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

v. Bids received from any Bidder deemed to be unskilled or experienced 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.

18. Bid Review

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

ii. Should there be any error in extensions, additions or computations, the Board 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 Board that they can comply with the requirements contained within this Bid Solicitation document and that they possess the necessary inventory, equipment, facilities, resources, and staff to perform the work specified in this Bid Solicitation document. Bidders may be required to submit evidence of above in a form acceptable to the Board. Substitution of materials, equipment, or methods different from that outlined in the terms of reference will not be accepted unless provided for within this Bid Solicitation document or with the written approval of the Board.

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

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

vi. The Board 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 Board in its selection. The Board reserves the right to consider all, or any information received from all available sources, whether internally or externally obtained. The Board may disqualify any Bid from further consideration based on results of reference or credit checks or review of litigation or claim history. The foregoing may include the Board's own experiences with the respective Bidder(s) or any of the subcontractors and sub-consultants proposed in their Bid.

19. Post-Award Meeting

A post-award meeting may be held consisting of the successful Vendor/Contractor, and their key personnel assigned to the contract, the Board's Project Manager/Lead and if applicable the Architect/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.

20. Intent to Award

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

i. Subject to the reserved rights of the Board and availability of funds, the lowest compliant Bid will be recommended for award.

ii. There shall be no obligation on the Board as a result of seeking Bids or conducting the procurement process and the Board reserves the right to pursue other

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

iii. If Applicable, within **twenty-four (24) "workday" hours** of receiving a request or intent to award from the Board, 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, Sub Trade Category and if applicable, related Divisions.

iv. Within **seven (7) calendar days** of receiving a request or intent to award from the Board, the Bidder (the "Recommended Bidder") shall provide the following mandatory requirements:

a. Insurance certificate with coverage specified in the Bid Solicitation Document.
b. WSIB clearance certificate valid on date of award or an exemption letter (if applicable and requested).
c. Non-Disclosure Agreement (NDA) duly signed by the authorized signatory (to be renewed annually). The Board will provide this form.
d. Bonding Requirements, if applicable, as specified in the Bid Solicitation Document.
e. An executed Board issued Form of Agreement, if applicable, and duly signed by the authorized signatory.
f. Any other submittal specified in the Bid Solicitation Document or in the intent to award, as a requirement of award.
g. 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.

v. The documents listed below will be incorporated as deemed necessary by the Board, 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:

a. Board approved change order(s) or Contract / Agreement / CCDC 2 -2020 amendment(s)
b. Purchase Order(s), Contract(s) Agreement(s) / CCDC 2 -2020 executed with the Bidder including exhibits
c. Bid Solicitation document issued by the Board, including addenda, if applicable
d. Bid submitted by the Bidder

21. Post Award

Ministry of Labour Notice of Project confirmation notice to be uploaded in Bids and Tender prior to mobilization and/or prior to first project draw

In addition to all of the Board'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 Board 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.

22. Award Notification

For procurements valued at $100,000 or more, and in accordance with the Broader Public Sector Procurement Directive, once the Board 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 Board 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 and Subcontractors

1.0 General Contractor Roster List

1.1 Only invited prequalified General Contractors, as a result of the award of a competitive prequalification process, #23-7430-RFPQ, may submit a bid for this opportunity. Invitations are based on awarded Project Size Categories. Roster approved GCs can only bid on the projects size categories based on the award.

2.0 Subcontractors/Subconsultants

2.1. Refer to specification sections for products, suppliers and installers that will be required.

2.2. The Subcontractor/Subconsultant list is not required at time of bid submission.

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 Board.

2.4. The Bidder (the "Recommended Bidder") shall provide a listing in a Board approved formatted list of Subcontractor/Subconsultant that it proposes to use for all Work described in this Procurement including the specification sections, as per the following:

2.5.1 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.

2.5.2 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.

2.5.3 The Owner reserves the right to reject any nominated Subcontractor/Subconsultant or supplier, based on the following but not limited to unsatisfactory past performance, suspended/removed from doing business with the Board and/or outstanding/unresolved corrective action notice issued by the Owner to the Subcontractor/Subconsultant within the last three (3) years.

2.5.4 The Owner 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.

2.5.5 The Board reserves the right to examine Bidder's facilities, equipment and visit the Subcontractor/Subconsultant's proposed.

2.5.6 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.

2.5.7 Where a bidder lists "own forces" in place of a Subcontractor/Subconsultant, the bidder shall carry out such item of the Work with its own forces.

2.5.8 Where “own forces” have been listed by a bidder, the Owner reserves the right to obtain information from the bidder and from third parties respecting the qualifications and experience of the bidder’s “own forces” for such item of the Work.

END OF SECTION

00 21 15 – Scope of Work

The project includes architectural, mechanical and electrical renovations to five (5) existing classrooms, Classrooms 9, 10, 11, 18 and 19, and renovations to Girls Washroom 121 and Boys Washroom 120. The classroom renovations includes new electrical lighting revisions, new mechanical work, new sprinkler work (adjustment to existing sprinklers and provision for new sprinklers below new finished ceilings), provision for new suspended acoustic ceiling assemblies, renovations to gypsum board bulkheads, new low shelving units, new white boards and tack boards and new rubber wall base. The renovations to the Girls and Boys Washrooms involves a complete renovation to provide for new layout of plumbing fixtures, new toilet partitions, new suspended acoustic ceiling assemblies, new masonry partitions, new concrete floor slab and terrazzo flooring, new doors and frames, new washroom accessories and electrical, mechanical, sprinkler and structural renovations.

END OF SECTION

00 31 34 – Subsurface Investigation Report – Not Applicable

END OF SECTION

Appendix 00 31 34A – Soil Report – Not Applicable

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 41 73 – Supplementary Bid Information

a) General Contractor

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 Board and cannot be changed without prior written approval from the Board.

b) Identified Price Form (Not Applicable)

Such work and amounts ARE included in the Bid Price.

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

NOTE – Information below if for Reference purposes only. Bidders will complete all price bid forms electronically through bids&tenders. Do not complete or submit this sheet.

Reference/Information Only

Description	Lump Sum

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 – Standard Terms and Conditions

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 Board in writing. This includes, without limitations, terms in publications, web-site, sales invoice, delivery document as well as those commonly applied by the Bidder. Board'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 Vendor/Contractor makes an assignment for the benefit of creditors, or becomes bankrupt or insolvent, or makes a proposal to its creditors, the Contract with the Vendor/Contractor shall immediately be terminated, and the Board shall be entitled to enter into an agreement with another party without the consent of the Vendor/Contractor.

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 Bid Solicitation document. In no case shall the invoicing for the entire Work performed exceed the Total Price, unless additional Work is ordered by the Board in writing. The unit prices as well as provisional pricing shall be used to invoice the additional or provisional work, as required by the Board. 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 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 (the 'Board") as surety that, if the Bid is accepted, a Contract will be entered into for the proper performance of the work. For more information, contact your surety company or visit the Surety Association of Canada website.

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 Vendor/Contractor 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 Bid Solicitation 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 Board.

For bid amounts where Bonding is not requested, the Awarded Bidder agrees to pay to the Board the difference in costs between the bid submitted and the final contract should the Awarded Bidder fail to either execute or deliver the contract documents in accordance with the Bid Solicitation within 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 successful Bidder shall provide a digital Bid Performance and Labour and Materials Bond in an electronically verifiable and enforceable (e-Bond) format in the amount(s) of not less than 50% Performance Bond and a 50% Labour and Materials Bond of the total Contract Price made payable to the Waterloo Region District School Board (the 'Board") as surety that, if the Bid is accepted, a Contract will be entered into for the proper performance of the work 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 successful Bidder fails to provide a performance bond and/or labour and materials bond when requested, the Board may declare the bid deposit forfeited and the Bidder will be held responsible for any increased costs or damages incurred by the Board. Any Bidder who fails to provide all required documents within the timelines provided, or otherwise fails to enter into an agreement with the Board upon notice of being the successful Bidder may be subject to future bidding constraints by the Board.

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

Any costs associated with performance 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 Board will not knowingly purchase goods and/or services from Vendor/Contractors who operate in contravention of local and international laws. If a product and/or service supplied to the Board is discovered to be in contravention, the Board reserves the right to rectify the issue with the Vendor/Contractor, including the cancellation of the contract.

The Board expects that all employees and Vendor/Contractors act within the parameters of the Administrative Procedure 4360 Principles of Business Conduct for Board Employees

6. Code of Conduct for Vendors/Contractors

These Guidelines cover any vendor, contractor, supplier, 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 contractor's employees, sub-contractors, agents, consultants, and others on site in connection with the contractor's work or at the vendor/contractor's express or implied invitation.

i. **Courtesy and Respect**: all vendor/contractors and their employees must conduct themselves in a manner that is lawful, courteous, businesslike, and respectful of all students, staff, faculty, guests, or visitors.

ii. **Language and Behavior**: vendors/contractors 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 contractor or contractor's employee is prohibited. Offenders will be removed from WRDSB property and/or reported to the local Police Department.

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

v. **Fraternization**: Vendor/Contractors and their employees may not fraternize or socialize with WRDSB students or employees.

vi. **Appearance**: Vendor/Contractors and their employees are required to wear appropriate work wear, hard hats and safety footwear, as the case may be, 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. **Reporting**: The Vendor/Contractor 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 Vendor/Contractor is responsible for its employees, agents, consultants and guests. If prohibited conduct does occur, the vendor/contractor 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

Vendor/Contractors shall abide by all applicable provincial and federal laws, as well as Board Policies. Some of the applicable laws are highlighted below for information purposes only. In case of any discrepancy between this Bid Solicitation 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. Broader Public Sector Accountability Act, 2010
ii. Construction Act
iii. Architect Act
iv. Canada Revenue Agency (CRA) regulations
v. Accessibility for Ontarians with Disabilities Act (AODA)
vi. Workplace Safety and Insurance Act (WSIB)
vii. Occupational Health and Safety Act
viii. Trade Agreements (CETA/CFTA)

ix. Education Act
x. Fighting Against Forced Labour and Child Labour in Supply Chains Act
xi. WRDBS Procurement Services Policies website
xii. WRDSB Policies and Procedures

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

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

The successful Bidder(s) will be required to comply with all applicable federal, provincial laws as well as Board 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 Board, upon request, periodic reports and evidences confirming such compliance.
By supplying the goods or equipment and/or providing services, the Vendor warrants that the goods or equipment supplied, and services provided to the Board 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 and Municipal Freedom of Information and Protection of Privacy Act

All information and documentation provided by the Board or to the Board in connection with this Procurement, before or after the issuance of this Procurement is the sole property of the Board 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 Board 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 Board to advise or assist with the Bid process, including the evaluation of Bid submissions.

Bidders should be advised 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 Board, the Bid prices submitted and agreed to under contract with the Board 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.

9. Confirmation to Proceed

No work shall commence until the Board has issued a purchase order and/or contract, if applicable to the successful Bidder. Goods/Service or Work as described shall not commence until all the required documents have been submitted to Procurement Services and the Form of Agreement and/or the CCDC 2 - 2020 if applicable, are executed by the Successful Bidder and the Board. For payment purposes, a Purchase Order shall be generated and issued to the Successful Bidder. The Purchase Order number must appear on all invoices in order to ensure prompt payment.

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, sub-consultants and suppliers also have no conflict with respect to other work and/or other clients.

The Vendor/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 Vendor/Contractor 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 Vendor/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 Vendor/Contractor.

The Vendor/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/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 Vendor/Contractor and its Subcontractors and Suppliers. Consistent with this fundamental term of the Contract, the Vendor/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 Vendor/Contractor, where such claim is, in whole or in part, in respect of a disputed claim by the Subcontractor or Supplier against the Vendor/Contractor, where the payment to the Subcontractor or Supplier by the Vendor/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 Vendor/Contractor shall be saved harmless from all or a portion of those claims. The Vendor/Contractor acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the Vendor/Contractor shall only be entitled to advance claims against the Owner for amounts pertaining to Subcontractor or Supplier claims where the Vendor/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 Vendor/Contractor has been found liable for those claims.

A breach by the Vendor/Contractor, any of the Subcontractors, 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 Board 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 Board, the Vendor/Contractor will provide to the Board, 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 Board-approved form for every employee of the Vendor/Contractor who may come in direct contact with Board staff and/or students on

a regular basis at any Board site prior to the occurrence and on or before September 1 each year thereafter may be required. Updated Offence Declarations may be required annually. The Board 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 Contractor/Vendor

The Vendor/Contractor, 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 Vendor/Contractor 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 Vendor/Contractor'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 Vendor/Contractor shall indemnify and save harmless the Board 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 Board Representative the Vendor/Contractor 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 Vendor/Contractor is responsible under the Contract, the Board, following notice in writing to the Vendor/Contractor of his intention so to do, may withhold payment of any monies due to the Vendor/Contractor under this or any other Contract until the Vendor/Contractor 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 Vendor/Contractor shall notify the Board representative the same working day of any service disruption or damage and the Vendor/Contractor will immediately notify the utility company to initiate repair. The Vendor/Contractor 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 Vendor/Contractor and at the Vendor/Contractor'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 Board representative. All repairs and replacements will be approved by a Board representative prior to final payment.

15. Debriefing Requests

For procurements valued at $100,000 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 Bid Solicitation Document in writing with their request within sixty (60) calendar days of the award notification.

16. Default

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

The Vendor/Contractor 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 Vendor/Contractor 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. Costing 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 board will not accept or consider any "delay claim" requests for delayed deliverables outlined in the tender documents.

18. Designated Substances

The Occupational Health and Safety Act of Ontario (OHSA) allows 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 MTE Consultants Inc. 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 Vendor/Contractor 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 Board Contact.

All asbestos work must be conducted by Vendor/Contractors approved by the Board, 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, Vendor/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 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 Vendor/Contractor 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 Board 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

Vendor/Contractor 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 Vendor/Contractor 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 Vendor/Contractor 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. responsible for obtaining its own independent financial, legal, accounting, and technical advice with respect to any information included in the Bid Solicitation Document or in any data, materials, or documents provided or required by the Board.

19. 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 Board'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 Vendor/Contractor or the Board 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.

20. Electrical Safety Requirements

All electrical equipment and components must bear a C.S.A. or Electrical Safety Association (E.S.A.) label.

21. Emergency and Maintenance

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

For the purpose of emergency and maintenance measures, the name, address, and telephone number of a responsible official of the contracting firm shall be given to the Board'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 Board in the event emergency or maintenance measures are required, regardless of the fact that the emergency or requirement of maintenance may have been caused by the Vendor/Contractor's negligence, Act of God, or any cause whatsoever.

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

22. Equivalent or Brand Name

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.

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 Board in the form of an Addendum. It is the Bidder's responsibility to demonstrate that the item meets the specifications.

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.

The request must include enough detail to determine equivalency by comparing the Board’s specifications to the alternate product. It will not be the Board’s responsibility to perform this comparison.

The Board/ Consultant may, depending on the nature of the product request site visits within a reasonable distance (preferable within 100 km of the Board) 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.

The Board/Consultant will endeavor to complete a review and make a decision prior to the Closing Date, and, if required, the Board 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 particular Procurement.

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

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

23. Evidence of Quality

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

24. 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 Vendor/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 Vendor/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 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 Board 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.

25. 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 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.
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.

25.1 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 School Board'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 School Board'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.

26. Incurred Costs

The Board 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.

27. Indemnification

The Bidder will indemnify and save harmless and defend the Board, 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.

28. Insurance Provisions

If selected, it is the responsibility of the Vendor/Contractor 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 Vendor/Contractor shall insure its undertaking, business, and equipment under the following coverage to protect and indemnify and save harmless the Board:

i. **General Liability Insurance:** The Vendor/Contractor shall maintain liability insurance acceptable to the Board throughout the term of this Agreement from the date of commencement of work until one (1) year from the date of substantial performance of work. Liability coverage shall be provided for completed operations hazards from the date of substantial performance of the work, as set out in the certificate of

substantial performance of work, on an ongoing basis for a period of 6 years following substantial performance of work. Coverage shall consist of a comprehensive policy of public liability and property damage insurance, with all applicable coverage extensions/ endorsements, in an amount of not less than $10,000,000 per occurrence. Such insurance shall name the **Waterloo Region District School Board** and any other person or party identified in the contract documents, as an **additional insured** with a cross liability endorsement and severability of interests' provision. 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. A combination of primary coverage plus umbrella or excess liability insurance may be used.

ii. **Owned and Non-Owned Automobile Liability Insurance:** The Vendor/Contractor shall maintain liability insurance on all Owned, Non-Owned and Leased Automobiles used in the performance of this work to a limit of $2,000,000 per occurrence throughout the term of this Agreement from the date of commencement of work and until one (1) year after the date of substantial performance of work.

iii. **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 Board and shall not allow subrogation claims by the Insurer against the Board.

iv. **If applicable**, 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 to, while stored at a temporary location, and awaiting installation at the work site.

v. **If applicable**, the General Contractor shall **ensure** its professional consultants, architects, landscape architects, planners, and engineers 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 $1,000,000 per claim providing coverage for acts, errors and omissions arising from their professional services performed under this Agreement. 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 Board prior to the completion of the project and in accordance with the provisions stated above.

vi. **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 condition during construction. Coverage shall be in an amount of not less than $2,000,000 per claim or per occurrence, or such greater amount as the Board may from time to time require, naming the Board 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. **Provisions:** Prior to the commencement of work, the General Contractor 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 Board.

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 Board and any other person insured under the policy and be primary insurance in response to claims. Any insurance or self-insurance maintained by the Board 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 Board under this Agreement.

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

viii. **Third Party Claims Process:**

a. The Board's claims process for Third Party claims is to refer the claimant directly to the Vendor/Contractor and to leave the resolution of the claim with the Vendor/Contractor. This applies regardless of whether or not it is an insured loss.

b. As the Board has a responsibility to the taxpayers, we must ensure that claimants are dealt with in a fair and efficient manner. Claims reported to the Vendor/Contractor, either directly by a third party or through the Board shall be promptly investigated by the Vendor/Contractor. The Vendor/Contractor shall contact the third party claimant within 48 hours of receipt of notice of a claim. The Vendor/Contractor shall initiate an

investigation of the claim immediately upon notice, and advise the third party claimant in writing, with a copy to the Board, of its position regarding the claim within 21 calendar days of the notice. The Vendor/Contractor 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 Vendor/Contractor shall immediately report the claim to its Insurer for further review. (Insurer for this purpose is defined as either the Claims Department of the Vendor/Contractor's Insurance Company or the Claims Administrator at the Vendor/Contractor's Insurance Broker.) The Vendor/Contractor's Insurer upon receipt of this claim shall advise the third party claimant by letter, with a copy to the Board, that it is now investigating the claim. When a final position on the claim has been determined, the Vendor/Contractor's Insurer shall advise the third party claimant by letter, with a copy to the Board. Failure to follow this procedure shall permit the Board to investigate and resolve any such claims.

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

e. The Board may, without breaching this contract, retain from the funds owing to the Vendor/Contractor an amount that, as between the Board and the Vendor/Contractor, is equal to the balance in the Board's favour of all outstanding debts, claims or damages, whether or not related to this contract.

29. Invoice Requirements, Proper Invoice and Payment Terms

Except for Credit Card payments, all invoices shall be sent to finance-ap@wrdsb.ca for payment at the completion of the Work or after receipt of goods, unless otherwise stated.

29.1 In advance of invoicing, upon request, contracted Vendors will provide:

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

29.2 Requests to change company information, such as a name change due to a merger or acquisition, must be submitted in writing accompanied with a legal document/letter signed by a lawyer on the law firm's letterhead.

29.3 Invoices, not subject to the Construction Act, must contain the following information, where applicable, in order to be deemed complete:

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

iv. Unique Invoice Number
v. Vendor name and address
vi. Contract reference (RFT #, RFQ# etc.)
vii. A description, including quantity where appropriate, month of service for ongoing contracts, and location of work
viii. The amount payable for the services or materials that were supplied, including
unit price (where applicable)
ix. HST amount shown as a separate line item
x. Payment Terms
xi. Board Project Lead/ Contact and
xii. Confirmation of completion of order and all Work as described in this Bid Solicitation Document.

29.4 Construction Act – Proper Invoice

The Board will pay such invoice within twenty-eight (28) calendar days of the Board's receipt of such proper invoice if the work has been performed to the satisfaction of the Board For Work that is governed by the provisions of the Construction Act and the Regulations thereto, the successful Bidder 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 Vendor/Contractor'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 applied for 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 Board in the Contract.
viii. the invoice number and if applicable, the revision number.
ix. the Vendor/Contractor'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.

29.5 Payment Terms

The payment terms shall be net twenty-eight days (28) days after receipt of proper invoice where the Construction Act is applicable, unless otherwise agreed by the Board in writing. All other payment terms will reflect Net 30. 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 Board. The Board will not pay any interest, penalty, or late fee for delayed payments. The Board preferred payment method is Credit Card or EFT, however alternate payment methods may be approved. Vendors are required to invoice promptly, without delay.

30. Licenses and Permits

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

31. Locates, if applicable

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

The successful Bidder will obtain all utility locates in advance of work and all cost(s) associated with obtaining the utility locates will be the Vendor/Contractor's responsibility.

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

32. 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 successful Bidder at the successful Bidder's expense.

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

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

34. Mathematical Errors (Unit Prices Prevail)

Should there be any error in extensions, additions or computations, the Board 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.

35. No Branding

The Vendor/Contractor 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 Board.

36. No Collusion

Bidders 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 for the same Work and shall be fair in all respects and shall be without collusion or fraud.

37. No Lobbying

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

i. any elected or appointed officer.
ii. any staff of the Board except the Single Point of Contact as identified in the Bid Solicitation Document; or
iii. any other person connected in any way with the procurement.

38. 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 Board owned properties. Furthermore, most Board properties are “scent free”. Smoking will not be permitted on-site. Offenders will be asked to leave the site, and infractions could result in corrective action and or fine.

39. Non-Assignment

No assignment by the Vendor/Contractor shall relieve the Vendor/Contractor of any responsibility for the full performance of all its’ obligations under this contract.

The Vendor/Contractor shall not change its corporate name without the prior written approval of the Board.

40. Non-Disclosure Agreement (NDA)

The Board 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 Board procedure AP4790. Prior to any sharing of Board personal, sensitive, or confidential information, the Vendor will be subject to further privacy and security reviews as required. This agreement will be renewed on an annual basis.

41. 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 Board 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 Board agree as follows.

i. Except as set out in paragraph (b) below, the Bidder hereby assigns and agrees to assign to the Board 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 Board 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 Vendor/Contractor agrees to always cooperate fully, and will cause its

Personnel to cooperate fully at all times, with respect to signing such documents and doing such acts and other things reasonably requested by the Board to confirm the transfer of ownership rights in the Deliverables.

42. Patent, Copyright and Other Proprietary Rights

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

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).

43. Performance

i. Where the Vendor/Contractor is in default in carrying out any of its obligations under the contract, the Board may issue a verbal warning outlining the deficiency in supply or other aspects of performance and requiring the Vendor/Contractor to correct those deficiencies within such period of time as stated.
ii. If the deficiency is not corrected within the time specified, or there is a further instance of deficient performance, the Board may issue a written notice to the Vendor/Contractor, identifying the deficiency in performance and setting a final date or time period for its correction.
iii. If corrective steps are not taken by the final date or within that time, the Board 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 Vendor/Contractor shall have no right to perform the services contemplated under this agreement beyond the time when such services become unsatisfactory to the Board; and in the event that Vendor/Contractor 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 Vendor/Contractor 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 Board. The evaluation report shall be reviewed with Procurement Services, and a copy of the completed evaluation forwarded to the Vendor for their records. Dependent on the evaluation scoring, the Board may request a corrective action plan

and/or project size/value may be affected on future bid opportunities for your company.

44. Permits and Licenses

Unless stated otherwise, the Vendor/Contractor 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 the Board upon request.

45. Proceedings Against the Board

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 Board and the Bidder. The Board may reject any Bid in the event of potential, current, pending, or threatened litigation, arbitration, alternative dispute resolution or disputes involving the Board and the Bidder.

46. Protection of Board Assets

The successful Bidder (the contractor / subcontractor) shall be informed of and protect all Board assets including existing structures and vehicles, to the satisfaction of the Board. Any damage shall be reported to the Board and subsequently repaired and/or replaced by the Vendor/Contractor, at their expense, to the satisfaction of the Board. The Vendor/Contractor shall not cause any inconvenience to Board operations, staff, public or users of the Board facilities, within reason. Communication between the successful Vendor/Contractor and the school (or Board representative if school contact is not available) must be timely and effective to ensure all stakeholders are considered / aware of work to be completed.

47. Public Health Safety Protocol

Best practices include but not limited to wearing a medical grade mask and maintaining physical distancing (2m/6.5ft).

Recommended practices are subject to change at any time For information and updates, refer to the following resources and website: Waterloo Region District School Board and Regional of Waterloo Public Health Services

48. Records, Inspection, Audits

The Board will have the right, upon reasonable notice, to full access to the accounts and records of the Vendor/Contractor in respect of the goods, services and equipment provided by it under the Contract, for the purposes of inspection and/or audit. The Vendor/Contractor 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.

49. Reserved Rights of the Board

The Board 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, or claims by or against or otherwise involving either of the Board 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 Supplementary pricing.
v. discuss with any Bidders different or additional terms to those contemplated in this Bid Solicitation 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. 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.
x. 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 Bid Solicitation Document,
    c. with inadequate credentials or due to unsatisfactory past performance,
xi. reject Bid(s) from Bidder who has engaged in lobbying or has contravened any of the terms of the Bid Solicitation Document.
xii. 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 Board exercising its clarification rights under the procurement process, or
    c. other relevant information that arises during the procurement process.
xiii. choose to reject a Bid if only a single Bid is received and cancel the bidding process or enter into direct negotiations with the sole Bidder.
xiv. accept a Bid other than the lowest or highest scoring and/or to not accept any Bid for any reason whatsoever.
xv. award the contract as split-order, lump sum or individual-item basis, or such combination as shall best serve the interests of the Board
xvi. 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.
xvii. no longer consider a Bidder if a satisfactory outcome is not reached as part of

negotiation, as determined by the Board in their sole discretion and move to the next highest ranked Bid in such event.

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

xix. award any business/Work described in this Bid Solicitation to more than one (1) Bidder.

xx. not award the Contract if the costs of completing the Work exceed budget funding; or

xxi. do not respond to all requirements or do not represent fair market value or where necessary internal approvals are not obtained.

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

50. Responsibilities of the Vendor

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

The Vendor shall:

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

ii. act in a professional manner at all times when dealing with Board staff, with the public, and while working on site.

iii. not, except with the consent of the Board 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 Board be used for, or in connection with, any advertising or promotional purpose of the Vendor.

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

51. 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 Bid Solicitation 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 subcontractors, sub-consultants, 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 Bid Solicitation Document including any addenda.

iv. In the event of discrepancies between the maps, drawings, reports, and the specifications with regard to 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 of 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 carry out its own independent research and due diligence, or to perform any other investigations considered necessary by the Bidder to satisfy itself as to all existing conditions. 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.

52. 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 Board will not be responsible for damages or extra work caused or occasioned by the Vendor/Contractor relying on this or any other information or records.

Before starting work, the Vendor/Contractor 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 Vendor/Contractor themself, the costs involved shall be borne by the Vendor/Contractor. The Vendor/Contractor will be responsible for any fees that may be associated with these services.

53. Site Inspection and Control

A representative of the Board (appointed by the Board) 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 Vendor/Contractor in written form

54. Site Investigation

Bidders shall not rely solely upon information furnished by the Board 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.

55. 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 carried out by skilled workers acceptable to the Board Representative, under the liability of the Vendor/Contractor.

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

56. Site Traffic/Pedestrian Safety

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

57. Site Use and Traffic Control

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

The Vendor/Contractor 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 Vendor/Contractor 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 Vendor/Contractor shall regularly inspect the surface condition of these streets and promptly dispose of all the debris.

Should the Vendor/Contractor be unable to carry out the required remedial measures, the Board may carry out the necessary maintenance and the costs for the work shall be deducted from payments due to the Vendor/Contractor.

The Vendor/Contractor shall, at his own expense and to the satisfaction of the Board, provide all vehicular traffic control equipment, 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 Vendor/Contractor 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 Vendor/Contractor must be included in the quotation and included with the bid price.

The Vendor/Contractor 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.

58. 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 Bid Solicitation Document.

59. Sustainable Purchasing

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

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

60. Termination

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

i. The Board may terminate the contract without further notice, and exercise its rights to the Contract security provided by the Vendor/Contractor.
ii. The Board may withhold any payment due to the Vendor/Contractor hereunder until the Vendor/Contractor has remedied its failure.
iii. The Board may engage the services of another Bidder to remedy the Vendor/Contractor's failure, and obtain reimbursement therefore from the Vendor/Contractor. The said reimbursement may be obtained either through deduction from any amounts owing to the Vendor/Contractor hereunder, or through any other legal means available to the Board; or
iv. The Board may assert any other remedy available to it in law or equity.

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

61. Termination for Convenience

The Board may terminate the Contract, in whole or in part, whenever the Board determine that such termination is in the best interests of the Board without showing cause, upon providing written notice to the Vendor/Contractor. The Board shall pay all reasonable costs incurred by the Vendor/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 Board. Payment shall be in accordance with prices as per Contract. However, in no event shall the Vendor/Contractor be paid an

amount, which exceeds the Total Bid Price. The Vendor/Contractor will not be reimbursed for any profits which may have been anticipated but which have not been earned up to the date of termination.

62. Termination for Lack of Funding

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

63. Tools and Equipment

All equipment and methods used to carry out 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 Board 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 Board entering into an agreement with the Vendor/Contractor, or at any time during the Contract, the Board may, at their discretion, request an inspection of the equipment proposed for use.

It is the responsibility of the Vendor/Contractor, 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 timeline terms of this tender. Failure to provide alternative equipment within timeline expectations specified within this tender, may result in termination of the contract. It is the responsibility of the Vendor/Contractor to ensure work continues and deadlines are met, despite any unforeseen interruption as a result of equipment failure.

It is the Vendor/Contractor's responsibility to ensure that the equipment and the operator, are licensed in accordance with the Ministry of Transportation. The Board may, at their discretion, require the Vendor/Contractor 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 Vendor/Contractor 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 Board shall apply.

64. Usage Reports

The Board, at no additional cost, may request usage reports to be provided annually or upon request.

65. Variation of Bid Prices

No variation in the Total Price, unit prices and/or provisional 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.

66. Volume and Exclusivity

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

67. Waiver

No term or provision of the Bid Solicitation 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 Board does not accept responsibility for any information or any errors or omissions which may be contained in the Bid Solicitation Document, or the data, materials or documents disclosed or as provided to the Bidders pursuant to the procurement. The Board make no representation or warranty, either expressed or implied, in fact or in law with respect to the accuracy or completeness of the Bid Solicitation Document or such data, materials or documents and the Board shall not be responsible for any actions, costs, losses or liability whatsoever arising from any Bidder's reliance or use of the Bid Solicitation Document or any other technical or historical data, materials or documents provided by the Board. The Bidder is responsible for obtaining its own independent financial, legal, accounting, and technical advice with respect to any information included in the Bid Solicitation Document or in any data, materials, or documents provided or required by the Board.

68. Warranty and Maintenance

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

warranty period.

69. Work Continuity

The Vendor/Contractor shall take adequate care to protect the Work, the Board'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 Vendor/Contractor, its subcontractors, suppliers, agents, employees, officers, directors, and all other persons and other entities for whose acts the Vendor/Contractor may be liable or for whom it is responsible in law and their respective officers, directors, agents and employees.

The Vendor/Contractor 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, Board equipment, public assets or private property during the Work shall be the responsibility of the Vendor/Contractor.

70. Work Requirements

The Vendor/Contractor shall perform entire work with minimal to no disturbance to the routine operations of the respective facility. Further, the Vendor/Contractor shall ensure safety of WRDSB assets, students, staff as well as public at all times.

71. Workplace Safety Insurance Board (WSIB) Certificate

The Board requires all Vendor/Contractors 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 Bid Solicitation, the recommended Bidder(s) make available to the Board a copy of certificates of good standing with the Workplace Safety and Insurance Board ("WSIB Certificates") stating that the vendor/contractor/consultant and all of its sub-contractors/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 shall be uploaded through the Bidding System within 72 hours of the expiration or replacement of the current certificate, without demand by the Board.

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 30th day of August in the year 2024. .2 (if applicable) *Occupancy* by the 30th day of August in the year 2024, and .3 *Ready-for-Takeover* by the 30th day of August in the year 2024."
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*." 10.3 The Contractor shall pay to the Owner compensation for all additional costs and damages borne by the Board to cover costs incurred due to delay beyond contract timelines, until Ready-for-Takeover is achieved and certified pursuant to the terms of the Contract. Liquidated damages will be assessed as incurred and amounts will be payable directly to the Board. Additional costs may include, but are not limited to: temporary classrooms, temporary washrooms, additional staff, etc.
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 <u>add</u> 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	<u>Add</u> new paragraphs 6.2.3, 6.2.4, and 6.2.5 as follows: "6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the *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 a cash allowance of to address the cost of the following items:

1	Designated Substance Removal. (Additional removal not already identified in the ACM Summary report)	$5,000.00
2	Independent Testing & Inspection (As directed by the Consultant)	$3,000.00
3	Door Hardware including Automatic Hardware	$20,000.00
7	Data cabling installation and network equipment (Including terminations)	$6,000.00
11	Public Address (PA) systems. (Including all cabling and hardware)	$6,000.00
	Total of All Allowances:	**$40,000.00**

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 co-ordinated with requirements of Work and Contract Documents.
6. Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
7. Shop drawings which require the approval of a legally constituted authority having jurisdiction shall be submitted by Contractor to such authority for approval. Such shop drawings shall receive final approval of authority having jurisdiction before Consultant's final review.
8. No work, requiring a shop drawing submission, shall be commenced until the submission has received Consultant's final review. Only shop drawings bearing Consultant's review stamp are to be sent and used on the job site.
9. Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

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

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:

1.7.7.1.3.1. 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,

1.7.7.1.3.2. 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

1.7.7.1.3.3. 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:

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

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

1.7.7.1.4.3. report any other problems they encounter,

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

1.7.7.1.4.5. 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 4200 Hot Works/Fire Watch (Copies Available on Request)

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

01 35 23 – Health And Safety

1.0 GENERAL

1.1. RELATED SECTIONS

.1 Section 01 31 00 - Project Managing and Coordination.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 35 17 – Fire Safety Requirements

.4 Section 01 35 43 – Hazardous Materials

.5 Section 01 41 00 – Regulatory Requirements

.6 Section 01 53 00 – Temporary Construction Facilities

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

1.2. REFERENCES

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

1.3. SAFETY PLAN

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. 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 Hazardous Materials

1.12. HAZARDOUS WORK

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

1.13. WORK STOPPAGE

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

1.14. LOCKOUT PROCEDURES

.1 All Work to be done on electrical systems or machinery, where the unexpected switching on of the system or machinery could result in personal injury to a student, staff, employee, or the Contractor's employee, must be done in accordance with the Contractor's standard lockout procedure.

.2 The Contractor shall provide his/her own locks for the above procedure.

.3 The lock shall include contact information for the person(s) locking out such 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 – Hazardous Materials

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 MTE Consultants Inc. for this facility, is attached under Appendix 013543 A. A duplicate set is also available in the Facilities Services Departments located in the Education Centre. Unless specifically covered by a Cash Allowance or Contingency Allowance that states otherwise, include in this Contract the required removal of all asbestos containing materials (ACM) to complete the work. No claims for extra costs will be accepted for areas known to contain ACM that are within the scope of this Work.

.2 Comply with applicable legislation regarding asbestos. Should the Contractor encounter asbestos not noted in the referenced Asbestos Audit that would be disturbed during the course of the Work, they should stop the work in that immediate area and report the same to the Consultant and Board contact.

.3 In addition, Lead, Mercury, Silica, and Isocyanates are anticipated to be present in existing facilities. New construction, renovations, or alterations require compliance by the Contractor with the applicable legislation.

1.4. PROTOCOL FOR ABATEMENT WORK

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

.2 Asbestos Abatement Contractors must maintain appropriate insurance coverage and WISB certification.

.3 Contractors retained for asbestos abatement work shall use personnel certified by the Ontario College of Trades and must provide the Consultant and Board with proof of asbestos certification (AAS and AAW) for all supervisors / all staff involved.

.4 School Access

.1 During school hours all asbestos contractors are to report to the school office upon arrival. After school hours, ensure card-in / card-out procedures are followed and building security is maintained.

.5 Communication

.1 Establish communication contact list with email and phone numbers that shall include:

.1 Principal / Vice Principal

.2 Area Facility Manager

.3 Head Custodian

.4 Environmental Officer

.5 Manager of Mechanical, Electrical and Environmental Services

.6 Manager of Health Safety & Security

.7 Contractor staff

.8 Consultant

.2 Contact the School Principal / Vice to set up a firm date for the abatement (removal / repair). Schedule to allow at least 72 hours notice ahead of the work.

.3 Confirm the date by notifying via email the following:

.1 Principal / Vice-principal,

.2 Area Facility Manager, and

.3 Environmental Officer.

.4 Consultant

.4 Indicate the date, the start time, the anticipated completion time for the work and the work areas in the school.

.5 Identify personnel managing the project and provide current cell numbers for emergency contacts.

.6 For emergency work, as requested by Area Supervisors, Facility Managers or Environmental Officer, no notification to the school is required.

.7 Additionally, for Type 3 work also contact:

.1 Manager of Health, Safety & Security, and

.2 Notify the MOL (also for Type 2) where required by regulation.

.3 Consultant

.8 Discussions with other groups, school staff, media and others is discouraged and shall be directed to the Board Communication Officer where warranted.

.6 Asbestos Operations

.1 Emergency work shall be carried out the same day (evening/night) or under exceptional conditions the following day / evening / night. Contractors shall exercise discretion when working in the school to minimize anxiety of staff/school community. Where warranted, contact Area Supervisor, Facility Manager or Environmental Officer to obtain further direction.

.2 For non-emergency work, contractor is to assess the work on site and provide a cost estimate to the Environmental Officer, (daniela_budure@wrdsb.on.ca) and Consultant. Some work will require discussion with the Facility Manager or Environmental Officer to assess if additional work should be done as to completely remove all ACM material form the area or similar.

.3 Where the MTE report shows ACM requiring repair, remove and re-insulate where required.

.4 Before beginning any Type 1, Type 2 or Type 3 Operations, the work area must be secured, doors closed, warning signs added to all entrances, caution tape used in open areas and signs used to restrict access to the work area so as to keep persons not involved in the work from entering in the work area.

.5 Provide “Construction” warning signs on solid barriers between the Work and public areas. Install a sufficient number of “asbestos abatement” warning signs behind the barriers, posted to warn of the hazard, and that access to the work area is restricted to persons wearing protective clothing and equipment.

.6 The contactor is responsible to disable the mechanical ventilation serving the work area and positively prevent operation using Lock-out / Tag-out devices for each air handling unit /fan. Exercise caution during heating season to ensure areas of the building are maintained above freezing and ensure equipment is turned back on after abatement / air clearance completed.

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

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

1.5. SUBMITTALS

.1 Once the abatement is completed, forward a Letter of Completion to the Environmental Officer, (daniela_budure@wrdsb.on.ca). This letter shall be

received no later than 72 hours after completion and shall include any sample results.

.2 For those projects requiring Air Clearance, ensure this info is sent without delay but in all cases no later than 24 hours after sampling. All Type 3 work must take into account that the initial samples may not pass and the contactor must allow one additional day to re-clean and re-sample before school is to resume operations. For those projects not under the direct supervision of a Environmental Consultant, the contactor is to expedite the air clearance sampling with the lab of their choice and carry these costs.

.3 Forward Air Clearance results to:

.1 Principal / Vice-principal,

.2 Facility Manager,

.3 Environmental Officer,

.4 Manager of Mechanical, Electrical and Environmental Services, and

.5 Manager of Health, Safety & Security.

.6 Consultant

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

May 4, 2018
MTE File No.: C34532-914

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

Re: 2018 Asbestos Audit Update – Tait Street Public School
184 Tait Street, Cambridge, Ontario

1.0 INTRODUCTION

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

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

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

2.0 SCOPE OF WORK

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

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

3.0 METHODOLOGY AND ASSESSMENT CRITERIA

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

- Locations that may be hazardous to the surveyor, such as electrical equipment;
- Where invasive inspection could cause consequential damage to the property or impair the integrity of the equipment, such as roof systems, underground services or components of mechanical equipment;
- Locations concealed by building finishes that require substantial demolition or removal for access or determination of quantities;
- Materials that is present in such an inconsistent fashion that without complete removal of finishes, the extent cannot be determined;
- Non-permanent items or personal contents, furnishings;
- Settled dust or airborne agents unless otherwise stated; and
- WRDSB Room 152 – this room was not accessible with any of the keys on site.

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 April 27, 2018. The two-storey school and was constructed in 1958 with additions in 1964, 1971 and 2014. The inspection did not include areas of post 1986 new construction or renovation (where all building finishes have been removed and replaced).

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

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

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

4.1 Analytical Results

During this inspection, a total of 9 building material samples that are suspect ACM were collected with a total of 5 analyses being performed. The threshold of equal to or greater than 0.5% asbestos by dry weight and is classified as ACM according to O. Reg. 278/05. Samples collected were submitted for analysis to Paracel Laboratories Ltd. (Paracel), in Mississauga, Ontario. Paracel is certified under the National Voluntary Laboratory Accreditation Program to perform asbestos analysis of bulk samples by PLM. Laboratory analysis was conducted in accordance with the United States Environmental Protection Agency, Test Method EPA/600-R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993 by Polarized Light Microscopy as prescribed by O. Reg. 278/05.

Reported laboratory detections of asbestos ranged between 2% to 4% Chrysotile and are therefore confirmed as ACM.

4.2 Removed ACM

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

4.3 Discovery of Additional ACM

No additional ACM or suspect ACM was identified.

4.4 Damaged ACM

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

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

5.0 RECOMMENDATIONS

5.1 Remedial

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

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

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

5.2 Long Term Management

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

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

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

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

6.0 LIMITATIONS

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

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

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

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

All of which is respectfully submitted,

MTE CONSULTANTS INC.

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Attach.
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APPENDIX A

ASBESTOS MANAGEMENT DATABASE

School Name	Legend:	Notes:
Tait Street Public School	**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: 1958		
Addition(s): 1964, 1971, 2014		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
Structure/Additions										
	Original Building	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	Original Building	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	Original Building	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	Original Building	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	Original Building	Windows	Interior/Exterior Frames	Sealant	-	Non ACM	HM	S02	28-Mar-13	ND
	Original Building	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	Original Building	Mastic	Mastic	Floor Tile Mastic	NF	ACM	HM	S09	17-Jul-09	2.4% Chrysotile
	Original Building	Mastic	Brown Mastic	1'x1' Long Fissure Ceiling Tile	NF	ACM	SL	S03ABC	13-Nov-18	ND
	1964 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1964 Addition	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	1964 Addition	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	1964 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1964 Addition	Windows	Interior/Exterior Frames	Sealant	-	Non ACM	HM	S02	28-Mar-13	ND
	1964 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1964 Addition	Mastic	Mastic	Floor Tile Mastic	NF	ACM	HM	S02	4-May-18	4% Chrysotile
	1971 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1971 Addition	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	1971 Addition	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	1971 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1971 Addition	Windows	Interior/Exterior Frames	Sealant	-	Non ACM	HM	S02	28-Mar-13	ND
	1971 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1971 Addition	Mastic	Mastic	Floor Tile Mastic	NF	ACM	HM	S01	4-May-18	2% Chrysotile
	Post-2014 Addition	Not Inspected	Not Inspected	Not Inspected						
Level 1										
7	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown (Post 2000)	-	Non ACM	-	-	-	-

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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
7	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
7	Classroom	Window	Caulking	-	-	Non ACM	SL	36335-101-S02ABC	28-Mar-13	ND
7	Classroom	Ceiling	Drywall Joint Compound	-	NF	ACM	SL	36335-101-S01A	28-Mar-13	1.1% Chrysotile
7	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
7	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
8	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
8	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
8	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
8	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
8	Classroom	Deck	Wood	-	-	Non ACM	-	-	-	-
8A	Storage Room	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
8A	Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
8A	Storage Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
8A	Storage Room	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
8A	Storage Room	Deck	Wood	-	-	Non ACM	-	-	-	-
8B	Washroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
8B	Washroom	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
8B	Washroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
8B	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
9	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
9	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
9	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
9	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
9	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
10	Classroom	Floor	Vinyl Floor Tile 9"x 9"	Dark Grey with White Steaks	NF	ACM	SL	S14abc	17-Jul-09	2.1% Chrysotile
10	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
10	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
10	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
10	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
11	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-

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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
11	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
11	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
11	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
11	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
12	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
12	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
12	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
12	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
12	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
12	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
13	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
13	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
13	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
13	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
13	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
13	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
14	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
14	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
14	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
14	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
14	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
14	Classroom	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
15	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
15	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
15	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	SL	S03abc	17-Jul-09	ND
15	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
15	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
15	Classroom	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
16	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
16	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-

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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
16	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
16	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
16	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
17	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
17	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
17	Classroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
17	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
17	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
17	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
17	Classroom	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
18	Classroom	Floor	Vinyl Floor Tile 9"x 9"	Green with White Streak	NF	ACM	SL	S09abc	17-Jul-09	7.4% Chrysotile
18	Classroom	Floor	Floor Tile Mastic	Black	NF	ACM	SL	S09abc	17-Jul-09	2.4% Chrysotile
18	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
18	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
18	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
18	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
19	Classroom	Floor	Vinyl Floor Tile 9"x 9"	White with Grey Streak	NF	ACM	SL	S11abc	17-Jul-09	3.1% Chrysotile
19	Classroom	Floor	Vinyl Floor Tile 9"x 9"	Orange with Brown Streak	NF	ACM	SL	S12abc	17-Jul-09	2.4% Chrysotile
19	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown with Brown Fleck	-	Non ACM	SL	S13abc	17-Jul-09	ND
19	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
19	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
19	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
19	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
20	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Fleck	-	Non ACM	-	-	-	-
20	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
20	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
20	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
20A	Washroom	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-
20A	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
20A	Washroom	Wall	Drywall Joint Compound	-	NF	ACM	HM	S03	20-May-15	1% Chrysotile
20A	Washroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
21	Classroom	Floor	Vinyl Floor Tile 9"x 9"	Yellow with Red and Orange Streak	NF	ACM	HM	S17	17-Jul-09	8.3% Chrysotile

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21	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
21	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
21	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
22	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
22	Classroom	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
22	Classroom	Ceiling	Drywall Joint Compound	-	NF	ACM	SL	36335-101-S01B	28-Mar-13	NA
22	Classroom	Deck	Wood	-	-	Non ACM	-	-	-	-
23	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
23	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
23	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
23	Classroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
120	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
120	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
120	Washroom	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
120	Washroom	Deck	Concrete	-	-	Non ACM	-	-	-	-
120	Washroom	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
120	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
121	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
121	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
121	Washroom	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
121	Washroom	Deck	Concrete	-	-	Non ACM	-	-	-	-
121	Washroom	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
121	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
122	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
122	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
122	Washroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
122	Washroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2008)	-	Non ACM	VC	-	-	-
123	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
123	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
123	Washroom	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND

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123	Washroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2008)	-	Non ACM	VC	-	-	-
123	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
123	Washroom	Piping	Pipe Insulation	Cellulose	-	Non ACM	SL	S08abc	17-Jul-09	ND
123	Washroom	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
124	Storage	Floor	Vinyl Floor Tile 12"x12"	Oatmeal (Post 2008)	-	Non-ACM	-	-	-	-
124	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
124	Storage	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
124	Storage	Ceiling	Ceiling Tile 2' x 4'	Medium-thick Random Pinhole	-	Non ACM	SL	S07abc	17-Jul-09	ND
124	Storage	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
124	Storage	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
124	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
125	Staff Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Streak	NF	ACM	HM	S01	17-Jul-09	3.7% Chrysotile
125	Staff Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
125	Staff Work Room	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
125	Staff Work Room	Ceiling	Ceiling Tile 2' x 4'	Medium and Small Pinhole	NF	ACM	SL	S06abc	17-Jul-09	0.25% Amosite, 0.5% Chrysotile
125	Staff Work Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
125	Staff Work Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
125	Staff Work Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
126	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Streak	NF	ACM	HM	S01	17-Jul-09	3.7% Chrysotile
126	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
126	Work Room	Wall	Wood	-	-	Non ACM	-	-	-	-
126	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
126	Work Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
126	Work Room	Ducting	Duct Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
127	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Fleck	-	Non ACM	SL	S04abc	17-Jul-09	ND
127	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
127	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
128	Work Room	Floor	Vinyl Floor Tile 12"x 12"	White with Blue/Grey Fleck	-	Non-ACM	HM	S02	17-Jul-09	ND
128	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
128	Work Room	Wall	Wood	-	-	Non ACM	-	-	-	-

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128	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
128	Work Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
128	Work Room	Ducting	Duct Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
129	Storage Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
129	Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
129	Storage Room	Ceiling	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
129	Storage Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
129	Storage Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
129	Storage Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
130	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
130	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
130	Storage	Ceiling	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
130	Storage	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
130	Storage	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
130	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
131	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Streak	NF	ACM	SL	S01abc	17-Jul-09	3.7% Chrysotile
131	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
131	Work Room	Wall	Wood	-	-	Non ACM	-	-	-	-
131	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
131	Work Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
131	Work Room	Ducting	Duct Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
132	Work Room	Floor	Vinyl Floor Tile 12"x 12"	White with Blue and Grey Fleck	-	Non ACM	SL	S02abc	17-Jul-09	ND
132	Work Room	Floor	Floor Tile Mastic	Black Mastic	-	Non ACM	SL	S02abc	17-Jul-09	ND
132	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
132	Work Room	Wall	Wood	-	-	Non ACM	-	-	-	-
132	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
133	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown Streak	NF	ACM	HM	S01	17-Jul-09	3.7% Chrysotile
133	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
133	Work Room	Wall	Wood	-	-	Non ACM	-	-	-	-
133	Work Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-

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133	Work Room	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
133	Work Room	Ducting	Duct Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
134	Custodial Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
134	Custodial Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
134	Custodial Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (2017)	-	Non ACM	-	-	-	-
134	Custodial Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
134	Custodial Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
135	Library	Floor	Carpet	-	-	Non ACM	-	-	-	-
135	Library	Floor	Vinyl Sheet Flooring	Red/Orange	-	Non-ACM	-	S02	20-May-15	ND
135	Library	Wall	Concrete	-	-	Non ACM	-	-	-	-
135	Library	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
135	Library	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
135	Library	Ceiling	Ceiling Tile 2' x 4'	Medium Fissure Random Pinhole	NF	ACM	HM	2551.846.004	25-Jan-91	1-5% Chrysotile
135	Library	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
136	Library Office	Floor	Carpet	-	-	Non ACM	-	-	-	-
136	Library Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
136	Library Office	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
136	Library Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
136	Library Office	Ceiling	Ceiling Tile 2' x 4'	Medium Fissure Random Pinhole	NF	ACM	HM	2551.846.004	25-Jan-91	1-5% Chrysotile
137	Work Room	Floor	Carpet	-	-	Non ACM	-	-	-	-
137	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
137	Work Room	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
137	Work Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
137	Work Room	Ceiling	Ceiling Tile 2' x 4'	Medium Fissure Random Pinhole	NF	ACM	HM	2551.846.004	25-Jan-91	1-5% Chrysotile
138	Staff Washroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
138	Staff Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
138	Staff Washroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
139	Staff Washroom	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
139	Staff Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
139	Staff Washroom	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-

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140	Staff Room	Floor	Vinyl Floor Tile 12"x12"	Brown Dense Fleck (Post 2008)	-	Non ACM	-	-	-	-
140	Staff Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
140	Staff Room	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
140	Staff Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
140	Staff Room	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2008)	-	Non ACM	VC	-	-	-
140	Staff Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
141	Custodial Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
141	Custodial Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
141	Custodial Room	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
141	Custodial Room	Deck	Concrete	-	-	Non ACM	-	-	-	-
142	Boiler Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
142	Boiler Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
142	Boiler Room	Deck	Concrete	-	-	Non ACM	-	-	-	-
142	Boiler Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
142	Boiler Room	Piping	Pipe Fitting	Parged Cement	F	ACM	SL	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
143	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
143	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
143	Storage	Deck	Concrete	-	-	Non ACM	-	-	-	-
144	Storage Room	Floor	Vinyl Floor Tile 12"x 12"	Grey with White and Blue Fleck	-	Non ACM	SL	S16abc	17-Jul-09	ND
144	Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
144	Storage Room	Deck	Concrete	-	-	Non ACM	-	-	-	-
144	Storage Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
144	Storage Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
145	Storage	Floor	Vinyl Floor Tile 9"x 9"	Yellow with Red Streaks	NF	ACM	HM	S15	17-Jul-09	1.9% Chrysotile
145	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
145	Storage	Deck	Concrete	-	-	Non ACM	-	-	-	-
146	Kitchen	Floor	Vinyl Floor Tile 9"x 9"	Green with White Streak	NF	ACM	HM	S09abc	17-Jul-09	7.4% Chrysotile
146	Kitchen	Floor	Vinyl Floor Tile 9"x 9"	Mastic	NF	ACM	HM	S09abc	17-Jul-09	2.4% Chrysotile
146	Kitchen	Wall	Concrete	-	-	Non ACM	-	-	-	-
146	Kitchen	Ceiling	Concrete	-	-	Non ACM	-	-	-	-

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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
147	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
147	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
147	Washroom	Ceiling	Drywall Joint Compound	-	NF	ACM	HM	S03	20-May-15	1% Chrysotile
148	Stage	Floor	Wood	-	-	Non ACM	-	-	-	-
148	Stage	Wall	Wood	-	-	Non ACM	-	-	-	-
148	Stage	Ceiling	Wood	-	-	Non ACM	-	-	-	-
150	Storage	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown (Post 2000)	-	Non ACM	-	-	-	-
150	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
150	Storage	Floor	Vinyl Floor Tile 12"x 12"	Beige with Brown (Post 2000)	-	Non ACM	-	-	-	-
150	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
150	Storage	Deck	Concrete	-	-	Non ACM	-	-	-	-
150	Storage	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
151	Storage Room	Floor	Vinyl Floor Tile 9"x 9"	Yellow with Red Streaks	NF	ACM	HM	S15	17-Jul-09	1.9% Chrysotile
151	Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
151	Storage Room	Deck	Concrete	-	-	Non ACM	-	-	-	-
151	Storage Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
152	Storage	Not inspected								
153	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-
153	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
153	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	HM	S05	17-Jul-09	ND
153	Office	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole (Cellulose/Screwed In)	-	Non ACM	-	-	-	-
154	Storage Room	Floor	Vinyl Floor Tile 9"x 9"	Yellow with Red and Orange Streak	NF	ACM	SL	S17abc	17-Jul-09	8.3% Chrysotile
154	Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
154	Storage Room	Ceiling	Ceiling Tile 1' x 1'	Large and Small Pinhole - Cellulose	-	Non ACM	-	-	-	-
155	Office	Floor	Vinyl Sheet Flooring	Grey (Post 2015)	-	Non ACM	-	-	-	-
155	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
155	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
155	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
156	Office	Floor	Vinyl Sheet Flooring	Grey (Post 2015)	-	Non ACM	-	-	-	-
156	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
156	Office	Wall	Drywall	Post 2015	-	Non ACM	-	-	-	-
156	Office	Ceiling	Drywall	Post 2015	-	Non ACM	-	-	-	-

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157	Washroom	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-
157	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
157	Washroom	Wall	Drywall	Post 2015	-	Non ACM	-	-	-	-
157	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
806	Gym Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
806	Gym Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
806	Gym Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	SL	S03ABC	20-May-15	1% Chrysotile
806	Gym Corridor	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
807	Corridor/Foyer	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
807	Corridor/Foyer	Wall	Concrete	-	-	Non ACM	-	-	-	-
807	Corridor/Foyer	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
808	Gym Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
808	Gym Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
808	Gym Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	SL	S03ABC	20-May-15	1% Chrysotile
808	Gym Corridor	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
810	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
810	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
810	Corridor	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
810	Corridor	Piping	Pipe Insulation	Cellulose	-	Non ACM	-	-	-	-
810	Corridor	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
810	Corridor	Piping	Pipe Fitting & Seems	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
811	Exit #4 Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
811	Exit #4 Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
811	Exit #4 Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
811	Exit #4 Corridor	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2008)	-	Non ACM	VC	-	-	-
811	Exit #4 Corridor	Deck	Metal Pan	-	-	Non ACM	-	-	-	-
811	Exit #4 Corridor	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-
811	Exit #4 Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
812	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
812	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-

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812	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
812	Corridor	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
813	Entrance	Floor	Carpet	-	-	Non ACM	-	-	-	-
813	Entrance	Floor	Vinyl Floor Tile 12"x12"	Oatmeal (Post 2008)	-	Non-ACM	-	-	-	-
813	Entrance	Wall	Concrete	-	-	Non ACM	-	-	-	-
813	Entrance	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
813	Entrance	Wall	Spray-on Fireproofing	Cellulose/Fibreglass	-	Non ACM	HM	S03	17-Jul-09	ND
813	Entrance	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2008)	-	Non ACM	VC	-	-	-
814	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
814	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
814	Corridor	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
814	Corridor	Piping	Pipe Fitting	Pipe Fitting & Seams	F	ACM	HM	2551.846.002 Pinchin	Jan-91	50-75% Chrysotile
815	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
815	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
815	Corridor	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
820	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
820	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
820	Corridor	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
821	Corridor	Floor	Carpet	-	-	Non ACM	-	-	-	-
821	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
821	Corridor	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
901	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
901	Corridor	Ceiling	Drywall	Drywall Joint Compound (Post 2015)	-	Non ACM	-	-	-	-
Level 2										
201	Office	Floor	Vinyl Floor Tile 12"x 12"	White with Blue and Grey Fleck	-	Non ACM	HM	S02abc	17-Jul-09	ND
201	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
201	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile

School Name	Legend:	Notes:
Tait Street Public School	**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: 1958		
Addition(s): 1964, 1971, 2014		

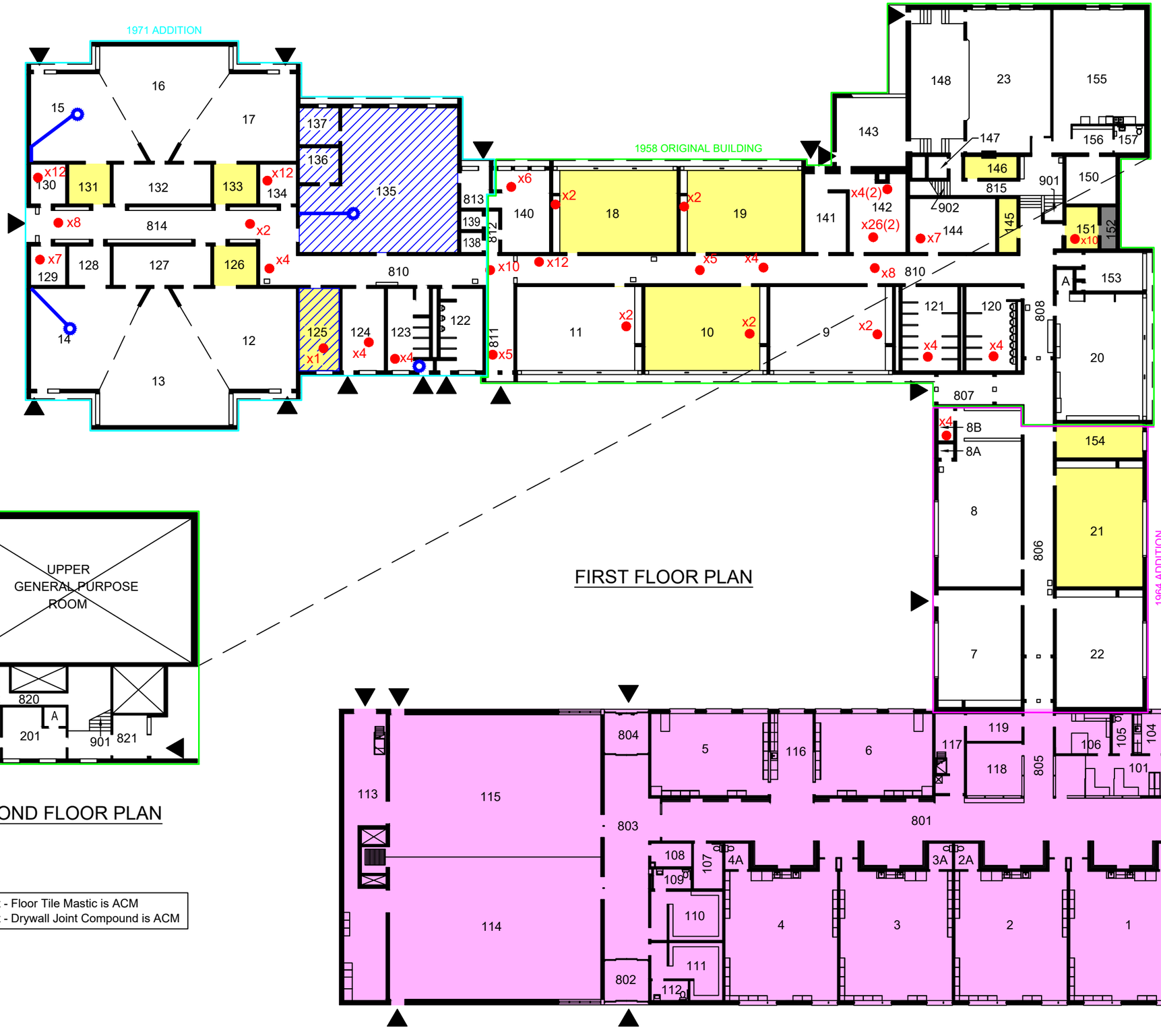
WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
201	Office	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
201A	Office	Floor	Vinyl Floor Tile 12"x 12"	White with Blue and Grey Fleck	-	Non ACM	HM	S02abc	17-Jul-09	ND
201A	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
201A	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
201A	Office	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
202	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-
202	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
202	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
202	Office	Ceiling	Ceiling Tile 2' x 4'	Small Fissure Random Pinhole (Post 2015)	-	Non ACM	-	-	-	-
203	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
203	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
203	Washroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
203	Washroom	Ceiling	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
820	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
820	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
820	Corridor	Ceiling	Ceiling Tile 1' x 1'	Long Fissure	-	Non ACM	HM	S18abc	17-Jul-09	ND
821	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
821	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
821	Corridor	Ceiling	Ceiling Tile 1' x 1'	Long Fissure	-	Non ACM	HM	S18abc	17-Jul-09	ND
901	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
901	Corridor	Ceiling	Ceiling Tile 1' x 1'	Long Fissure	-	Non ACM	HM	S18abc	17-Jul-09	ND
902	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
902	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
902	Corridor	Ceiling	Drywall	Drywall Joint Compound	NF	ACM	HM	S01	20-May-15	1% Chrysotile
Summary of Potential ACM Hidden or Not Assessed										
142	Boiler Room	Chimney	Not Inspected	Refractory/Insulation						
	Original Building/1964/1971	Not Inspected	Not Inspected	Wall Cavity Insulation						

School Name	Legend:	Notes:
Tait Street Public School	**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: 1958		
Addition(s): 1964, 1971, 2014		

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
	Original Building/1964/1971	Not Inspected	Not Inspected	Door Core Insulation						

APPENDIX B

FIGURES



FIRST FLOOR PLAN

SECOND FLOOR PLAN

Throughout - Floor Tile Mastic is ACM
Throughout - Drywall Joint Compound is ACM

NOTES:

ALL DRAWINGS TO BE REFERENCED WITH THE ASSOCIATED REPORT, LOCATIONS AND QUANTITIES ARE APPROXIMATE.

ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS AND/OR DESIGNATED MATERIALS ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE REPORT FOR A COMPLETE LIST OF IDENTIFIED MATERIALS.

THIS FIGURE IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF THE FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND REPORT.

Legend

- 13 — Fixed Reference Number
- No Access
- Post 1986 Construction

Asbestos-Containing Materials (ACM):

- Floor Tile
- Rolled Flooring
- Ceiling Tile
- Friable Soft Textured Ceiling
- Non-Friable Hard Textured Ceiling
- Spray-On Fire Proofing
- Transite (Asbestos Cement) Paneling
- Duct Insulation
- x2(1) — Pipe Fitting Insulation w Quantity (Brackets Indicate # of Damaged Fittings)
- Pipe Insulation (Vertical and Horizontal)
- Transite (Asbestos Cement) Pipe (Vertical and Horizontal)
- x2(1) — Duct Expansion Joints w Quantity (Brackets Indicate # of Damaged Joints)
- Friable Debris

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT
2018 ASBESTOS AUDIT UPDATE

DRAWING
TAIT STREET PUBLIC SCHOOL

FIRST FLOOR

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

APPENDIX C

TABLES

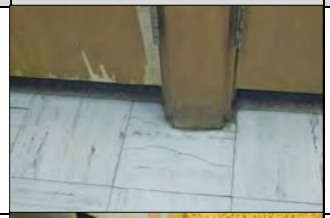
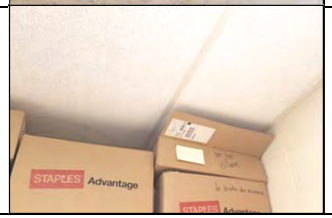
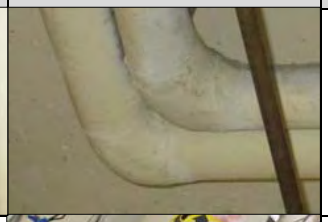
TABLE 1 - INTERNAL ABATEMENT MANAGEMENT							
Tait Street Public School							
Material	**WRDSB Fixed Reference Number**	**MTE Functional Space Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	19	1033	9"x9" White with Grey Streak Vinyl Floor Tiles	1 Tile	-		Monitor Annually
Asbestos Non-Friable	146	1056	9"x9" Green with White Streak Vinyl Floor Tiles	1 Tile	-		Monitor Annually
Asbestos Non-Friable	135	1018	2'x4' Medium Fissure Random Pinhole Ceiling Tiles	1 Tile	-		Monitor Annually
Asbestos Non-Friable	137	1016	2'x2' Medium Fissure Random Pinhole Ceiling Tiles	2 Tiles	-		Removal in accordance with O. Reg. 278/05 as a Type 1 Operation

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT							
Tait Street Public School							
Material	**WRDSB Fixed Reference Number**	**MTE Functional Space Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	135	1018	2'x4' Medium Fissure Random Pinhole Ceiling Tiles	3 Tiles	-		Removal in accordance with O. Reg. 278/05 as a Type 1 Operation
					-		Removal in accordance with O. Reg. 278/05 as a Type 1 Operation
Asbestos Non-Friable	125	1025	2'x4' Medium and Small Pinhole Ceiling Tiles	2 Tiles	-		Removal in accordance with O. Reg. 278/05 as a Type 1 Operation

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

Tait Street Public School

Material	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Friable	142	1036	Insulation on Pipe Fittings	2			Removal/Repair in accordance with O. Reg. 278/05 as a Type 2 Glove Bag Operation
				2	-		Removal/Repair in accordance with O. Reg. 278/05 as a Type 2 Glove Bag Operation

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 3: BULK ASBESTOS SAMPLING SUMMARY					
Sample #	**Location**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
2009 Asbestos Audit Update					
32523-TAIT S.01A	**1009**	**12" x 12" Floor Tile - Beige with brown streaks**	**3.7**	**Chrysotile**	**Yes**
32523-TAIT S.01B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.01C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.02A	1010	12" x 12" Floor Tile - White with blue and grey fleck	Tile: ND Mastic: ND	-	No
32523-TAIT S.02B			Tile: ND Mastic: ND	-	No
32523-TAIT S.02C			Tile: ND Mastic: ND	-	No
32523-TAIT S.03A	1013	Firespray located above CT	ND	-	No
32523-TAIT S.03B			ND	-	No
32523-TAIT S.03C			ND	-	No
32523-TAIT S.04A	1005	12" x 12" Floor Tile - Beige with brown fleck	ND	-	No
32523-TAIT S.04B			ND	-	No
32523-TAIT S.04C			ND	-	No
32523-TAIT S.05A	1012	2' x 4' Ceiling Tile - Short Fissure Random Pinhole	ND	-	No
32523-TAIT S.05B			ND	-	No
32523-TAIT S.05C			ND	-	No
32523-TAIT S.06A	**1025**	**2' x 4' Ceiling Tile - Small & Medium Pinhole**	**0.25 0.5**	**Amosite Chrysotile**	**Yes**
32523-TAIT S.06B			**NA**	**Amosite Chrysotile**	**Yes**
32523-TAIT S.06C			**NA**	**Amosite Chrysotile**	**Yes**
32523-TAIT S.07A	1026	2' x 4' Ceiling Tile - Medium Thick Fissure Random Pinhole	ND	-	No
32523-TAIT S.07B			ND	-	No
32523-TAIT S.07C			ND	-	No
32523-TAIT S.08A	1027	Rainwater Leader Insulation	ND	-	No
32523-TAIT S.08B			ND	-	No
32523-TAIT S.08C			ND	-	No
32523-TAIT S.09A	**1031**	**9" x 9" Floor Tile - Green with White Streaks**	**Tile: 7.4 Mastic: 2.4**	**Chrysotile Chrysotile**	**Yes Yes**
32523-TAIT S.09B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.09C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.10A	**1030**	**9" x 9" Floor Tile - Grey with White Streaks**	**1.9**	**Chrysotile**	**Yes**
32523-TAIT S.10B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.10C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.11A	**1033**	**9" x 9" Floor Tile - White with Grey Streaks**	**3.1**	**Chrysotile**	**Yes**
32523-TAIT S.11B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.11C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.12A	**1033**	**9" x 9" Floor Tile - Orange with Brown Streaks**	**2.4**	**Chrysotile**	**Yes**
32523-TAIT S.12B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.12C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.13A	1033	12" x 12" Floor Tile - Brown with Brown Fleck	ND	-	No
32523-TAIT S.13B			ND	-	No
32523-TAIT S.13C			ND	-	No
32523-TAIT S.14A	**1032**	**9" x 9" Floor Tile - Dark Grey with White Steaks**	**2.1**	**Chrysotile**	**Yes**
32523-TAIT S.14B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.14C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.15A	**1034**	**9" x 9" Floor Tile - Yellow with Red Streaks**	**1.9**	**Chrysotile**	**Yes**
32523-TAIT S.15B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.15C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.16A	1037	12" x 12" Floor Tile - Grey with White and Blue Fleck	ND	-	No
32523-TAIT S.16B			ND	-	No
32523-TAIT S.16C			ND	-	No
32523-TAIT S.17A	**1048**	**9" x 9" Floor Tile - Yellow with Red and Orange Streaks**	**1.9**	**Chrysotile**	**Yes**
32523-TAIT S.17B			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.17C			**NA**	**Chrysotile**	**Yes**
32523-TAIT S.18A	1061	1' x 1' Ceiling Tile - Long Fissure	ND	-	No
32523-TAIT S.18B			ND	-	No
32523-TAIT S.18C			ND	-	No

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY

Sample #	Location	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
2013 Asbestos Audit Update					
36335-101-S01A	**1045**	**Drywall Joint Compound - 1964 Addition**	**1.1**	**Chrysotile**	**Yes**
36335-101-S01B			**NA**	**Chrysotile**	**Yes**
36335-101-S01C			**NA**	**Chrysotile**	**Yes**
36335-101-S02A	1045	Window Caulking	ND	-	No
36335-101-S02B			ND	-	No
36335-101-S02C			ND	-	No
2015 Asbestos Audit Update					
S01A	**1001**	**Drywall Joint Compound - 1971 Addition**	**1**	**Chrysotile**	**Yes**
S01B	**1013**	**Drywall Joint Compound - 1971 Addition**	**1**	**Chrysotile**	**Yes**
S01C	**1015**	**Drywall Joint Compound**	**1**	**Chrysotile**	**Yes**
S02A	1018	Vinyl Sheet Flooring - Red and Orange	Tile: ND Mastic: ND	-	No
S02B			Tile: ND Mastic: ND	-	No
S02C			Tile: ND Mastic: ND	-	No
S03A	1061	Drywall Joint Compound	ND	-	No
S03B			ND	-	No
S03C	**1061**	**Drywall Joint Compound - Original Building**	**1**	**Chrysotile**	**Yes**
2016 Roof Material Sampling					
S01A	Roof	Roof Membrane - Gravel Tar	ND	-	No
S01B	Roof	Roof Membrane - Gravel Tar	<MDL	Chrysotile	No
S01C	Roof	Roof Membrane - Gravel Tar	ND	-	No
S01A	**Roof**	**Roof Membrane - 4-Ply**	**0.64**	**Chrysotile**	**Yes**
S01B	**Roof**	**Roof Membrane - 4-Ply**	**NA**	**Chrysotile**	**Yes**
S01C	**Roof**	**Roof Membrane - 4-Ply**	**NA**	**Chrysotile**	**Yes**
S01A	Roof	Roof Membrane - Cellulose Mastic	ND	-	No
S01B	Roof	Roof Membrane - Cellulose Mastic	ND	-	No
S01C	Roof	Roof Membrane - Cellulose Mastic	ND	-	No
S01A	Roof	Roof Membrane - Paper Mastic	ND	-	No
S01B	Roof	Roof Membrane - Paper Mastic	ND	-	No
S01C	Roof	Roof Membrane - Paper Mastic	ND	-	No
2018 Asbestos Audit Update					
S01A	**1009**	**12x12 VFT - Black Mastic (1971)**	**2**	**Chrysotile**	**Yes**
S01B	**1011**	**12x12 VFT - Black Mastic (1971)**	**NA**	**Chrysotile**	**Yes**
S01C	**1006**	**12x12 VFT - Black Mastic (1971)**	**NA**	**Chrysotile**	**Yes**
S02A	**1048**	**12x12 VFT - Black Mastic (1964)**	**4**	**Chrysotile**	**Yes**
S02B	**1048**	**12x12 VFT - Black Mastic (1964)**	**NA**	**Chrysotile**	**Yes**
S02C	**1047**	**12x12 VFT - Black Mastic (1964)**	**NA**	**Chrysotile**	**Yes**
S03A	1051	1'x1' Long Fissure Ceiling Tile - Brown Mastic	ND	-	No
S03B	1051	1'x1' Long Fissure Ceiling Tile - Brown Mastic	ND	-	No
S03C	1051	1'x1' Long Fissure Ceiling Tile - Brown Mastic	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.

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Certificate of Analysis

MTE Consultants Inc. (Kitchener)

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

Client PO:
Project: 34532-914 2018 AAU - Trait PS
Custody:

Report Date: 29-May-2018
Order Date: 18-May-2018

Order #: 1820582

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

Paracel ID	Client ID
1820582-01	S01A
1820582-02	S01B
1820582-03	S01C
1820582-04	S02A
1820582-05	S02B
1820582-06	S02C

Approved By:

Emma Diaz

Senior Analyst

PARACEL LABORATORIES LTD.

Order #: 1820582

Certificate of Analysis

Client: MTE Consultants Inc. (Kitchener)

Client PO:

Report Date: 29-May-2018

Order Date: 18-May-2018

Project Description: 34532-914 2018 AAU - Trait PS

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

Paracel I.D.	*Sample Date*	*Layers Analyzed*	*Colour*	*Description*	*Asbestos Detected:*	*Material Identification*	*% Content*
1820582-01	27-Apr-18	sample homogenized	Black	Mastic	**Yes**	Client ID: S01A	
						Chrysotile	2
						Non-Fibers	98
1820582-02	27-Apr-18					Client ID: S01B	
						not analyzed	
1820582-03	27-Apr-18					Client ID: S01C	
						not analyzed	
1820582-04	27-Apr-18	sample homogenized	Black	Mastic	**Yes**	Client ID: S02A	
						Chrysotile	4
						Non-Fibers	96
1820582-05	27-Apr-18					Client ID: S02B	
						not analyzed	
1820582-06	27-Apr-18					Client ID: S02C	
						not analyzed	

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

Analysis Summary Table

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

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

Work Order Revisions / Comments

None

PARAC LABORATORIES

1820582

Mississauga Location
) Kitimat Road, Unit # 15
ssissauga, ON L5N 5M1

Chain of Custody
(Lab Use Only)

Page 1 of 1

Client Name: MTE Consultants Inc.	Project Reference: 34532-914 2018 AAU - Tait PS	TAT:
Contact Name: Aisling Dennett	Quote #: 18-226 MTE Standing Offer	[X] Regular [ ] 3 Day
Address: 520 Bingemans Centre Drive, Kitchener	PO #: N/A	[ ] 2 Day [ ] 1 Day
	Email Address: adennett@mte85.com and psemeniuk@mte85.com	[ ] Same Day
Telephone:519-743-6500		Date Required:

ASBESTOS ANALYSIS

Matrix: [ ] Air [X] Other **Regulatory Guideline:** O. Reg. 278/05

Required Analyses: [ ]PCM [X]PLM [ ]PLM 400PC [ ]PLM 1000PC [ ]Chatfield [ ]TEM

	Sample ID	Location (1820582)	Matrix Description	Sampling Date	Air Volume (L)	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1	S01A	1009	12x12 VFT Black Mastic - 1971 Addition	27-Apr-18	-	Y	N	Black Mastic
2	S01B	1011	12x12 VFT Black Mastic - 1971 Addition	27-Apr-18	-	Y	N	Black Mastic
3	S01C	1006	12x12 VFT Black Mastic - 1971 Addition	27-Apr-18	-	Y	N	Black Mastic
4	S02A	1048	12x12 VFT Black Mastic - 1964 Addition	27-Apr-18	-	Y	N	Black Mastic
5	S02B	1048	12x12 VFT Black Mastic - 1964 Addition	27-Apr-18	-	Y	N	Black Mastic
6	S02C	1047	12x12 VFT Black Mastic - 1964 Addition	27-Apr-18	-	Y	N	Black Mastic
7								
8								
9								
10								
11								
12								
13								
14								
15								

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

Comments:

Method of Delivery: PULOLATOR

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print)& Date/Time: May 17/18 2:30pm	Date/Time:	Date/Time: 18 May 18 08:35	Date/Time:

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15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

MTE Consultants Inc. (Kitchener)

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

Client PO:
Project: 34532-914 2018 AAU-Trait PS
Custody:

Report Date: 15-Nov-2018
Order Date: 15-Nov-2018

Order #: 1846355

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

Paracel ID	Client ID
1846355-01	S03A
1846355-02	S03B
1846355-03	S03C

Approved By:

Emma Diaz
Senior Analyst

PARACEL LABORATORIES LTD.

Order #: 1846355

Certificate of Analysis

Report Date: 15-Nov-2018

Client: MTE Consultants Inc. (Kitchener)

Order Date: 15-Nov-2018

Client PO:

Project Description: 34532-914 2018 AAU-Trait PS

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

Paracel I.D.	*Sample Dat*	*Layers Analyzed*	*Colour*	*Description*	*Asbestos Detected:*	*Material Identification*	*% Content*
1846355-01	13-Nov-18	sample homogenized	Brown	Mastic	No	Client ID: S03A	
						Cellulose	1
						MMVF	1
						Non-Fibers	98
1846355-02	13-Nov-18	sample homogenized	Brown	Mastic	No	Client ID: S03B	
						Cellulose	1
						MMVF	1
						Non-Fibers	98
1846355-03	13-Nov-18	sample homogenized	Brown	Mastic	No	Client ID: S03C	
						Cellulose	1
						MMVF	1
						Non-Fibers	98

** MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool*

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0	15-Nov-18

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

Work Order Revisions / Comments

None

PARACE

Paracel ID: 1846355

ssauga Location
mat Road, Unit # 15
uga, ON L5N 5M1

Chain of Custody
(Lab Use Only)

Page 1 of 1

Client Name: MTE Consultants Inc.

Project Reference: 34532-914 2018 AAU - Tait PS

TAT:

Contact Name: Aisling Dennett

Quote #: 18-226 MTE Standing Offer

[ ] Regular [ ] 3 Day

Address: 520 Bingemans Centre Drive, Kitchener

PO #: N/A

[ ] 2 Day [ ] 1 Day

Email Address: adennett@mte85.com and psemeniuk@mte85.com

[X] Same Day

Telephone:519-743-6500

Date Required:

1846355

ASBESTOS ANALYSIS

Matrix: [ ] Air [X] Other **Regulatory Guideline:** O. Reg. 278/05

Required Analyses: [ ]PCM [X]PLM [ ]PLM 400PC [ ]PLM 1000PC [ ]Chatfield [ ]TEM

	Sample ID	Location	Matrix Description	Sampling Date	Air Volume (L)	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1	S3A	1051	1x1 LF Ceiling Tile - Brown Mastic	13-Nov-18	-	Y	N	Brown Mastic Only
2	S3B	1051	1x1 LF Ceiling Tile - Brown Mastic	13-Nov-18	-	Y	N	Brown Mastic Only
3	S3C	1051	1x1 LF Ceiling Tile - Brown Mastic	13-Nov-18	-	Y	N	Brown Mastic Only
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

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

Comments:

Method of Delivery

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print)& Date/Time: Paul Semeniuk Nov 14, 2018 10am	Date/Time:	Date/Time: Nov 15-18 9:00	Date/Time: Nov 15-18 9:23

APPENDIX D

ABATEMENT LETTERS

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

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

March 27th, 2015

Attention: Daniela Budure (Environmental Officer) WRDSB

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

Location: Tait Street Public School – 184 Tait Street, Cambridge

Area: Room MTE#1062

Work Description:
Removal of Vinyl Asbestos Tile and Mastic

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

Completion Date: March 18th 2015 with 01 AAS and 3 AAW certified staff.

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

License # 7549-9EZL TL

Regards,

Frank Parronchi,
Owner/President
519 498-0077

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

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

April 6th, 2015

Attention: Daniela Budure (Environmental Officer) WRDSB

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

Location: Tait Street Public School – 184 Tait Street, Cambridge

Area: Room MTE#1036

Work Description:
Removal of 3 Elbows marked by GC

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

Completion Date: April 6th 2015 with 01 AAS and 1 AAW certified staff.

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

License # 7549-9EZL TL

Regards,

Frank Parronchi,
Owner/President
519 498-0077

519.772.5500 www.zeroenvironmental.com
Zero Environmental Inc. 100 Hanson Ave. Unit B, Kitchener, ON N2C 2E2

August 17, 2016
Waterloo Region District School Board
51 Ardelt Ave
Kitchener, ON

RE: Confirmation of Completed Asbestos Removal

NOTICE

Building: Tait St PS
Address: 184 Tait St Cambridge
Location: MTE Room Location # 1034 as per MTE Asbestos Audit Report dated November 25, 2009
Work Description:
All work performed in accordance with Ontario Regulation 278/05

- Type 1 removal of all vinyl floor tiles in Classroom 9 (MTE location 1034)

Start Date: July 29, 2016
Completion Date: July 29, 2016
Completed by (1) AAS and (2) AAW
After Hours Work: Yes ☐ No ☒
Disposal of Asbestos Waste: Waterloo Region Landfill

Sincerely,

Zero Environmental Inc.

PARACEL LABORATORIES LTD.
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15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

MTE Consultants Inc. (Kitchener)

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

Client PO:
Project: WRDSB Roof Inspection Sampling
Custody:

Report Date: 6-Dec-2016
Order Date: 2-Dec-2016
Revised Report

Order #: 1649410

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

Paracel ID	Client ID
1649410-25	S01A - Tait Street Public School (Gravel Tar)
1649410-26	S01B - Tait Street Public School (Gravel Tar)
1649410-27	S01C - Tait Street Public School (Gravel Tar)
1649410-28	S01A - Tait Street Public School (4 Ply)
1649410-29	S01B - Tait Street Public School (4 Ply)
1649410-30	S01C - Tait Street Public School (4 Ply)
1649410-31	S01A - Tait Street Public School (Cellulose Mastic)
1649410-32	S01B - Tait Street Public School (Cellulose Mastic)
1649410-33	S01C - Tait Street Public School (Cellulose Mastic)
1649410-34	S01A - Tait Street Public School (Paper Mastic)
1649410-35	S01B - Tait Street Public School (Paper Mastic)
1649410-36	S01C - Tait Street Public School (Paper Mastic)

Approved By:

Emma Diaz

Senior Analyst

PARACEL LABORATORIES LTD.

Order #: 1649410

Certificate of Analysis

Report Date: 06-Dec-2016

Client: MTE Consultants Inc. (Kitchener)

Order Date: 2-Dec-2016

Client PO:

Project Description: WRDSB Roof Inspection Sampling

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

Paracel I.D.	*Sample Date*	*Layers Analyzed*	*Colour*	*Description*	*Asbestos Detected:*	*Material Identification*	*% Content*
1649410-25	29-Nov-16	sample homogenized	Black	Tar	No	**Client ID: S01A - Tait Street Public School (Gravel Tar)** [AS-PRE]	
						Cellulose	5
						Non-Fibers	95
1649410-26	29-Nov-16	sample homogenized	Black	Tar	**Yes**	**Client ID: S01B - Tait Street Public School (Gravel Tar)** [AS-PRE]	
						[ASTrc] **Chrysotile**	<MDL
						Cellulose	5
						Non-Fibers	95
1649410-27	29-Nov-16	sample homogenized	Black	Tar	No	**Client ID: S01C - Tait Street Public School (Gravel Tar)** [AS-PRE]	
						Cellulose	5
						Non-Fibers	95
1649410-28	29-Nov-16	sample homogenized	Black	4ply	**Yes**	**Client ID: S01A - Tait Street Public School (4 Ply)** [AS-PRE]	
						Chrysotile	0.64
						Cellulose	15
						Non-Fibers	84.36
1649410-29	29-Nov-16					**Client ID: S01B - Tait Street Public School (4 Ply)**	
						not analyzed	
1649410-30	29-Nov-16					**Client ID: S01C - Tait Street Public School (4 Ply)**	
						not analyzed	
1649410-31	29-Nov-16	sample homogenized	Black/Brown	Cellulose/Mastic	No	**Client ID: S01A - Tait Street Public School (Cellulose Mastic)** [AS-PRE, Z-01]	
						Cellulose	80
						Non-Fibers	20
1649410-32	29-Nov-16	sample homogenized	Black/Brown	Cellulose/Mastic	No	**Client ID: S01B - Tait Street Public School (Cellulose Mastic)** [AS-PRE, Z-01]	
						Cellulose	80
						Non-Fibers	20
1649410-33	29-Nov-16	sample homogenized	Black/Brown	Cellulose/Mastic	No	**Client ID: S01C - Tait Street Public School (Cellulose Mastic)** [AS-PRE, Z-01]	
						Cellulose	80
						Non-Fibers	20
1649410-34	29-Nov-16	sample homogenized	Black/Brown	Paper/Mastic	No	**Client ID: S01A - Tait Street Public School (Paper Mastic)** [AS-PRE, Z-01]	
						Cellulose	70
						Non-Fibers	30
1649410-35	29-Nov-16	sample homogenized	Black/Brown	Paper/Mastic	No	**Client ID: S01B - Tait Street Public School (Paper Mastic)** [AS-PRE, Z-01]	
						Cellulose	70
						Non-Fibers	30

PARACEL LABORATORIES LTD.

Order #: 1649410

Certificate of Analysis

Report Date: 06-Dec-2016

Client: MTE Consultants Inc. (Kitchener)

Order Date: 2-Dec-2016

Client PO:

Project Description: WRDSB Roof Inspection Sampling

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

Paracel I.D.	*Sample Date*	*Layers Analyzed*	*Colour*	*Description*	*Asbestos Detected:*	*Material Identification*	*% Content*
1649410-36	29-Nov-16	sample homogenized	Black/Brown	Paper/Mastic	No	Client ID: S01C - Tait Street Public School (Paper Mastic) [AS-PRE, Z-01]	
						Cellulose	70
						Non-Fibers	30

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

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0	2-Dec-16

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

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

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

Z-01: Inseparable Layers

Work Order Revisions / Comments

Revision 1d - This report contains an updated sample list.

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Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Client Name: MTE Consultants Inc	Project Reference: WRDSB Roof Inspection Sampling
Contact Name: Steven Nieboer	Quote #:
Address: 520 Bingemans Centre Drive, Kitchener, ON, N2B3X9	PO #:
	Email Address: snieboer@mte85.com, adennett@mte85.com
Telephone: 519-743-6500	

Turnaround Time:
☐ Immediate ☐ 1 Day
☐ 4 Hour ☒ 2 Day
☐ 8 Hour ☐ 3 Day
☐ Regular
Date Required: FRIDAY END OF DAY

ASBESTOS & MOLD ANALYSIS

Matrix: ☐Air ☐Bulk ☐Tape Lift ☐Swab ☐Other **Regulatory Guideline:** _____

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

Paracel Order Number: 1649410

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Matrix Description	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1	S01A - Sandowne Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Mastic on Paper
2	S01B - Sandowne Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Mastic on Paper
3	S01C - Sandowne Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Mastic on Paper
4	S01A - Centennial Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Foam Mastic, Paper Mastic
5	S01B - Centennial Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Foam Mastic, Paper Mastic
6	S01C - Centennial Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Foam Mastic, Paper Mastic
7	S01A - Stewart Avenue Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Cardboard Mastic, Paper Mastic
8	S01B - Stewart Avenue Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Cardboard Mastic, Paper Mastic
9	S01C - Stewart Avenue Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Cardboard Mastic, Paper Mastic
10	S01A - Tait Street Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	See comment
11	S01B - Tait Street Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	See comment
12	S01C - Tait Street Public School	29-Nov	-	PLM	Roofing Materials	Y	Y	See comment
13	S01A - STANLEY PARK PUBLIC SCHOOL	30-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Paper Mastic
14	S01B - " "	30-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Paper Mastic
15	S01C - " "	30-Nov	-	PLM	Roofing Materials	Y	Y	4Ply, Paper Mastic

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

Comments: Sample 10, 11, 12 layers are - Gravel Tar, 4Ply, Cellulose Mastic, Paper Mastic
Adjusted surcharge 1 Day Late via Purolator TK

Method of Delivery: Purolator

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Steven Nieboer			
Date/Time: November 30, 2016	Date/Time:	Date/Time: Dec-2-16 9:00	Date/Time: Dec 2-16 9:20

INSPECTION REPORT

PROJECT INFORMATION

Inspection Date:	January 13, 2017			***Report No.***	001
Project Name:	Asbestos Air Monitoring				
Site Address:	Tait Street Public School – 184 Tait Street, Cambridge, ON				
Client:	Waterloo Region District School Board				
Contractor Supervisor:	Lou Lima				
OnPoint Inspector:	Sean Hauck				
Arrival Time:	4:15 pm	***Departure Time:***	7:55 pm	***No. of Workers:***	n/a

DISTRIBUTION

Issued to:	Lou Lima	WRDSB	lou_lima@wrdsb.on.ca
	Daniela Budure	WRDSB	daniela_budure@wrdsb.on.ca
	Barry Kingsley	WRDSB	barry_kingsley@wrdsb.on.ca
	James Bond	WRDSB	james_bond@wrdsb.on.ca
	Cherree Roberts	WRDSB	cherree_roberts@wrdsb.on.ca
	Liz Torres	WRDSB	liz_torres@wrdsb.on.ca

WORK AREAS + DESCRIPTION OF WORK

Room 17 & adjacent Corridor (subject areas)

OnPoint Environmental Solutions (OnPoint) was retained by the Waterloo Region District School Board (WRDSB) to perform air testing to document the airborne fibre levels (including asbestos) within the subject areas.

- **Air monitoring (ACCEPTABLE)**

METHODOLOGY & RESULTS

Room 17 & adjacent Corridor (subject areas)

Methodology

- OnPoint collected air samples for airborne fibre (including asbestos) analysis using 25mm Mixed Cellulose Ester (MCE) cassettes with 0.8 micrometer (µm) pore size and Allegro high volume sample pumps calibrated to a flow rate of approximately 15 litres per minute (L/min).
- All samples were analysed following the Phase Contrast Microscopy (PCM) method as specified in the NIOSH 7400 method. The PCM method does not allow discrimination between asbestos and non-asbestos fibres. All fibres that meet the counting criteria are included in the count. Using the fibre count data and the sampling volume, an estimate of the average airborne fibre concentration during the sampling period was made.

Results

- All air samples reported concentrations of total fibres to be less than 0.01 fibres per cubic centimetre (fibres/cc) of air. Ontario Regulation 490/09 Designated Substances prescribes an acceptable Time Weighted Average Exposure Value (TWAEV) for asbestos fibre of not more than 0.1 f/cc. The reported concentrations (<0.01 f/cc) indicate that airborne fibre (including asbestos) levels within the subject areas are

well below the criterion noted above. One field blank was collected for quality control purposes. Analysis of the field blank showed 0 fibres per 100 fields counted.

- A photograph of the air monitoring equipment is provided below.

AIR MONITORING RESULTS – Phase Contrast Microscopy (PCM)*

Type	Sample No.	Sampling Location	Start Time	Stop Time	Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Result (f/cc of air)
OC	249275	Room 17	4:30 pm	7:30 pm	15	180	2,700	< 0.01
OC	249255	Corridor adj. Room 17	4:40 pm	7:40 pm	15	180	2,700	< 0.01
QC	249256	Field Blank	N/A	N/A	N/A	N/A	N/A	0 fibres/100 fields

Notes:

OCCUPIED (OC) Area samples were collected in regularly occupied spaces (i.e. not within an asbestos abatement work area).
QUALITY CONTROL (QC) Field blank samples were collected in a manner representing the actual handling of associated samples in a sample set for quality control purposes.
f/cc fibres per cubic centimeter of air
L/min litres/minute
***** Air monitoring and analysis was performed following the NIOSH 7400 method using Phase Contrast Microscopy (PCM)

CONCLUSION

PCM analysis of the collected air samples confirmed airborne fibre concentrations (including asbestos) were within the acceptable range (i.e. below 0.1 fibres/ml of air). As such, the subject areas (Room 17 and the adjacent Corridor) are acceptable for continued occupancy.

PHOTOGRAPH

Photo 1: Air monitoring equipment, Room 17

11 Centennial Rd unit 5
Kitchener, ON, Canada.
N2B 3E9

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

January 31, 2017

Attention: Environmental Officer - WRDSB

Re: Ceiling Tile Removal & Replacement

Location: Tait St. Public School – 184 Tait St., Cambridge

Area: Corridor MTE# 1007, 1024, 1029, & Partial 1060

Work Description:

Type 2 Abatement and disposal of Ceiling Tile, Replacement with Cortega Fireguard Acoustical Tile

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

Completion Date: January 30, 2017 with 03 AAS and 07 AAW certified staff.

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

License # 7549-9EZL TL

Regards,

Frank Parronchi,
Owner/President
519 498-0077

11 Centennial Rd unit 5
Kitchener, ON, Canada.
N2B 3E9

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

March 21, 2017

Attention: Environmental Officer - WRDSB

Re: Ceiling Tile Removal & Replacement

Location: Tait St. Public School – 184 Tait St., Cambridge

Area: Classrooms MTE # 1000, 1001, 1002, 1013, 1014, 1015
- **Pod Areas MTE # 1004, 1005, 1006, 1009, 1010, 1011**

Work Description:

Type 2 Abatement and disposal of Ceiling Tile, Replacement with Cortega Fireguard Acoustical Tile

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

Completion Date: March 17, 2017 with 03 AAS and 11 AAW certified staff.

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

License # 7549-9EZL TL

Regards,

Frank Parronchi,
Owner/President
519 498-0077

11 Centennial Rd unit 5
Kitchener, ON, Canada.
N2B 3E9

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

March 21, 2017

Attention: Environmental Officer - WRDSB

Re: Ceiling Tile Removal & Replacement

Location: Tait St. Public School – 184 Tait St., Cambridge

Area: Classrooms MTE # 1019, 1020, 1021, 1022, 1023

Work Description:

Type 2 Abatement and disposal of Ceiling Tile, Replacement with Cortega Fireguard Acoustical Tile

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

Completion Date: March 17, 2017 with 03 AAS and 11 AAW certified staff.

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

License # 7549-9EZL TL

Regards,

Frank Parronchi,
Owner/President
519 498-0077

Appendix 01 35 34B– Lead Report – Not Applicable

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 Street, Suite 616, Ottawa, ON K1P 5G4; URL: http://www.acec.ca.

.2 **AWMAC** - Architectural Woodwork Manufacturers Association of Canada, 516-4 Street West, High River, AB T1V 1B6; URL: http://www.awmac.com.

.3 **Canada Green Building Council**, 330 - 55 rue Murray Street, Ottawa, ON. K1N5M3; Tel: 613-241-1184, Fax: 613-241-5750; URL: http://www.cagbc.org.

.4 **CCA** - Canadian Construction Association, 75 Albert St., Suite 400, Ottawa, ON K1P 5E7; URL: http://www.cca-acc.com.

.5 **CCDC** – Canadian Construction Documents Committee, Refer to ACEC, CCA, CSC or RAIC; URL: http://www.CCDC.org.

.6 **CGA** - Canadian Gas Association, 20 Eglinton Avenue West, Suite 1305, Toronto, ON M4R 1K8; URL: http://www.cga.ca..

.7 **CGSB** - Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, QC K1A 0S5; URL: http://w3.pwgsc.gc.ca/cgsb.

.8 **CISC** - Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, ON M2J 4G8; URL: http://www.cisc-icca.ca.

.9 **CLA** - Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, ON K1N 8C7; URL: http://www.cla-ca.ca.

.10 **CNLA** - Canadian Nursery Landscape Association, RR #4, Stn. Main,7856 Fifth Street, Milton, ON L9T 2X8; URL: http://www.canadanursery.com.

.11 **CRCA** - Canadian Roofing Contractors Association, 155 Queen Street,Suite 1300, Ottawa, ON K1P 6L1; URL: http://www.roofingcanada.com.

.12 **CSA** - Canadian Standards Association International, 178 Rexdale Blvd., Toronto, ON M9W 1R3; URL: http://www.csa-international.org.

.13 **CSC** - Construction Specifications Canada, 120 Carlton Street, Suite 312, Toronto, ON M5A 4K2; URL: http://www.csc-dcc.ca.

.14 **CSDMA** - Canadian Steel Door Manufacturers Association, One Yonge Street, Suite 1801, Toronto, ON M5E 1W7; URL: http://www.csdma.org.

.15 **CSPI** - Corrugated Steel Pipe Institute, 652 Bishop Street N, Unit 2A, Cambridge, ON N3H 4V6; URL: http://www.cspi.ca.

.16 **CSSBI** - Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, ON N3H 4V6; URL: http://www.cssbi.ca.

.17 **CUFCA** - Canadian Urethane Foam Contractor's Association, Box 3214, Winnipeg, MB R3C 4E7; URL: http://www.cufca.ca.

.18 **CWC** - Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, ON. K1J 9B8; URL: http://www.cwc.ca.

.19 **EC** - Environment Canada, Conservation and Protection, Inquiry Centre, 351 St. Joseph Blvd, Hull, QC KIA 0H3; URL: http://www.ec.gc.ca.

.20 **EFC** - Electro Federation of Canada, 5800 Explorer Drive, Suite 200, Mississauga, ON L4W 5K9; URL: http://www.electrofed.com.

.21 **MPI** - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6; URL: http://www.paintinfo.com.

.22 **NABA** - National Air Barrier Association, PO Box 2747, Winnipeg, MB R3C 4E7; URL: http://www.naba.ca.

.23 **NLGA** - National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, BC V3M 6G2; URL: http://www.nlga.org.

.24 **NRC** - National Research Council, Building M-58, 1200 Montreal Road, Ottawa, ON K1A 0R6; URL: http://www.nrc.gc.ca.

.25 **QPL** - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, QC K1A 1G6; URL: http://www.pwgsc.gc.ca/cgsb.

.26 **RAIC** - Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, ON K1N 5M3; URL: http://www.raic.org.

.27 **SCC** - Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, ON K1P 6N7; URL: http://www.scc.ca.

.28 **TTMAC** - Terrazzo, Tile and Marble Association of Canada, 30 Capston Gate, Unit 5 Concord, ON L4K 3E8; URL: http://www.ttmac.com.

.29 **ULC** - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, ON M1R 3A9; URL: http://www.ulc.ca.

.3 USA Organizations:

.1 **AA** - Aluminum Association, 900 19th Street N.W., Washington, DC 20006; URL: http://www.aluminum.org.

.2 **AASHTO** - American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, DC 20001; URL: http://www.aashto.org.

.3 **AHA** - American Hardboard Association, 1210W Northwest Hwy, Palatine, IL 60067; URL: http://www.hardboard.org.

.4 **AITC** - American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, CO 80112; URL: http://www.aitc-glulam.org.

.5 **AMCA** - Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, IL 60004-1893; URL: http://www.amca.org.

.6 **ANSI** - American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036; URL: http://www.ansi.org.

.7 **APA** - The Engineered Wood Association, P.O. Box 11700, Tacoma, WA 98411-0700; URL: http://www.apawood.org.

.8 **API** - American Petroleum Institute, 1220 L St. Northwest, Washington, DC 20005-4070; URL: http://www.api.org.

.9 **ARI** - Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, VA 22203; URL: http://www.ari.org.

.10 **ASHRAE** - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329; URL: http://www.ashrae.org.

.11 **ASME** - American Society of Mechanical Engineers, ASME Headquarters, 3 Park Avenue, New York, NY 10016-5990; URL: http://www.asme.org.

.12 **ASTM International**, 100 Barr Harbor Drive West, Conshohocken, PA 19428-2959; URL: http://www.astm.org.

.13 **AWCI** - Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600 , Falls Church, 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 250m2 or less, and 1 additional check for each additional 250m2 or part thereof).

.4 Laboratory tests: moisture content and grading of materials.

.5 Stage Three:

.1 Inspection of asphalt installation.

.2 Checking of thickness and density of material and checking suitability of equipment used.

.6 Standard Proctor Test shall be carried out for all projects.

.7 Further, grain size analysis and Marshall test shall be carried out if visual inspection is not satisfactory or, if there is reason to suspect materials supplied are not acceptable.

.8 All laboratory tests shall be performed according to A.S.T.M. methods, latest revisions

.9 Paving Contractor shall obtain from their supplier grading tables of materials used and submit them to the testing laboratory for approval. The paving contractor shall ensure material delivered complies with grading tables.

.10 Be responsible for all approvals given to 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 1800 mm high chain link fence or self-supporting, heavy duty, interconnected fence panels (commonly referred to as Insta-fence)for a temporary site enclosure (hoarding) completely around perimeter of work site,

.2 any temporary posts shall be completely removed by the contractor prior to occupancy,

.3 under no circumstance shall t-bar posts be used on board property

.4 any additional safety devices including full hoarding as required and noted on the drawings, to protect the students, staff, public and private property from injury and damage,

.5 any additional requirements as regulated by authorities having jurisdiction, local by-laws and zoning.

.2 The Contractor is to assume full responsibility for any injury or damage caused due to failure to comply with Paragraph 1 above.

.3 Any hazardous conditions identified outside of the main fenced area will be barricaded with a fence complying to the above.

.4 Provide lockable truck entrance gate/gates and at least one (1) pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys with restricted availability, in the project office.

.5 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

.6 Provide barriers around trees and plants designated to remain.

.7 Protect from damage by equipment and construction procedures.

1.7. TREE PROTECTION

.1 Protect all existing trees to remain from damage during construction period. Make good, at Contractor's expense, trees damaged during construction.

.2 Confine movement of heavy equipment, storage of same, and storage of materials to a predetermined area. Do not store materials or place equipment over root systems of any existing trees to remain.

.3 Install fencing or approved equal at limits of drip line of existing trees to remain unless directed otherwise. Where this case is not practical, and only if approved by the Consultant, the trunks shall be protected with an approved tree guard.

.4 No rigging cables shall be wrapped around or installed in trees. Do not flush concrete trucks or cement mixing machines over root systems or near trees. Flush concrete trucks or cement mixing machines in areas approved by 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 Co-ordinate use of elevator cabs with Consultant and the Board.

1.16. USE OF THE WORK

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

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

1.17. CONSTRUCTION PARKING

.1 Construction personnel vehicle parking, to be confined to the work site enclosure, or.

.2 Parking will be permitted on site only where and if it does not disrupt the employees of the place of work as directed by the Board

.3 Permission to park vehicles on site does not imply any liability or responsibility for safe keeping of vehicles and contents thereof by the School Board.

1.18. ACCESS TO SITE

.1 Provide and maintain adequate access to 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 Submit name and address of Surveyor to Consultant.

.2 On request of Consultant, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying that elevations and locations of completed Work conforms with Contract Documents.

1.4. QUALIFICATIONS OF SURVEYOR

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

1.5. SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on Drawings.

.2 Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to the Consultant.

.4 Report to Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require the surveyor to replace control points in accordance with original survey control.

1.6. SURVEY REQUIREMENTS

.1 Establish existing and new permanent bench marks on site, referenced to established benchmarks by survey control points.

.2 Record locations, with horizontal and vertical data in Project Record Documents.

.3 Establish lines and levels, locate and lay out, by instrumentation.

.4 Establish pipe invert elevations.

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

1.7. SUBSURFACE CONDITIONS

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

1.8. EXAMINATION

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

1.9. PREPARATION

.1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of 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

SECTION 01 73 30 – EXECUTION AND CUTTING AND PATCHING

1.0 GENERAL

1.1. RELATED SECTIONS

.4 Section 01 32 00 - Construction Progress Documentation: Submittals and scheduling.

.5 Section 01 61 00 - Product Requirements.

.6 Section 01 70 00 – Examination and Preparation

.7 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

.8 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.

.9 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

.10 Monitor fabrication and installation tolerance control of Products to produce acceptable Work.

.11 Do not permit tolerances to accumulate beyond effective or practical limits.

.12 Comply with manufacturers' tolerances. In case of conflict between manufacturers' tolerances and Contract Documents, request clarification from the Consultant before proceeding.

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

1.17. WARRANTIES AND BONDS

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

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

.3 Except for items put into use with Owner's permission, leave 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 RELATED WORK

.1	Temporary Utilities	Section 01 51 00
.2	Execution and Cutting and Patching	Section 01 73 00

1.2 REFERENCES

.1 Conform to all laws, By-Laws and regulations of the authorities having jurisdiction and, in particular, the Ontario Occupational Health and Safety Act; The Environmental Protection Act; The Ontario Building Code, Ontario Regulation 332/12; The Ontario Fire Code; The National Building Code, 2010; and the National Fire Code.

.2 CSA S350-M, code of practice for safety in demolition of structures.

.3 Ontario regulations under the Environmental Protection Act:

- .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
- .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
- .3 O.Reg. 347/90 General - Waste Management; refer to "Definitions"

.4 Ontario regulations under the Occupational Health and Safety Act:

- .1 O.Reg. 213/91 Construction Projects
- .2 All regulations regarding “Designated Substances”
- .3 O.Reg. 860/90 Workplace Hazardous Materials Information System (WHMIS)

.5 Conform to “Guidelines for Maintaining Fire Safety During Construction in Existing Buildings”, provided by the Office of the Ontario Fire Marshal.

.6 RFCI Recommended Work Practices for Removal of Resilient Floor Coverings

1.3 EXAMINATION OF EXISTING SITE AND STRUCTURE

.1 Examine the existing site and building before tendering to be familiar with the detailed extent of demolition, dismantling, relocation and reassembly required.

.2 Examine the drawings and include all costs associated with the demolition work, including after-hours work and remobilization costs. Coordinate all work with the Owner to ensure that the site and building can remain operational, in use and occupied during construction.

.3 No allowance will be made for failure to obtain complete information prior to close of tenders.

1.4 SUMMARY OF WORK

.1 Carry out all alteration and demolition work required to accommodate new work indicated on drawings. Make good any damage caused by alterations required.

.2 Remove HVAC equipment, electrical fixtures and all other items so noted on drawings as required for the renovation, unless otherwise noted.

.3 Unless noted otherwise, building materials resulting from demolition under this contract shall become the property of the Contractor, and shall be removed by the Contractor.

.4 Supply and install temporary dust proof membranes at junctions with work area, at all adjoining doorways and corridor walls between the existing building areas and the proposed building areas to be renovated. Dust proof membranes shall be minimum thickness of 10 MIL polyethene sheet. Sheets are to be overlapped a minimum of 300mm and taped at complete perimeter of openings and provided at a height from top of finished floor to underside of ceiling and or exposed roof deck. At doorways where access is required, provide double layer of membranes with zippers to accommodate access.

.5 Dust proof membranes shall be erected outside of building operating hours and shall remain in place until the work is fully commissioned and accepted by the Owner. Membranes shall be removed, reconfigured and relocated as required to maintain the security of the site and the existing building and ensure that construction noise and dust does not penetrate into the existing building and disturb building occupants.

1.5 SCHEDULE OF WORK

.1 Safety and required exiting from the existing building must be maintained at all times, particularly during operating hours and scheduled events. Work must be suspended if the Owner advises that noise and/or dust is interfering with the building operation.

.2 When the building is occupied by students and staff, work which will generate excessive noise, dust or vibration must be undertaken outside of the building's hours of operation, during the times when the building is normally occupied. Confirm the building hours of operation with the Owner.

.3 Dust proof partitions must be installed prior to any work being undertaken.

.4 Refer to drawings for the complete scope of work. Confirm any required construction phasing sequences with the Owner and the Consultant prior to commencing the work.

1.6 PROTECTION

.1 Protect adjacent properties against damage which might occur from falling debris or other cause. Make good damage to adjacent public or private properties resulting from Work of this Contract.

.2 Protect existing building from damage and contamination during demolition activities. All openings must be made weatherproof. Provide temporary barriers, dust control

measures, security controls, supports, and such additional protection as may be required by specific demolition work.

.3 Prevent movement, settlement, and damage to existing building to remain, including services, paving, landscaped areas to remain, and adjacent structures. Provide temporary supports, including shoring and bracing, as required. All shoring must be designed by a professional engineer licensed in the Province of Ontario.

.4 Employ licensed rodent and vermin exterminators to destroy all discovered vermin and rodents.

.5 Remove contaminated and dangerous material from the site and dispose of safely and legally. Meet all M.O.E. requirements.

.6 Take precautions to guard against movement or settlement of adjacent land, existing building, and remaining services and utilities. Provide and place bracing or other means of support.

.7 Take precaution against contamination of air and adjacent properties.

1.7 MAINTAINING FIRE SAFETY IN EXISTING BUILDING

.1 Maintain all required exiting for safe operations within the existing building. Where an exit is closed off due to construction activities, provide alternate exit acceptable to both the Consultant and to Authorities Having Jurisdiction. Any temporary exits must be clearly identified with appropriate signage.

.2 Maintain access roadways for fire department vehicles, acceptable to the fire department. Access must be approved prior to commencement of construction activities.

.3 Store all combustible materials in accordance with the Fire Code and the Occupational Health and Safety Act. Do not store combustible materials within the existing building or against the building. All combustibles shall be stored in a manner which minimizes risks to building and occupants.

.4 Maintain dust proof membranes and protection at openings, as specified above, with fire separation ratings as required by Authorities Having Jurisdiction.

.5 Maintain fire alarm system in operating condition in existing building. Notify the fire department and Owner of any temporary shutdowns of service and provide alternative measures during such periods of time.

.6 Coordinate with Owner and Authorities Having Jurisdiction for all changes to fire emergency procedures as may be required during construction.

1.8 SERVICES

.1 Seal and cap mechanical and electrical services in order to facilitate removals indicated on drawings. Mark location and type of service of all capped services at the site. Submit record drawing showing locations and dimensions of all capped services.

PART 2 – PRODUCTS

2.1 Not Used

PART 3 – EXECUTION

3.1 GENERAL

.1 Remove and dispose of any fixtures, fittings and equipment remaining in the work area, which are not shown to be relocated or reused in the completed project.

.2 Protect all items indicated to be removed and later reinstalled. These items shall be removed prior to demolition work wherever possible. It will be the responsibility of the Contractor to repair or replace any such items damaged by careless handling.

.3 Refer also to demolition and alteration notes on drawings.

3.2 DEMOLITION

.1 Demolish any masonry walls in small sections. Do not permit masonry to fall in mass.

.2 Remove and carefully lower wood or steel framing as applicable.

.3 Remove interior masonry walls, partitions, ceilings, bulkheads, as indicated on drawings, and as required to accommodate new construction.

.4 Remove glass, metals and combustible materials from walls being demolished.

.5 Remove all items not indicated or noted to remain or be re-used.

.6 Remove mechanical and electrical equipment, devices, fixtures, conduit and piping indicated to abandoned. Temporarily uninstall and store existing fixtures to be removed and then reinstated after work is complete. Refer to mechanical and electrical demolition drawings. Disconnect and remove existing power and data receptacles as noted on the electrical drawings.

.7 Any items noted to be re-used or re-located are to be removed carefully, cleaned, packaged appropriately, and handed over to Contractor.

.8 Upon discovery of mold or moldy materials remove and dispose of these separately.

.9 If any materials suspected to contain asbestos and other designated substances are encountered, do not disturb these materials. Inform the Consultant of the location and extent of suspect material. Do not resume work in this area until it has been cleared by an Abatement Consultant. Abatement of known asbestos containing materials as described in the Asbestos Audit Report are included in the Contractor's base cost. The Contractor is required to become familiar and understand the description of asbestos containing materials described in these reports.

.10 At the end of each day's work, leave work in a safe condition so that no part of the remaining structure is in danger of collapse.

.11 Do not burn any refuse or debris at the site.

.12 Complete scanning and x-rays of any and all walls and floors, as required to complete the work and carry all required procedures as part of the base bid price.

3.3 NEW OPENINGS IN EXISTING WALLS

.1 Where new openings are shown to be cut into existing walls, break open the wall to the sizes required, provide new lintels over the opening, and patch all adjacent materials. Temporary shoring of existing wall assemblies is the responsibility of the Contractor, as required to safely complete the work.

.2 Refer to the Asbestos Audit Report and Project Specific Designated Substance and Hazardous Materials Assessment, included in the Project Manual, to confirm where finishes contain asbestos or lead. Some existing partitions may contain hazardous materials and are required to be partially abated to complete the work. Abatement of asbestos or lead containing materials, as required to complete the work, is to be carried by the Contractor in their base bid price.

3.4 REMOVAL OF EXISTING FLOOR FINISHES

.1 Existing terrazzo floor finishes shall be removed in their entirety in the existing Girls and Boys washrooms and shall be replaced with new terrazzo flooring and continuous base throughout.

.2 New concrete slab-on-grade shall be provided in the existing washrooms and prepared according to manufacturer’s instructions for new terrazzo flooring and base.

.3 In all the classrooms, remove existing rubber wall base at the full length of the wall where new low millwork shelving is to be installed. Remove all associated adhesives and prepare the existing wall for the installation of new matching rubber wall base.

3.5 REMOVAL OF CEILINGS ASSEMBLIES AND DISPLAY BOARDS

.1 Remove existing ceilings and bulkheads in areas where new ceilings and bulkheads are indicated, and as shown on drawings.

.2 Ceilings to be demolished shall be removed complete with all finishes, framing, suspension system, trim, fasteners, and accessories.

.3 Where ceilings are to be removed to accommodate work, and later reinstalled, carefully disassemble ceilings to the extent required. Clean all components, wrap for protection, clearly label package contents, and store in a safe location until they are to be reinstalled.

.4 Where ceilings are to remain after adjacent walls or bulkheads are demolished, remove ceiling components as required to complete demolition work. Coordinate with forces doing new ceiling work, to confirm what components are to be retained for reuse. Cut ceiling tiles may not be used; new full or appropriately cut tiles will be required.

.5 Where ceiling mounted equipment is indicated to be removed and reused, or where it must be temporarily removed to accommodate the Work, it is to be carefully removed, cleaned, wrapped, labelled as to contents, and stored in a safe location, ready for reinstallation.

.6 Remove existing tack boards and black boards, and all associated mastics, adhesives, accessories and fasteners, where noted on the drawings in the classrooms and replace with new tack boards and white boards as noted on the drawings. Make good existing wall surfaces as required to accept the moutning of new tack boards and white boards.

3.6 MECHANICAL, SPRINKLER AND ELECTRICAL WORK

.1 Mechanical and Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.

.2 Refer to mechanical and electrical drawings for the extent of removals, relocations, and alterations required.

.3 Ceiling mounted mechanical and electrical equipment which is to be removed and reused is to be carefully removed and stored as specified above.

.4 Cutting of holes up to 100mm in size in the existing structure and surfaces required by the mechanical and electrical trades shall be by those Subcontractors. Cutting and patching of openings greater than 100mm in size shall be by the Contractor in co-ordination with those trades. PATCHING OF ALL HOLES IN EXPOSED FINISHED SURFACES SHALL BE BY THE CONTRACTOR. Mechanical and Electrical trades shall do their own coring of existing slabs as required.

.5 Where new ceilings are installed in classrooms and washrooms, existing sprinklers are to remain and are to be adjusted as required to serve the areas within the concealed ceiling plenum, below the existing wood roof deck, and new sprinklers are to be provided below the new finished ceilings to serve the open classroom and washroom areas.

3.7 COMPLETION OF WORK

.1 Remove all surplus materials, equipment and rubbish from the site.

.2 Leave site in condition to meet approval of the Consultant.

.3 On completion of Demolition work, thoroughly clean all existing surfaces to remain, including ceiling space. No debris or dirt shall remain to be enclosed by new construction.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 All reinforcement for cast-in-place concrete.
.2 Supply of reinforcing bars for masonry.

1.2 RELATED WORK

.1 Concrete Formwork, Section 03 10 00.
.2 Cast in Place Concrete, Section 03 30 00.
.3 Precast Structural Concrete, Section 03 41 00.
.4 Masonry, Division 4.

1.3 REFERENCES

.1 Reinforcing Steel Manual of Standard Practice published by the Reinforcing Steel Institute of Canada.
.2 ACI SP-66, ACI Detailing Manual published by the American Concrete Institute.
.3 CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
.4 CSA-A23.3, Design of Concrete Structures.
.5 ASTM A82, Standard Specification for Steel Wire, Plain, for concrete reinforcement.
.6 ASTM A185, Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
.7 CSA G30.18, Billet-Steel Bars for Concrete Reinforcement.
.8 CAN/CSA G40.21, Structural Quality Steels.
.9 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.
.10 ASTM D3963/D3963M, Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars.

1.4 SOURCE QUALITY CONTROL

.1 Upon request, provide the Consultant with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.
.2 Upon request, inform the Consultant of proposed source of material to be supplied.
.3 Upon request, provide the Consultant with a copy of plant certificate by the Concrete Reinforcing Steel Institute for epoxy coating of reinforcement.
.4 Upon request, provide the Consultant with a copy of manufacturer’s instructions for patching factory applied epoxy coating.
.5 Use welding firm certified by the Canadian Welding Bureau under the requirements of CSA W186.

1.5 SHOP DRAWINGS

.1 Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 - Submittals. This applies to all reinforcement including reinforcing bars for masonry to be installed by the Masonry Trade.

.2 Submit to the Consultant for review before the start of Work, 4 white prints of shop drawings. Leave room on drawings for the stamps of the Consultant and the Structural Engineer. Check and sign before submission. Only 2 copies will be returned to General Contractor.

.3 Allow a minimum of 10 working days for review of each submission of shop drawings in the Structural Engineer's office. Shop drawings received after noon will be date-stamped as received the following working day.

.4 If required, CAD diskettes of the Structural Drawings are available "as-is", and at cost, for use in the preparation of shop drawings provided that the title blocks are removed and provided that the Owner and the Owner's Consultants are not held responsible for any errors or omissions on the drawings. These CAD drawings are not to be scaled.

.5 Submit plans, elevations, sections, and bar lists necessary to show reinforcing and to facilitate review and placing. Show location of construction joints and detail reinforcement at joints. Dimension strips for flat slabs and flat plates. Draw elevations of walls including reinforced masonry walls. Show concrete cover on the diagrams. Draw to scale not smaller than 1:50.

.6 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and splices with identifying code marks to permit correct placement without reference to Structural Drawings.

.7 Conform to CSA A23.1 and the Reinforcing Steel Manual of Standard Practice, unless the Contract Documents contain a more stringent requirement, in which case the latter shall govern. Provide accessories as required by the Standard. Conform to ACI, SP-66 Detailing Manual whenever a detail condition is not covered by any of the above, but is covered by the ACI Manual.

.8 Design and detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated. Provide standard hooks at ends of hooked bars.

.9 Do not release for fabrication reinforcing bars whose length may be affected by field conditions, such as the final elevation of footings, until the governing field dimensions have been ascertained.

.10 Review of shop drawings by the Consultant is on a sampling basis for general conformity with contract documents. It is not a detailed check and must not be construed as relieving the Contractor of responsibility for making the work accurate and in conformity with the Contract Documents.

.11 Design for which the Contractor is responsible under the contract will not be reviewed. Work done prior to the receipt of the reviewed shop drawings will be at the risk of the Contractor. Review comments are not authorization for changes to the contract price.

.12 After review, drawings will be returned to the Contractor stamped to show one of the following:

.1		Reviewed -	Released for fabrication.
.2		Noted -	Released for fabrication after revisions noted are made. Submit revised drawing for Consultant's records.
.3	Resubmit -		Correct and resubmit for review.

Conform to the requirements of each authority that has reviewed the drawings.

.13 Keep on site at all times a set of reviewed shop drawings and use only these drawings and the Structural Drawings to place reinforcing steel. Neatly mark on the Structural Drawings changes issued during the course of construction.

1.6 TOLERANCES

.1 Conform to CSA A23.1.

.2 Cover to be not less than required for fire rating.

1.7 **SUBSTITUTES**

.1 Substitute different size bars only if permitted in writing by the Consultant.

1.8 **ALLOWANCE**

.1 Include an allowance of five tonnes of additional reinforcing bars in the Contract. Allowance to include all costs including supply, detailing, fabricating and placement of rebars. Provide detailed records of use. Provide credit for unused portion based on unit prices.

PART 2 - MATERIALS

2.1 MATERIALS

.1 Reinforcing steel: billet steel, grade 400 MPa, deformed bars to CSA-G30.18, unless otherwise indicated.
.2 Weldable reinforcing steel: weldable steel, grade 400MPa, deformed bars to CSA G30.18. Required only where welding is indicated.
.3 Cold-drawn annealed steel wire ties: to CSA G30.3.
.4 Welded wire fabric: to CSA G30.5. Provide in flat sheets only.
.5 Epoxy coated reinforcement: Apply fusion bonded epoxy coating conforming to the requirements of ASTM D3963/D3963M. Provide colour which contrasts sharply with reinforcing steel and rust colours. Brown is not acceptable. All bars must be supplied by plants certified by the Concrete Reinforcing Steel Institute for epoxy coated steel. Certified plants include:
  .1 Harris Rebar - Stoney Creek, Ontario
  .2 Teme Rebar Concepts - Fruitland, Ontario
  Provide patching material for areas where the epoxy coated is damaged or omitted in accordance with the coating manufacturer's written instructions using material supplied by the manufacturer.
.6 Bar supports and side form spacers: to CSA-A23.1. For exposed concrete surfaces and for floor and roof slabs with directly applied ceiling finish: use either plastic bar supports or plastic tipped bar supports for at least the bottom 25mm; use plastic side form spacers; and use plastic with colour to match concrete. For epoxy coated reinforcement, use plastic bar supports, epoxy coated support bars and plastic coated tie wires.
.7 Epoxy coating of existing reinforcement: Amerlock 400 High-Solids Epoxy by Amercoat Canada Inc. or an equivalent material acceptable to the Consultant. Provide colour which contrasts sharply with steel and rust colours.

2.2 **FABRICATION**

.1 Fabricate reinforcing steel in accordance with CSA-A23.1, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
.2 Obtain Consultant's approval for locations of reinforcement splices other than shown on placing drawings.
.3 Where indicated, weld reinforcement in accordance with CSA-W186. Use weldable reinforcing steel.
.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar lists.

PART 3 - EXECUTION

3.1 PLACING REINFORCEMENT

.1 Handle epoxy coated bars in accordance with CSA S413.
.2 Place reinforcing steel in accordance with CSA-A23.1.
.3 Concrete cover to be not less than required for fire rating.
.4 Use only reviewed shop drawings and the Structural Drawings for placing of reinforcement. Report discrepancies to the Consultant before proceeding.
.5 Before placing, remove all loose scale, dirt, oil or other coatings, which would reduce bond.
.6 Turn the ends of tie wire towards the interior of the concrete.
.7 Use bar supports for beams and slabs. Use precast concrete chairs where supports rest on the ground. Where welded wire fabric is used in slabs-on- grade, place precast concrete chairs at 600 mm on centre each way. Use side form spacers for walls and columns.
.8 No splicing of reinforcement is permitted other than shown on the Structural Drawings.
.9 Do not cut reinforcement without written approval of Consultant.
.10 Ensure concrete cover to reinforcement is maintained during concrete pour.

3.2 FIELD BENDING

.1 Do not field bend reinforcement except where indicated or authorized by the Consultant. Do not field bend epoxy coated reinforcement.
.2 When field bending is authorized, bend without heat, applying a slow and steady pressure. Replace bars, which develop cracks or splits.

3.3 FIELD WELDING

.1 Do not field weld reinforcement except where indicated or authorized by the Consultant. Do not weld epoxy coated reinforcement.
.2 Conform to CSA A23.1 and CSA W186.

3.4 PATCHING FACTORY APPLIED EPOXY COATING

.1 If factory applied epoxy coating is damaged or omitted, patch in accordance with coating manufacturer's written instructions using material supplied by manufacturer.

3.5 REVIEW OF CONSTRUCTION

.1 Provide the Consultant with a minimum of 24 hrs notice of intended concrete pours to allow review of reinforcement.
.2 Review of construction by Consultant is to ascertain general conformity with contract documents. It does not relieve the Contractor of his contractual responsibilities. The review is based on representative samples of the work and does not relieve the Contractor from carrying out his own quality control and making the work in conformity with the drawings and specifications.
.3 Reviews are undertaken so that the Owner may be informed in writing as to the quality of the Contractor's performance and for the protection of the Owner.
.4 The Contractor will receive copies of the construction review reports and the results of material tests. He will thereby be informed of any defects or deficiencies found.
.5 Bring to the attention of the Consultant, any defects or deficiencies in the Work, which may occur during construction together with a proposal for remedy. The Consultant will decide what corrective action may be taken and will issue the necessary instructions.

3.6 REINFORCED MASONRY

.1 Supply reinforcing bars required for the construction of masonry lintels, beams, walls, columns and piers. Provide shop drawings. Note that Structural Drawings do not show all openings. Refer to lintel notes on structural drawings.

3.7 **PITS, CURBS, BASES**

.1 Construct all concrete sumps, pits, trenches, curbs and machinery bases forming part of floor construction that are required within the building by other trades.

.2 Unless otherwise shown on drawings, reinforce curbs with 10M @ 400 dowels plus 2 - 10M continuous horizontal.

.3 Unless otherwise shown on drawings, reinforce bases with 10M at 300 each way placed 50 mm below top of concrete.

END OF SECTION

PART 1 – GENERAL

1.1 WORK INCLUDED

.1 All cast-in-place concrete including supply, placing, finishing and curing.
.2 Installing embedment.
.3 Grouting under base plates and bearing plates.
.4 Installing shelf angles/plates and wall plates that bear on or are attached to concrete.

1.2 RELATED WORK

.1	Concrete Formwork	Section 03 10 00
.2	Concrete Reinforcement	Section 03 20 00
.3	Precast Structural Concrete	Section 03 41 00
.4	Structural Steel	Section 05 12 10

1.3 REFERENCES

.1 ASTM C260, Standard Specification for Air-Entraining Admixtures to Concrete.
.2 ASTM C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
.3 ASTM C494/C494M, Standard Specification for Chemical Admixtures for Concrete.
.4 ASTM D1751, Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
.5 CSA A5, Portland cement.
.6 CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
.7 CSA-A23.2, Methods of Test and Standard Practices for Concrete.
.8 CAN/CSA A3000, Cementitious Materials for Use in Concrete.
.9 CAN/CSA S448.1, Repair of Reinforced Concrete in Buildings.
.10 CSA A283, Qualification Code for Concrete Testing Laboratories.

1.4 QUALITY ASSURANCE

.1 Concrete supplier to have a valid “Certificate of Ready Mixed Concrete Production Facilities” as issued by the Ready Mixed Concrete Association of Ontario.

1.5 PROJECT RECORDS

.1 Batch Logs: Concrete supplier to keep record of each batch delivered to site.

.2 Concrete Delivery Slips: Keep all concrete delivery slips (“driver’s tickets”) on site until building is completed. Record on delivery slip where concrete was placed including time and date.

.3 Record Drawings: Record on a set of Structural Drawings extent of each pour including pour date and falsework removal date. Also record all changes to that shown on drawings including footing elevations.

.4 Keep project records up to date and make available to Consultant at all times.

1.6 SUBMITTALS

.1 Submit to the Consultant for review before the start of Work, 4 white prints of shop drawings. Leave room on drawings for the stamps of the Consultant and the Structural Engineer. Check and sign before submission. Only 2 copies will be returned to General Contractor.

.2 Minimum 2 weeks prior to starting concrete work, submit certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1.

.3 Minimum 2 weeks prior to starting concrete work, submit all concrete mix designs, including pump mixes, and indicate where each concrete mix is to be used. Where Class C1, C2 or F1 mix designs are required, submit test data to confirm that air-void system conforms to CSA A23.1 for each mix design.

.4 Minimum 2 weeks prior to starting concrete work, submit a written confirmation that all admixtures used in concrete will not have any adverse impact on the long term durability and performance of concrete, or any other materials embedded or in contact with concrete. Also provide a written statement that any admixtures used in concrete will not have any adverse effect on human health and the environment.

.5 Minimum submission requirements for each concrete mix design shall include the following:

- .1 minimum specified compressive strength at 28 days.
- .2 maximum aggregate size
- .3 aggregate type (if not normal density)
- .4 alkali-aggregate resistance
- .5 concrete density range, wet and dry (if not normal density)
- .6 CSA exposure class
- .7 cement type (if not type 10)
- .8 maximum water/cement ratio
- .9 plastic air content range air-void system test data
- .10 assumed method of placement of concrete
- .11 slump range
- .12 percentage and type of any supplementary cementing materials
- .13 admixtures (type and name only)
- .14 certificate of compatibility between admixtures unless all admixtures are supplied by same manufacturer

.6 Minimum 2 weeks prior to starting concrete work, submit proposed quality control procedures for Consultant's approval for following items:

- .1 Finishing, curing and protection

.2 Hot weather concreting
.3 Cold weather concreting

.7 Minimum 4 weeks prior to placing any slabs-on-grade, submit drawings showing proposed locations of construction joints and control joints in slabs-on-grade.

PART 2 – MATERIAL

2.1 CONCRETE MIX MATERIALS

.1 Portland cement: to CSA-A5.

.2 Cementitious hydraulic slag: to CSA-A363

.3 Fly ash: to CSA-A23.5, Type CI

.4 Water: to CAN/CSA-A23.1

.5 to CSA-A23.1. Coarse aggregates to be crushed stone or gravel which is suitable for type N concrete as defined by Supplementary Guidelines to OBC 2012, SG-2, . Do not use recycled concrete as aggregate.

.6 To ensure compatibility, all admixtures to be supplied by a single manufacturer or certificate of compatibility to be provided with mix design.

.7 Air entraining admixture: to ASTM C260.

.8 Chemical admixtures: to ASTM C494. Do not use admixtures containing chlorides.

.9 Corrosion inhibiting admixture: Containing calcium nitrite:
.1 DCI by W.R. Grace (use DCI-S with ambient temperatures above 20°C)
.2 Rheocrete CNI by Master Builders (add set retarder with ambient temperatures above 20°C).

.10 Shrinkage reducing admixture: Eclipse Floor for non-air entrained concrete and Eclipse Plus for air entrained concrete by W.R. Grace. Confirm compatibility with superplasticizer if being used.

.11 Plastic fiber additive: fibrillated polypropylene fibers at least 19mm in length:
.1 Fibremesh by Master Builders
.2 ConLoc Fibres by Pro Technologies
.3 Fiberforce by Ampro
.4 Promesh by Canada Cordage

2.2 OTHER MASTERIALS

.1 Grout: Premixed, non-metallic, non-shrink:
.1 Euco NS Grout by Eulicd Admixture Canada
.2 Masterflow 713 by Chemrex (M.B.T.)

.3 V-3 Grout by W.R. Meadows of Canada
.4 Sikagrout 212 by Sika Canada
.5 M-Bed Standard by Sika Canada
.6 CPD Non-Shrink Grout by CPD

.2 Dry pack grout: Use 1:2 mix of Portland cement and concrete sand. Add sufficient water for the mixture to retain its shape when made into a ball by hand. When thickness of grout exceeds 50mm, use 1:1½:2 mix of Portland cement, concrete sand and 10mm pea gravel instead. Compressive strength at 28 days to be 30 MPa.

.3 Liquid curing/sealing compound: to ASTM C309 Type 1, Class B, water based acrylic, compatible with surface hardener where hardener is used:
Sealtight CS 309 by W.R. Meadows of Canada. Apply two (2) coats where exposed concrete floor is called for in Room Finishing Schedule. Apply first coat as soon as concrete sets - Apply second coat just prior to occupancy by Owner.

.4 Premoulded joint fillers: Bituminous impregnated fibre board: to ASTM D1751.

.5 Evaporation reducer: Confilm by Chemrex (M.B.T.).

.6 Bonding agent: synthetic latex:
.1 Surfacrete Concentrate by Sika Canada
.2 Intralok by W.R. Meadows of Canada
.3 Acryl-Set by Chemrex (M.B.T.)
.4 CPD Concentrated Latex Adhesive by CPD

.7 Drilled concrete expansion anchors:
.1 Kwik-Bolt by Hilti
.2 Wedge Anchor by Ucan Fastening Products

.8 Drilled concrete adhesive anchors:
.1 HVA Adhesive Anchor by Hilti
.2 ADH Adhesive Anchor by Ucan Fastening Products

.9 Epoxy for bonding anchors and dowels into predrilled holes in concrete:
.1 HIT -HY-150 by Hilti
.2 Epcon Ceramic 6 by ITW Construction Products
.3 Flo-Rok FR1-22 & FR3-22 by Ucan Fastening Products

.10 Non-slip nosing insert for concrete stairs: Fine aluminum oxide strips, 6mm (¼") wide x 10mm (d") deep.

.11 Vapour barrier for slab on grade:
.1 Refer to DIV.7

.12 Rigid insulation: Extruded polystyrene boards:
.1 Styrofoam SM by Dow Chemical
.2 Styrofoam HI-100 by Dow Chemical

.13 Control joint filler: semi-rigid filler to protect against slab edge breakdown:
.1 For sawcuts and joints in interior slabs:

.1 Rezi-Weld Flex by W. R. Meadows
.2 Loadflex by Sika Canada
.2 For sawcuts and joints in exterior slabs:
.1 Sikaflex 2C NS/SL by Sika Canada

.14 Elastomeric bearing pads: Virgin natural polyisoprene or virgin polychloroprene conforming to CAN/CSA-S6

.15 Sliding bearing assembly: Galvanized top steel plate with a type 304 stainless steel highly polished lower surface and bottom elastomeric pad with a polytetrafluoroethylene (Teflon) upper surface. Static and kinetic coefficients of friction not to exceed 5% under working stress. Assembly to have a working stress capacity of 7 MPa on lower pad. Elastomeric bottom pad to allow a 2% rotation of upper plate and still maintain a substantially uniform bearing pressure between plate and pad. For concrete work, provide two 12 dia. anchor studs for top plate and provide water tight polyethylene wrapping for assembly, except for anchor studs, which can be left in place during construction. Manufactured by:
.1 Fabreeka Canada Ltd.
.2 Goodco Ltd.
.3 Structural Tech Corp. Ltd.

.16 Controlled density concrete fill, f'c = 4 MPa:
.1 K-Crete by Dufferin Concrete Products or equivalent

.17 Prefabricated Seepage Protection System:
.1 Terradrain 200 by Terrafix Geosynthetics Inc.
.2 Weeperwick by Subsurface Systems Inc.

.18 Bentonite Geotextile Waterproofing:
.1 Voltex by CETCO (distributor : DRE Industries)

.19 Crack Filler Epoxy: Capweld 524 by Cappar Ltd.
.20 Base under concrete Slabs on Grade: Clean, crushed stone, 20 to 22mm.

2.3 CONCRETE MIXES

.1 Use ready-mix concrete. Proportion concrete in accordance with CSA A23.1, Use a water-reducing agent in all concrete. Obtain approval of the Consultant for the use of admixtures other than water-reducing and air entraining agents.

.2 Supplementary cementing materials: Conform to the directions of the slag and fly ash manufacturers for the proportioning and mixing of concrete. Except as otherwise required, limit supplementary cementing materials to no more than 25% of total cementitious content and limit the fly ash component to no more than 10% of total cementitious content. The limit on supplementary cementing materials may be increased for Class N exposure concrete provided that the effects of the resulting concrete properties, including finishing, rate of early-age strength gain, curing and protection, are considered by the Contractor and a letter describing these effects and any special construction procedures is submitted for review with the mix design. Do not use supplementary cementing materials in architectural concrete.

.3 For columns less than 300mm in least dimension and for walls less than 200mm thick, reduce nominal size of coarse aggregate to 10mm.

.4 Interior slabs, beams, walls and columns: Provide normal density concrete to give following properties unless otherwise noted:
- .1 Class of exposure N
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 25MPa unless specified otherwise on Structural Drawings
- .4 Nominal size of coarse aggregate: 20mm. See also clause 2.3.3.
- .5 Slump at time and point of discharge: 50mm to 110mm

.5 Footings, piers, and foundation walls : Provide normal density, frost resistant concrete to give following properties:
- .1 Class of exposure F-2
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 25MPa unless specified otherwise on Drawings
- .4 Maximum water/cementing material ratio: 0.55
- .5 Nominal maximum size of coarse aggregate: 20mm. See also clause 2.3.3.
- .6 Slump at time and point of discharge: 50mm to 110mm
- .7 Air content: 4 to 7%

.6 Lean concrete and mud slabs: Provide normal density concrete to give following properties:
- .1 Class of exposure N
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 10MPa
- .4 Nominal maximum size of coarse aggregate:20mm.
- .5 Slump at time and point of discharge: 50mm to 110mm

.7 Exterior, exposed walls and columns exposed to freezing and thawing, but not exposed to chlorides: Provide normal density, frost resistant concrete to give following properties:
- .1 Class of exposure F-2
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 25MPa unless specified otherwise on Structural Drawings
- .4 Maximum water/cementing material ratio: 0.55
- .5 Nominal size of coarse aggregate: 20mm. See also clause 2.3.3.
- .6 Slump at time and point of discharge: 50mm to 110mm
- .7 Air content: 5 to 8%

.8 Structurally reinforced concrete exposed to chlorides, including exterior reinforced slabs: Provide normal density concrete to give following properties:
- .1 Class of exposure C-1
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 35MPa
- .4 Maximum water/cementing material ratio: 0.40
- .5 Nominal size of coarse aggregate: 20mm. See also clause 2.3.3.
- .6 Slump at time and point of discharge: 50mm to 110mm
- .7 Air content: 5 to 8%

.9 Interior slabs-on-grade: Provide normal density concrete to give following properties:
- .1 Class of exposure:N
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 25MPa unless specified otherwise on Structural Drawings
- .4 Maximum water/cementing material ratio: 0.55
- .5 Nominal maximum size of coarse aggregate: 20mm. Increase to 40mm where slab-on- grade thickness exceeds 130mm.
- .6 Slump at time and point of discharge: 50mm to 110mm
- .7 Plastic fiber additive: apply at rate of 0.9 kg/m³. Add sufficient water reducing agent to restore slump loss
- .8 Slump at time and point of discharge, after addition of fibers and plasticizer: 50mm to 110mm
- .9 Provide curing/sealing coat to all slabs-on-grade; two coats where slab exposed-refer to 2.2.3.above.

.10 Interior slabs-on-grade with resilient floor finishes: Provide normal density concrete to give following properties:
- .1 Class of exposure:N
- .2 Cement: Type 10
- .3 Minimum compressive strength 25MPa
- .4 Nominal maximum size of coarse aggregate: 40mm
- .5 Water/cementing material ratio: 0.55
- .6 Slump at time and point of discharge: 50mm to 110mm

.11 Construction Method:
- .1 Place & compact 200mm of clean, crushed stone, 20 to 22mm size.
- .2 Construct slab-on-grade on 15 mil polyolefin sheet vapor barrier placed directly below concrete. Terminate vapor barrier by extending vertically up the abutting concrete walls
- .3 Saw cuts should be done with a dry process (soft-cut on the same day of a pour).
- .4 Curing: Apply 24 hours of wet curing. Start curing immediately after finishing slab. Cover slab-on-grade for at least 72 hours using plastic sheets with joints taped and free edges covered.
- .5 Protection: Protect finished and cured slab from surface water (i.e. rain, snow).
- .6 Refer to Architectural Specifications for acceptable moisture content and testing methods prior to placing floor finishes.

.12 Interior and roof concrete toppings, curbs and bases: Provide normal density concrete to give following properties:
- .1 Class of exposure:N
- .2 Cement: Type 10
- .3 Minimum compressive strength 25MPa
- .4 Nominal size of coarse aggregate for:
  - .1 Toppings between 25 and 35mm thick:10mm
  - .2 Toppings between 35 and 50mm thick:14mm
  - .3 Thick toppings: 20mm
- .5 Slump at time and point of discharge: 20mm to 60mm

Where topping is less than 25mm thick, no coarse aggregate is allowed and a bonding agent shall be provided within the mix and to bond the topping to the substrate.

.13 Exterior unreinforced slabs, driveways, sidewalks, curbs and gutters, parking slabs on grade: Provide normal density, chloride resistant concrete to give following properties:
- .1 Class of exposure C-2
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 32MPa
- .4 Maximum water/cementing material ratio: 0.45
- .5 Nominal maximum size of coarse aggregate: 20mm
- .6 Slump at time and point of discharge: 50mm to 110mm
- .7 Air content: 5 to 8%

.14 Exterior, unreinforced pavements: Provide normal density concrete to give following properties:
- .1 Class of exposure C-2
- .2 Cement: Type 10
- .3 Minimum compressive strength at 28 days: 32MPa
- .4 Maximum water/cementing material ratio: 0.45
- .5 Nominal maximum size of coarse aggregate: 20mm
- .6 Slump at time and point of discharge: 40mm to 80mm. Use plasticizer if necessary to increase slump for placement.
- .7 Air content: 5 to 8%

PART 3 – EXECUTION

3.1 CONSTRCUTION REVIEW

.1 Construction reviews are undertaken by the Consultant and the Inspection and Testing Agency so that the Owner may be informed in writing as to the quality of the Contractor's performance and for the protection of the Owner. They will be carried out by examination of representative samples of the Work.

.2 The Contractor will receive copies of the construction review reports and the results of material tests. He will thereby be informed of any defects or deficiencies found.

.3 Bring to the attention of the Consultant, any defects or deficiencies in the Work, which may occur during construction together with a proposal for remedy. The Consultant will decide what corrective action may be taken and will issue the necessary instructions.

3.2 PREPARATION

.1 Obtain written approval of each footing bearing surface by Geotechnical Engineer prior to placing concrete for footings/mud slabs.

.2 Confirm that subgrade and backfill meets specifications and is free of frost and surface water before placing slab-on-grade.

.3 Provide vapor barrier under all slabs placed on the ground including slabs-on-grade and framed slabs.

.4 Grout column base plates and beam bearing plates as soon as steelwork is completed. Do not add load on steelwork until grouting is completed and grout strength has reached at least 20 MPa.

3.3 SLEEVES, OPENINGS AND EMBEDMENTS

.1 Ensure that sleeves and openings do not impair the required strength of the member, and unless shown on the Structural Drawings, are accepted by the Consultant for size, location, and reinforcement before concrete is cast. No trade shall cut holes through existing concrete unless acceptable to the Consultant.

.2 Do not embed in slabs and walls any conduit or pipe whose outside diameter is greater than one- quarter the concrete thickness. Do not space less than 3 diameters on centre. Locate so as not to impair the required strength of the member. Do not install in or below columns, conduit which displaces more than 3 percent of the cross-section.

.3 Cooperate with any trade applying finishes to concrete surfaces to obtain a surface, which will ensure adequate bond. Provide chases, chamfers and reglets where required.

.4 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated on Structural Drawings or approved by the Consultant.

.5 Where approved by Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Unless indicated on the Structural Drawings, sleeves and openings greater than 100 x 100 mm must be approved by Consultant.

.6 Do not eliminate, cut or displace reinforcement to accommodate openings or hardware. If openings or hardware cannot be located as specified, obtain approval of modifications from Consultant before placing of concrete.

.7 Check locations and sizes of sleeves and openings shown on Structural Drawings with Architectural, Mechanical and Electrical Drawings. Notify Consultant of any discrepancies.

.8 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

.9 Anchor bolts: Set anchor bolts using templates under supervision of appropriate trade prior to placing concrete. Locate each anchor bolt group to within 6 mm of required location with no accumulation of tolerances allowed between groups

3.4 PLACING CONCRETE

.1 Notify Consultant 24 hours before placing concrete and 24 hours before closing wall forms.

.2 Do cast-in-place concrete work in accordance with CSA-A23.1.

.3 Remove water and disturbed soil from excavations before placing concrete therein.

.4 Do not overload forms.

.5 Use rubber tipped vibrators for concrete containing epoxy coated reinforcement.

3.5 FINSIHING FLATWORK

.1 Finish flatwork in accordance with CSA-A23.1, and following clauses.

.2 Protect concrete during finishing process in accordance with CSA-A23.1. Also use evaporation reducer during severe drying conditions.

.3 Cast slabs with a top surface that is level or sloping as required by the Drawings. Allow for cambering where required. Set top of slab below finished floor level by the distance required for the type of applied finish.

.4 Provide final finish in accordance with proposed use and as follows:
- .1 Screeded and bull floated for: mud slabs and footings.
- .2 Screeded and bull floated with scratch finish for: base slabs, which receive mortar setting beds or bonded toppings.
- .3 Powered float finish for: roofs and slabs, which receive a membrane.
- .4 Wood float finish with brooming for: exterior exposed slabs.
- .5 Powered steel trowel finish for: interior exposed slabs; slabs which receive resilient flooring, carpet, epoxy-based finishes, thin-set tiles, etc.

.5 Steel trowel exposed interior concrete floors at least twice. Provide final spin trowelling when non-slip finish is required.

.6 Except as noted, conform to finish tolerance Class A for floors and Class B for exterior slabs and base slabs for toppings. For wood flooring, conform to finish tolerance Class C. Compliance will be considered satisfactory if 80% of the measurements, using the straightedge method, are less than or equal to the tolerance and no measurement exceeds the tolerance by more than 25%. When requested by Consultant, make measurements within 3 days of placing concrete and before falsework is removed and submit results to Consultant.

3.6 CURING AND PROTECTION

.1 Cure and protect concrete in accordance with CSA A23.1. In addition to Cold-Weather Protection requirements in A23.1, provide protection so that temperature of concrete surfaces is maintained at not less than 21 degrees C for 3 days after placement, not less than 10 degrees C for the next 2 days and above freezing for the next 2 days. Vent exhaust gases from combustion type heaters to atmosphere outside heated enclosure.

.2 Cure slab surfaces immediately after finishing is completed. Use a curing compound compatible with applied finishes except where bonded topping to be applied. Where curing compound is not used, cover slab surfaces with absorptive mat or fabric and keep continuously wet.

.3 Extend basic curing period until concrete has reached following strength levels for structural safety:
- .1 Framed slabs and beams: 75% of specified 28 day strength.
- .2 Columns, piers and footings: 75% of specified 28 day strength.
- .3 Walls: 50% of specified 28 day strength.

3.7 FINISHING FORMAED SURFACES

.1 Finish formed surfaces in accordance with CSA A23.1. Completely fill holes left by through-bolts with grout.

.2 Do not patch surfaces until instructed in writing by Consultant.

.3 Where honeycombing has cut out in accordance with CSA A23.1. do not patch until reviewed by Consultant.

.4 Provide smooth-form finish for all exposed concrete surfaces.

.5 Provide smooth-rubbed finish to all concrete surfaces exposed to public view. Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.

3.8 BONDED TOPPINGS

.1 Not more than 24 hours prior to applying concrete toppings, clean base slab of dirt, laitance, loose material and grease. Scrub with 10 percent solution of muriatic acid and rinse clean. Four to six hours before laying topping, saturate surface with clean water. Surface shall have reached a damp condition at the time the new concrete is placed. Apply a slurry coat of cement and water to the surface and immediately follow with the topping or apply approved and compatible bonding agent in accordance with manufacturer's instructions.

.2 Do not allow the temperature difference between base slab and new concrete to exceed 6 degrees C when concrete is placed.

.3 Make mix consistency as stiff as can be worked with a sawing motion of the strike-off board. Consolidate concrete by rolling and tamping. Float with a power floating machine weighing at least 90 kg. Finish and cure as specified for floors.

.4 Locate joints in top course directly over joints in base course.

.5 Minimum thickness of topping over cambered base slab shall be 38 mm at high point.

.6 Remove any concrete which seeps through joints of precast units and clean surface before concrete sets

3.9 SLABS ON GRADE

.1 Determine that the compacted granular fill supporting slabs-on-grade has been approved before starting work.

.2 Over compacted granular fill, place & compact 200mm of clean crushed stone, 20 to 22mm size.

.3 Over crushed stone, vapour barrier as per Architectural Specification. Seal all joints and punctures with tape. Repair all tears or holes with layers of sheeting, tapping all seams.

.4 Provide and install joint filler between slab and masonry walls.

.5 See Drawings for thickness of concrete and slab reinforcing.

.6 Provide slab depressions and slopes as indicated on the Architectural Drawings. Slope floors to drain.

.7 Testing & Inspection Company must inspect vapour barrier and reinforcing just prior to placement of concrete and Contractor must rectify any deficiencies noted prior to pour.

3.10 GROUTING UNDER BASE PLATES AND BEARING PLATES

.1 Grout under base plates and bearing plates using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

.2 Grout column base plates and beam bearing plates as soon as steelwork is completed. Do not add load on steelwork until grouting is completed and grout strength has reached at least 20 Mpa.

3.11 JOINTS

.1 Slabs-on-grade: Provide joints in both directions. Maximum spacing of construction joints to be 30m with sawcut joints in-between spaced at 30 times slab thickness maximum, but not more than 5m maximum. Locate joints on column centre lines wherever possible and on intermediate lines, which result in approximately square panels. Protect edges of sawcuts from breakage. Clean out sawcuts in exposed slabs and fill with control joint filler after concrete is at least 120 days old. At construction joints in exposed slabs, sawcut top 25 mm for a width of 5 mm and fill with control joint filler after concrete is at least 120 days old. Clean out sawcuts in other slabs and fill with a sand-cement paste one month prior to installing floor coverings.

.2 Construction Joints and Control Joints: See Section 03 10 00.

.3 Expansion Joints: See Structural Drawings for widths, locations and details. Remove all forming and filler material used during construction and provide clear space between structural elements equal to width specified.

.4 Construction Gaps: See Structural Drawings for widths, locations and details. Do not place concrete in gaps in beams and slabs until all concrete at that level is at least 28 days old. Do not fill wall gaps until all adjoining framed slabs, above and below, are at least 28 days old.

.5 Isolation Joints: Provide 10mm thick premoulded joint filler of the same depth as the thickness of the concrete wherever slabs-on-grade abut foundation walls, columns and piers. Omit if slab is chased or dowelled into structure.

3.12 DRILLED ANCHORS

.1 Conform to requirements of manufacturer. Use hammer drill to make holes. Hole diameters must never exceed those required by manufacturer. Tighten all expansion anchors using a torque wrench unless finger-tight is required by the Drawings to allow for movement. Unless otherwise noted on drawings, provide manufacturer's standard embedment length into solid concrete.

.2 Do not cut reinforcement to accommodate anchors. Relocate anchors, at no extra cost to the Contract, when obstructions prevent drilling holes to required depth in locations specified. Obtain Consultant's approval of new location before drilling hole. Fill all abandoned holes with grout.

.3 Arrange for manufacturer's technical representative to be present during installation of first few anchors of each size and type. Submit site reports by manufacturer to Consultant within one week of each visit. Reports to indicate anchor sizes and types installed, locations, and names of those present during installation.

.4 Retain an inspection and testing company to randomly select and pull test 5% of all types and sizes of anchors installed on a weekly basis, but not less than one anchor of each type and size. Pull test to twice the design tension capacity of the anchor given by the manufacturer. Submit reports to Consultant within one week of testing. Reports to indicate each anchor location, test load and mode of failure, if applicable. Notify Consultant immediately if any anchor fails the pull test.

3.13 CRACKS IN SLABS-ON-GRADE

.1 Extensive cracking of slabs-on-grade or cracks in excess of 3 mm in width shall be cause for rejection of slab or portion of slab at the discretion of the Consultant.

.2 Protect edges of cracks in slabs-on-grade from breakage.

.3 Unless slab is rejected, repair cracks that are over 0.4 mm wide in exposed slabs-on-grade in unfinished areas after concrete is at least 120 days old. Repair by filling crack with a sand-cement grout and then, after 7 days, cutting out top 20 mm of crack for a width of 5 mm and filling with control joint filler.

3.14 INSPECTION AND TESTING

.1 Inspection and testing of concrete and concrete materials will be carried out in accordance with A23.1 by a Testing Agency designated by Consultant. Testing agency shall be certified under CSA A283 with category to suit testing provided.

.2 Agency will review all submittals pertaining to concrete mix designs and certification of plant, equipment and materials.

.3 Agency will take additional test cylinders during cold weather concreting. Assist Agency by curing these cylinders for 7 days on site adjacent to the work which they represent and under the same conditions as the concrete which they represent.

.4 Samples will be taken prior to the addition of steel fiber reinforcement or superplasticizers to the mix on site.

.5 Methods for testing concrete will be in accordance with CSA-A23.2.

.6 Inspection or testing by Agency will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

.7 Assist the Agency in its work. Notify Agency as to the concreting schedule and before each pour. Provide concrete samples.

.8 The Agency will report to the Consultant, with copies to the Structural Engineer, Contractor, Concrete Supplier and Municipal Authorities. Reports will include the locations in structure to which tests relate, comments on abnormal results and conditions, and the Supplier's mix design numbers. Test reports shall be provided within five working days.

3.15 PITS, CURBS, BASES

.1 Construct all concrete sumps, pits, trenches, curbs and machinery bases forming part of floor construction that are required within the building by other trades.

.2 Provide isolation joints between machinery bases and slabs-on-grade.

3.16 EXTERIOR SALBS AND SIDEWALKS

.1 Exterior slabs shall be finished with a spin trowel finish followed with a fine broom and the edges shall be rounded with an edging tool. Slab thickness shall be 125mm except as noted on drawings. Reinforce slab with one layer of welded wire mesh in flat sheets or as otherwise noted on drawings and apply one coat of curing sealing compound as soon as the concrete will support a workman without damage to the finish. Saw cut slab into areas as indicated on drawings but not exceeding 9 square meters.

3.17 MUNICIPAL SIDEWALKS

.1 Construction of concrete sidewalks, curbs, gutters, materials and finishes shall be in compliance with OPSS 351 and all other related OPSS. Contractor shall obtain specifications and approvals from the Municipality prior to start of work.

.2 Thickness of sidewalk to be 125mm and 175mm across driveways. The top surface of concrete shall receive a broom finish. Provide dummy joints, contraction joints and expansion joints as specified in OPSS. Sidewalks within the Municipal road allowance shall also comply with the Municipal requirements.

3.18 MECHANICAL AND ELECTRICAL WORK

.1 Construct all concrete underground electrical duct banks, underground water service thrust blocks and supports for underground piping in specified fill. Also construct all concrete pads for pipes passing through foundation walls, manholes and catch basins. See mechanical and electrical drawings and specifications for details and extent of work.

3.19 REJECTED WORK

.1 Do not deliver to the site materials which are known not to meet the requirement of the Specifications. If rejected after delivery, they shall be immediately removed.

.2 Where review reveals materials or workmanship which appear to have failed to meet the specified quality or tolerances, the Consultant shall have the authority to order additional curing; to have tests made of in-situ concrete, concrete cores, reinforcement or other materials; to order a structural analysis of the existing elements; and to load test the structure. All such work will be carried out in order to assist in determining whether the structure may, in the opinion of the Consultant be accepted, with or without strengthening or modification. Testing shall meet the requirements of the Ontario Building Code. All expenses incurred shall be chargeable to the Contractor regardless of the results.

END OF SECTION

PART 1 – GENERAL

1.1 SECTIONS INCLUDES

.1 Finishing concrete floor surfaces.

1.2 RELATED SECTIONS

.1	General Requirements	Division 01
.2	Cast in Place Concrete	Section 03 30 00
.3	Waterproofing	Section 07 13 00
.4	Sealants	Section 07 92 00
.5	Portland Cement Terrazzo Flooring	Section 09 66 13

1.3 REFERENCES

.1 ACI-302.IR-96, Guide for Concrete Floor and Slab Construction.

.2 ASTM-C171-97a, Sheet Materials for Curing Concrete.

.3 ASTM-C309-98a, Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete.

.4 CSA-A23.1/A23.2-00, Concrete Materials and Methods of Concrete Construction I Methods of Test for Concrete.

1.4 SUBMITTALS

.1 Submit Product data and Shop Drawings under provisions of Section 01 33 00 - Submittals.

.2 Provide list of Products proposed for use on Project where such Products are not specified by trade name or where Specification permits choice or alternatives. Include descriptive manufacturer or Supplier literature.

.3 Include application instructions for concrete curing compound.

1.5 QUALITY ASSURANCE

.1 Conform to CSA-A23.1/A23.2 and ACI 302.IR.

1.6 QUALIFICATION

.1 Concrete Finishes Company specializing in commercial floor finishing with a minimum of five years documented experience, approved by the Consultant.

.2 Submit references two (2) months before concrete work commences.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver Products to site under provisions of General Requirements Division 01.

.2 Store and protect Products under provisions of General Requirements Division 01.

.3 Take delivery of and store packaged materials on site in original undamaged condition with manufacturers' packing, labels and seals intact.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Temporary Lighting: Minimum one 200 W light source, placed 2.5m above the floor surface, for each 40m2 of floor being finished.

.2 Temporary Heat: Ambient temperature of 10 degrees C minimum.

.3 Ventilation: Sufficient to prevent carbon monoxide or high levels of carbon dioxide and other injurious gases from affecting concrete.

.4 Electrical Power: Sufficient to operate equipment normally used.

.5 Work Area: Water-tight protection against rain and detrimental weather conditions.

1.9 WARRENTY

.1 Provide a warranty for the work of this section in accordance with the General Conditions but for a period of three years.

.2 The warranty shall cover defects in concrete floor finishing due to faults in workmanship or materials provided in this section.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Water: clean, potable and not detrimental to quality of concrete.

.2 Concrete Materials: Conform to Section 03 30 00 - Cast in Place Concrete.

.3 Concrete Sealer (SLC): pigmented, resin, copolymer curing compound and sealer. The Euclid Chemical Company: Super Floor Coat Colored.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify that substrate surfaces are ready to receive work and elevations are as indicated on Shop Drawings and as instructed by the finish flooring manufacturer.

.2 Beginning of installation shall mean acceptance of substrate and site conditions.

.3 Ensure that underslab vapour retarder specified in section 07 13 00 – Waterproofing is installed and ready to receive the work of this section for slabs-on-grade except as specified below.

3.2 PREPARATION

.1 Steel trowel concrete slabs left exposed or to receive resilient flooring, and applied floor finishes.

.2 Where concrete slabs are to receive ceramic tile, screed off to true lines and levels and leave ready to receive finish. Depress slabs to accommodate finish thickness.

.3 Where floor drains occur, floors shall be level around walls with a minimum 5mm per meter uniform pitch to drains, unless indicated otherwise.

3.3 FINISHING CONCRETE FLOORS

.1 Finish concrete to CSA-A23.1/A23.2.

.2 When concrete is placed, strike off or rod surface with a straight edge. Darby or bull float the surface to smooth and level the concrete.

.3 When the concrete has hardened enough to leave only slight footprints on the surface, float the surface with metal floats and power finishing machines and bring surface to a true elevation. Do not over float. Avoid bringing water and fines to the surface.

.4 Concrete Floors for Applied Portland Cement Terrazzo or Thin-set Ceramic Tile Finish:

- .1 After floating, allow bleed water or sheen to disappear.
- .2 Steel trowel the surface by means of power and hand trowels.
- .3 Do not bring water and fines to the surface by over trowelling.
- .4 Surface shall have a fine even textured steel finish. Do not leave any hard smooth polished or burnished surface areas.
- .5 Cure by the moist curing or sealed surface methods only.

.5 Sprinkling of dry cement or dry cement and sand mixture over concrete surfaces is not acceptable.

.6 Saw cut control joints to CSA-A23.1 24 hours maximum after placing of concrete.

.7 Place expansion joint devices in accordance with details, 24 hours maximum after placing of concrete.

.8 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges.

3.4 CURING

.1 Cure concrete in accordance with CSA-A23.1/CSA-A23.2.

.2 Moist Curing Method:
- .1 Cover the concrete with burlap or canvas coverings.
- .2 Keep the surface continuously wet by sprinkling or fog spray.
- .3 Concrete shall be kept moist for a minimum of seven consecutive days when normal Portland cement is used, and for a minimum of three consecutive days when high early strength Portland cement is used.

.3 Sealed Surface Curing Method:
- .1 Cover the concrete with waterproof paper or polyethylene sheets. Lap all joints and tape.
- .2 Coverings shall be sufficiently heavy to be resistant to tearing and puncturing.
- .3 Coverings shall be kept in place for a minimum of seven consecutive days when normal Portland cement is used, and for a minimum of three consecutive days when high early strength Portland cement is used.

.4 Liquid Applied Curing Compound Method:
- .1 Apply liquid curing compounds in strict accordance with the manufacturer's instructions.
- .2 Ensure that curing compounds are compatible with applied floor finish adhesives.

.5 After curing and when concrete is dry, seal control joints and joints at junction with vertical surfaces with sealing compound.

.6 Concrete Sealer Application:
- .1 Ensure concrete surface is clean and free of standing water. Remove all material that may prevent sealer adhesion.
- .2 Prime concrete surface as recommended by the concrete sealer manufacturer.
- .3 Apply concrete sealer at a uniform coverage by spray or roller application as recommended by the concrete sealer manufacturer.
- .4 Apply second coat of concrete sealer, as recommended by the manufacturer, within 24 hours of first coat application.

3.5 TOLERANCES

.1 Exposed High Wear Resistance Surface Dense Trowelled: 6mm in 3000mm.

.2 Exposed Smooth Non-slip Surface Trowelled and Broomed: 8mm in 3000mm.

.3 Level concrete slab to achieve the following tolerances:
- .1 Under vinyl composition flooring - 7mm in 3000mm

.2 Under sheet flooring - 3mm in 3000mm
.3 Under thin-set ceramic tile - 3mm in 3000mm and 1.5mm in 305mm maximum

.4 Correct defects in the floor only by grinding or removal and replacement of the defective slabs. Areas requiring corrective work will be identified by the Consultant. Re-measure corrected areas. Costs of corrective work shall be borne by the Contractor.

3.6 FIELD QUALITY CONTROL

.1 Field inspection and testing will be performed under provisions of Section 01 43 00 - Quality Assurance.

.2 The cost of inspection and testing will be paid from the cash allowance specified in General Requirements - Division 01. Allow 24 hours before proceeding with concrete enhancer application.

3.7 PROTECTION

.1 Protect finished installation in accordance with the requirements of General Requirements – Division 01.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Procedures for unit masonry work.

.2 Procedures for incorporating products to be built into unit masonry.

1.2 RELATED SECTIONS

.1	General Requirements	Division 01
.2	Masonry Mortar and Grout	Section 04 05 13
.3	Masonry Anchorage and Reinforcement	Section 04 05 19
.4	Concrete Unit Masonry	Section 04 05 22
.5	Masonry Accessories	Section 04 05 23
.6	Structural Steel	Section 05 10 00
.7	Firestopping and Smoke Seals	Section 07 84 00
.8	Sealants	Section 07 92 00
.9	Hollow Metal Doors and Frames	Section 08 11 13

1.3 REFERENCES

.1	CAN/CSA-A179-04(R2009)	Mortar and Grout for Unit Masonry
.2	CAN/CSA-A371-04(R2009)	Masonry Construction for Buildings

1.4 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 – Submittals.

.2 Submit samples:

- .1 One 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 by inspection and testing company for testing purposes.

1.5 TEST REPORTS

.1 Submit laboratory test reports in accordance with Section 01 45 00 – Quality Control.

.2 Submit laboratory test reports certifying compliance of masonry units and mortar ingredients with specification requirements.

1.6 QUALITY ASSURANCE

.1 Masonry work shall be carried out by experienced masons under the continuous supervision of a competent foreman with a minimum of 5 years' experience with work of similar size and complexity.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to job site in dry condition.

.2 Keep materials dry until use except where wetting of bricks is specified.

.3 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Cold Weather Requirements: Supplement Clause 5.16.2 of CAN/CSA-A371 with following requirements:
- .1 Maintain temperature of mortar between 5°C and 50°C until batch is used.
- .2 Protect masonry work from cold weather in accordance with clause 5.16.3 of CAN/CSA-A371, but for a minimum of 72 hours after construction.

.2 Hot Weather Requirements: Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

.3 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.

.4 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

.5 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 Article 1.03.

PART 3 – EXECUTION

3.1 INSTALLATION

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

.2 Build masonry plumb, level, and true to line, with vertical joints in alignment.

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

.4 Extend walls and partitions to underside of deck or slab unless noted otherwise on Drawings.

.5 Construct portions of walls and partitions above doors, screens, windows and other openings to match adjacent wall and partition construction unless noted otherwise on Drawings.

.6 Refer to Structural Drawing for load-bearing masonry structural requirements.

3.2 CONSTRUCTION

.1 Exposed Masonry: Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

.2 Jointing:

- .1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, true to line, compressed, uniformly concave joints unless other jointing is indicated or specified.
- .2 Where raked joints are indicated allow joints to set just enough to remove excess water, then rake joints uniformly to 6mm depth and compress with square tool to provide smooth, compressed, raked joints of uniform depth.
- .3 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.
- .4 Wall surfaces and joint treatment for concealed portions of walls above ceilings and behind wall mounted fitments shall match exposed surfaces.

.3 Cutting:

- .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
- .2 Make cuts straight, clean, and free from uneven edges.

.4 Building-In:

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

.2 Where structural steel members penetrate masonry walls fill-in spaces with neatly cut pieces of masonry units set in event mortar beds with tooled joints. Do not use rubble or broken pieces and mortar combinations as in-fill.

.5 Wetting of Bricks:

.1 Except in cold weather, wet bricks having an initial rate of absorption exceeding 1g/minute/1000mm², 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.

.6 Support of Loads:

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

.2 Use grout to CAN/CSA-A179 where grout is used instead of solid units. Cells with reinforcement shall be grouted.

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

.7 Provision for Movement:

.1 Leave 10mm space below shelf angles.

.2 Leave 25mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.

.3 Build masonry to tie in with stabilizers, with provision for vertical movement.

.8 Loose Steel Lintels: Install loose steel lintels supplied by Section 05 10 00 – Structural Steel Framing. Centre over opening width.

.9 Bearing Plates and Anchors: Install loose steel bearing plates and anchors supplied by Section 05 10 00 - Structural Steel Framing.

.10 Control Joints for Non-loadbearing Masonry Walls:

.1 Construct continuous full height control joints as indicated.

.2 Fill void at control joint with 20 MPa concrete grout to form continuous key.

.3 Locate exterior wall control joints as indicated on elevations.

.4 Locate interior wall control joints at a maximum spacing of 6000mm, and where non-loadbearing walls meet loadbearing walls.

.11 Provide control joints in loadbearing masonry walls only at locations approved by the structural consultant or where shown on Structural Drawings.

.12 Expansion Joints: Build-in continuous expansion joints as indicated.

3.3 SITE TOLERANCES

.1 Tolerances in notes to Clause 5.3 of CAN/CSA-A371 apply.

3.4 RE-INSTALLATION

.1 Cut openings in existing work as indicated.
.2 Openings in walls to be approved by Consultant.
.3 Make good existing work. Use materials to match existing.

3.5 FIELD QUALITY CONTROL

.1 Inspection and testing of masonry work will be carried out by an inspection and testing company designated by the Consultant.
.2 Cost of masonry inspection and testing will be paid through the project Cash Allowance.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Mortar for Unit Masonry

1.2 RELATED SECTIONS

1.	General Requirements	Division 01
2.	Cast in Place Concrete	Section 03 30 00
3.	Masonry Procedures	Section 04 05 13
4.	Masonry Anchorage and Reinforcement	Section 04 05 19
5.	Concrete Unit Masonry	Section 04 05 22

1.3 REFERENCE STANDARDS

.1	CAN/CSA A179	Mortar and Grout for Unit Masonry
.2	CAN/CSA A371	Masonry Construction for Buildings
.3	CSA A3000	Cementitious Materials Compendium
.4	ASTM C 780	Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
.5	ASTM C 1357	Standard Test Methods for Evaluating Masonry Bond Strength

1.4 SAMPLES

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

.2 Submit two 75mm size samples of each mortar type and colour.

1.5 QUALITY ASSURANCE

.1 Mortar prepared on-site based on proportion specifications:

- .1 Prior to the commencement of masonry work prepared on-site, under the supervision of the inspection and testing company, mortar mixes for each mortar type specified.
- .2 The inspection and testing company will sample and test the mortar mixes to determine a site aggregate/cement ratio Control Value for each mortar type.
- .3 Once Site Control Values are established these will form the basis of acceptance for all subsequent Sample Ratio Tests conducted during the course of the work.

.2 Mortar prepared off-site based on property specifications:

- .1 Prior to the commencement of masonry work the inspection and testing company will sample and perform laboratory test for each mortar type prepared off-site to verify compliance with the specifications.
- .2 Testing shall consist of the determination of:
  - .1 Aggregate/cement ratio.

.2 Water retention.
.3 Compressive strength.
.4 Air Content

.3 Once acceptable values are established these will form the basis of acceptance for tests conducted during the course of the work.

.3 Arrange for representative of mortar manufacturer to meet with mason on site prior to commencement of masonry work, to review proper mixing procedures of mortar. Mixing must conform to instructions from supplier of pre-mixed mortar materials.

.4 Submit test data as specified below.

1.6 COLD WEATHER REQUIREMENTS

.1 During cold weather, lower than 5oC, when danger of freezing exists, heat all masonry materials using methods accepted in the industry, in conformance to CSA-A371, and approved by the Consultant.

1.7 SUBMITTALS

.1 Submit three (3) copies of performance data sheet for mortar mixtures. Indicate related standards and mortar properties in terms of compressive strength, water retention and air content. Provide all test certificates required for mortar mixture lots delivered to site.

1.8 TESTING

.1 Testing of mortar materials will be carried out by Testing Laboratory designated by Consultant.

.2 Inspection and testing to be paid by Owner through the project cash allowance.

.3 Submit samples of sand and water for testing to ensure that mortar will not produce efflorescence.

.4 Test for compliance with the performance requirements for integral mortar water-repellence. Mortar shall be capable of achieving a Class E Rating when evaluated using ASTM E 514 with the test extended to 72 hours, using the rating criteria specified in ASTM E 514.

.5 Perform compressive strength tests on all mortar and grout in accordance with the requirements of CSA S304.1. Compressive strengths must conform to the property specifications of CSA-A179.

.6 Perform tests for flexural bond strength of masonry in accordance CSA S304.1. Flexural bond strengths shall not be less than 0.20MPa, in conformance with CSA-A179.

PART 2 – MATERIAL

2.1 MATERIALS

.1	Sand:	fine grain aggregate, graded in accordance with CSA A179
.2	Water:	potable, free off ice and any contaminants, to CSA A179.
.3	Portland cement:	to CAN/CSA-A5 normal Type 10
.4	Hydrated lime:	type ‘S’, in accordance with ASTM C207

2.2 MORTER

.1 Mortar:

.1 Betomix Plus by Daubois or bulk preblended silo mix as supplied by Max-Mix, or equal approved by Consultant. Colourants to be premixed with mortar materials. Colour to be selected by Consultant.

.2 Mortars for clay brick and concrete unit masonry to be Portland cement/ hydrated lime/ sand mortars to the property standards of CSA A179. Colour to be selected by consultant to match the selected clay brick.

.3 Mortar for masonry foundations, load bearing walls and partitions to be Type ‘S’ as per property specifications of CSA A179.

.4 Mortar for non-load bearing walls and partitions to be Type ‘N’ as per property specifications of CSA A179, unless indicated otherwise on the Structural Drawings.

.5 Compressive strengths of mortars shall conform to the values indicated on Tables 8 and 9, for solid brick and concrete block respectively, of CSA Standard A179. Compressive strength of mortars must not exceed the compressive strength of the masonry units with which they are being used.

.6 Except where specified otherwise, the basis of acceptance for mortar prepared on-site shall be the proportion specifications in CAN/CSA-A179

.7 The basis of acceptance for mortar prepared off-site shall be the property specifications in CAN/CSA-A179

2.3 GROUT

.1 Grout:

.1 Coarse grout to CSA A179, with maximum aggregate size of 12.5mm.
.2 Use fine grout where least dimension of void is less than 50mm.
.3 All grout to CSA A179, with sufficient water to produce pouring consistency without segregation of ingredients, but to retain cohesiveness.
.4 Slump is to be 200mm to 250mm. Minimum compressive strength is to be 20 Mpa. Refer to structural drawings for additional grout requirements at reinforcing steel.

2.4 SOURCES

.1 Use same manufactured brands and sources of mortar materials for entire project, in order to ensure uniformity of mix and coloration.

2.5 PARGING

.1 Cement mortar parging: 1 part cement, 1 part lime to 6 parts sand by volume with sufficient water for a trowelable mix.

PART 3 – EXECUTION

3.1 CONSTRUCTION

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

3.2 FIELD QUALITY CONTROL

.1 As masonry work progresses, the inspection and testing company will test and report on mortar properties as follows:
- .1 Mortar prepared in accordance with proportion specifications: Aggregate/Cement ratio.
- .2 Mortar prepared in accordance with property specifications: compressive strength.

.2 Provide six 50mm by 50mm by 50mm mortar samples taken at random for each test when requested by inspection and testing company.

3.3 MIXING OF MORTARS

.1 Mason to review mixing procedures with mortar manufacturer.

.2 Mix mortar thoroughly, in quantities only as needed for immediate use.

.3 Mix mortar in mechanical mixer operated until homogeneously blended, but not less than 3 minutes after all materials are in mixer.

.4 Obtain manufacturer’s approval for any additives.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Reinforcement for masonry walls and lintels
.2 Connectors for masonry walls

1.2 RELATED SECTIONS

.1	General Requirements	Division 01
.2	Masonry Procedures	Section 04 05 00
.3	Masonry Mortar and Grout	Section 04 05 13
.4	Concrete Unit Masonry	Section 04 05 22
.5	Masonry Accessories	Section 04 05 23
.6	Clay Unit Masonry	Section 04 21 00
.7	Structural Steel	Section 05 10 00

1.3 REFERENCES

.1	ASTM-A153/A153M-95	Standard Specified for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
.2	CAN/CSA-A23.1-04	Concrete Materials and Methods of Concrete Construction.
.3	CAN/CSA-A370-04 (R2009)	Connectors for Masonry
.4	CAN/CSA-A370-04 (R2009)	Masonry Construction for Buildings
.5	CAN/CSA-G30.18-M92 (R2007)	Billet-Steel Bars for Concrete Reinforcement.
.6	CSA-S304.1-04	Design of Masonry Structures
.7	CSA-W186-M1990 (R2007)	Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.4 DESIGN REQUIREMENTS

.1 Seismic Loads: Design size and spacing of masonry reinforcement and masonry veneer connectors to withstand seismic loads in accordance with the Ontario Building Code, Subsection 4.1.8.
.2 Structural Design of masonry reinforcement and masonry veneer connectors shall be by a qualified Professional Engineer licensed to practice in the Province of Ontario

1.5 SUBMITTALS

.1 Submit product data sheets for all reinforcement types proposed for use in this project, in accordance with Section 01 33 00 – Submittal Procedures.

.2 Include a copy of the data sheets in the shop drawing manual at the conclusion of the project.

.3 Submit samples of anchors, ties, and fasteners for approval of Consultant.

1.6 SOURCE QUALITY CONTROL

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

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

1.7 SHOP DRAWINGS

.1 Submit Shop Drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Shop Drawings shall consist of bar bending details, lists and placing drawings.

.3 On placing Drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.

.4 Shop Drawings shall bear the seal and signature of the Professional engineer providing structural design for reinforcement and connectors.

PART 2 – MATERIAL

2.1 REINFORCEMENT

.1 Bar reinforcement: to CAN/CSA-A371 and CAN/CSA-G30.18.

.2 Wire Joint Reinforcement - Single Wythe Walls: to CAN/CSA-A371, ladder type, 4.76mm diameter wire, size to suit wall thickness.
- .1 Blok-Lok Limited: BL-10 Ladder Reinforcement.
- .2 Dur-O-Wal: DA3200 Single Wythe Ladur.

.3 Wire Joint Reinforcement - Cavity Walls: to CAN/CSA-A371, ladder type, 4.76mm diameter wire, size to suit wall thickness. Blok-Lok Limited: BL-42 Ladder Reinforcement.

.4 Wire Joint Reinforcement - Double Wythe Foundation Walls: to CAN/CSA-A371, ladder type, 4.76mm diameter wire, size to suit wall thickness.
- .1 Blok-Lok Limited: BLll Ladder Reinforcement.
- .2 Dur- O-Wal: DA3200TR Ladur Trirod.

.5 Cavity Wall Connectors: to CAN/CSA-A370. Hot dip galvanized, to ASTM-A153/A153M, Class B2, 458g/ m2 minimum coating.
- .1 Concrete masonry unit backings:
  - .1 Blok-Lok Limited: 4.76mm diameter, System 2000 Tie installed at 400mm on centre vertical spacing and used in conjunction with wire joint

reinforcement specified in subparagraph 2.01.3 for cavity walls and Blok-Lok Limited, Wedge-Lok cavity-wall insulation fasteners.

.2 Fero Corporation: Block Shear Connector complete with V-Tie and insulation supports, installed at 800mm on centre horizontal spacing and 400mm on centre vertical spacing and used in conjunction with wire joint reinforcement as specified in sub-paragraph 2.01.2 installed at 400mm on centre vertical spacing.

.2 Cast-in-Place Concrete Backings:

.1 Install dovetail anchor slots at 800mm on centre spacing and dovetail anchors at 400mm on centre.

.2 Blok- Lok Limited, BL-305 Dovetail Anchor Slot with BL-303 Dovetail Anchors, complete with Blok-Lok Limited, Wedge-Lok cavity wall insulation fasteners.

.3 Steel Stud Backings: Fero Corporation, Stud Shear Connector, 1.6mm thick in appropriate size for wall studs used, complete with four screws for each connector, and 4.76mm diameter V-Tie Lateral Tie-Clip, and cavity wall insulation fasteners. Install at 800mm on centre horizontal spacing and 400mm on centre vertical spacing.

.6 Corrosion Protection for Wire Joint Reinforcement: galvanized to ASTM-A153/A153M.

.1 Exterior Wall: Hot dip galvanized, Class 82, 458g/m 2 minimum coating.

.2 Interior Wall: Mill galvanized.

.3 Foundation Walls: Hot dip galvanized, Class 82, 458g/m2 minimum coating.

2.1 FABRICATION

.1 Fabricate reinforcing in accordance with CAN/CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.

.2 Fabricate connectors in accordance with CAN/CSAA-370.

.3 Obtain the Consultants approval for locations of reinforcement splices other than those shown on placing drawings.

.4 Upon Consultants approval, weld reinforcement in accordance with CSA-W186.

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

PART 3 – EXECUTION

3.1 GENERAL

.1 Do masonry connector and reinforcement work in accordance with CAN/CSA-A370, CAN/CSA-A371, CAN/CSA-A23.1 and CSA-S304.1 unless indicated otherwise.

.2 Accurately place reinforcement, support, and secure against displacement as indicated on structural drawings and in accordance with CAN/CSA-A371

.3 Prior to placing grout, obtain Consultant's approval of placement of reinforcement and connectors.

.4 Do additional reinforcement of masonry as indicated.

.5 Supply dovetail anchor slots for casting into concrete work where required as indicated on the structural drawings and specifications.

3.2 INSTALLATION OF MASONRY ANCHORAGE AND REINFORCEMENT

.1 Refer to Section 04 05 19 for installation of masonry anchorage and reinforcement.

.2 Refer to structural drawings for additional requirements. All reinforcing shall conform to structural requirements as a minimum. Where structural requirements differ from these specifications, the most stringent requirements shall apply.

.3 Note that "solid wall" describes a masonry wall consisting of 1 or more wythes of brick and/or block (which may be solid or hollow core) with mortar joint only between wythes - no air space.

.4 Install reinforcement as indicated above for the materials specified, in conformance with structural drawings and manufacturer's instructions.

.5 For single wythe interior masonry walls, truss type reinforcing is required at every second course for walls 190mm wide or less, and ladder type reinforcing is required at each course at walls wider than 190mm.

.6 Provide and install prefabricated tees and corners at wall corners and intersections.

.7 Install ties in accordance with Ontario Building Code.

.8 Pre-drill for anchors using appropriate type and size of bit. Provide two anchors per tie with minimum embedment of 25mm. Conform to manufacturers specifications.

.9 Test at least two anchors to failure. Test must be carried out by a Professional Engineer and must certify tension load test to anchor failure. Cost of test will be paid by the Owner.

3.3 JOINT REINFORCEMENT

.1 Locations of Joint Reinforcement:
- .1 Concrete masonry unit wythe in cavity walls.
- .2 Single wythe masonry walls and partitions.

.2 Install joint reinforcement horizontally at 400mm on centre vertical spacing, unless indicated otherwise.

.3 Place additional reinforcement extending 600mm beyond jambs in courses 200mm, 400mm and 800mm above and below wall openings.

.4 Lap joint reinforcement 300mm at splices.

.5 Reinforce and grout loadbearing masonry walls as shown on the Structural Drawings.

3.4 BONDING AND TYING

.1 Foundation Walls:
- .1 Bond foundation walls of two or more wythes with the specified wire joint reinforcement.
- .2 Install joint reinforcement at 400mm on centre vertical spacing, unless indicated otherwise.

.2 Bond walls of tow or more wytes using wire joint reinforcement and metal connectors in accordance with the OBC, CSA-S304.1, CAN/CSA-A371 and as indicated.

.3 Tie masonry veneer to backing in accordance with OBC, SCA-S304.1, CAN/SCA-A371 and as indicated.

.4 Install continuous single wire brick joint reinforcement connected to brick ties.

3.5 REINFORCED LINTELS AND BOND BEAMS

.1 Reinforce masonry lintels and bond beams as indicated on Structural Drawings. Make joints in lintels and bond beams to match adjacent walls.

.2 Place and grout reinforcement in accordance with CAN/CSA-A371, and the Structural Drawings.

3.6 GROUTING

.1 Grout masonry in accordance with SCA-S304.1 and as indicated on Structural Drawings.

3.7 METAL ANCHORS

.1 Do metal anchor work as indicated.

3.8 LATERAL SUPPORT AND ANCHORAGE

.1 Do lateral support and anchorage in accordance with SCA-S304.1 and as indicated.

.2 Lateral Support Anchors (for attachment to structural steel): Blok-Lok, Flex-o-Lok.

3.9 CONTROL JOINTS

.1 Terminate reinforcement 25mm short of each side of control joints unless otherwise indicated.

3.10 FIELD BENDING

.1 Do not field bend reinforcement and connectors except where indicated or authorized by the Consultant.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars and connectors which develop cracks or splits.

3.11 FIELD TOUCH-UP

.1 Touch-up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

END OF SECTION

PART 1 – GENERAL

1.1 RELATED WORK

.1	Masonry Mortar and Grout	Section 04 05 13
.2	Masonry Anchorage and Reinforcement	Section 04 05 19

1.2 REFERENCE STANDARDS

.1	CAN/CSA-A165 Series	CSA Standards for Concrete Masonry Units
.2	CAN/CSA-S304.1	Design of Masonry Structures
.3	CAN/CSA-A371	Masonry construction for Buildings
.4	CAN/CSA-A370	
.5	National Concrete Masonry Association	
	1. NCMA TEK 10-2C	Control Joints for Concrete Masonry Walls - Empirical Method
	2. NCMA TEK-3A	Control and Removal of Efflorescence
	3. NCMA TEK-3A	Cleaning Concrete Masonry

1.3 PROTECTION

.1 Protect adjacent surfaces from marking or damage due to masonry work.

PART 2 – MATERIAL

2.1 MATERIALS

.1 Concrete blocks:

- .1 to CAN/CSA-A165 Series, metric modular, Type H/15/A/M in concealed spaces, and H/15/D/M lightweight for exposed walls.
- .2 Provide block of higher compressive strength where indicated on structural drawings.
- .3 Blocks for fire rated partitions to have required percentage of solid material necessary to provide rating.
- .4 Sizes as indicated on drawings.

.2 Curing of lightweight block:

- .1 Autoclave or low-pressure steam curing is acceptable, provided that masonry units comply with linear shrinkage and moisture content requirements of CSA A165.1 for type M units at time of delivery to site.
- .2 Age all units, prior to delivery to site, as follows:
  - .1 Autoclaved units: minimum 7 days.
  - .2 Low pressure steam cured units: minimum 28 days

.3 Special Shapes:

.1 Bond beam, lintel beam, corner and other shapes as required or indicated on drawings.

.2 Provide external corner units as a single unit, with required architectural face appearance on one side and one end.

.4 Metal Anchors: Conforming to Ontario Building Code and Section 04 05 19.

.5 Control Joint Filler: Blok-Lok “Exp-Joint”, closed cell neoprene expansion joint material.

2.2 EXPOSED MASONRY FACES

.1 Notwithstanding visual inspection requirements of CSA standards, masonry units shall be free of surface indentations, surface cracks due to manufacture, or chipping. Units so delivered shall be culled from use for exposed purposes but may be used where concealed.

.2 Concrete masonry units exposed both sides, such as at interior partitions walls, must be visibly uniform in width, so that both faces of the wall are smooth, with all block faces in plane. Total variation in width must not exceed 2mm. Mason shall reject blocks which do not conform to this size requirement.

PART 3 – EXECUTION

3.1 WORKMANSHIP

.1 Build masonry work true-to-line, plumb, square and level, with vertical joints in proper alignment.

.2 Assume complete responsibility for dimensions, plumbs and levels of this work and constantly check same with graduated rod.

.3 Masonry courses to be of uniform height, and both vertical and horizontal joints to be of equal and uniform thickness.

.4 Extend non-loadbearing partitions to underside of floor structure above, providing 25mm deflection clearance. Install lateral support angles, as specified on the structural drawings, and acoustic insulation filler at top of wall.

.5 Carry wall up in uniform manner, no one portion being raised more than 1200mm above another at any time. Build no more than 1500mm of wall measured vertically in any one day.

.6 Buttering corners of units, throwing mortar into joints, deep or excessive furrowing of bed joints not permitted. Do not shift or tap units after mortar has taken initial set. Where adjustments must be made after mortar has started to set, remove mortar and replace with fresh supply.

.7 Where new masonry abuts old or fully set masonry, clean existing surfaces and dampen if necessary to obtain bond.

.8 Evidence of noncompliance with Contract Documents including the following will require replacement and/or repair:

.1 Shrinking
.2 Curling
.3 Spalling
.4 Poor colour blend
.5 Poor texture blend
.6 Discolouration of mortar
.7 Chipping

3.2 BLOCKWORK

.1 Lay concrete block in running bond, except as noted on Drawings, with thicker end of face shell upward. Standard coursing to be modular 200mm for one block and one joint.

.2 Use lightweight concrete blocks for exposed interior surfaces of walls and partitions. Regular concrete blocks may be used for concealed surfaces.

.3 Use special shaped, and finished units where indicated, specified or required. Use bull-nosed units for exposed external corners, window jambs, etc. Exposed open cells not permitted.

.4 Concrete masonry units shall have face shells and their end joints fully filled with mortar, and joints squeezed tight. Also fill webs at cores, to be reinforced and grouted, and strike flush at core taking care to prevent mortar from falling into core.

.5 Tie intersecting non-bearing walls together with masonry reinforcing every second course.

.6 Do not tie intersecting bearing walls together in masonry bond, except at corners.

.7 Exercise special care laying up concrete block in locations where plastic wall coating finish is indicated. Block walls in these locations shall be plumb with joints tooled, concave.

.8 Where resilient base is indicated, tool the joints to within 100mm of the floor. Cut joints flush behind the base.

3.3 MORTAR AND POINTING

.1 Mortar is specified in Section 04 05 13.

.2 Make all joints uniform in thickness, straight, in line, with mortar compressed to form concave joints.

.3 Strike joints flush where walls are to receive insulation, ceramic tile, or similar finishes.

.4 Point faced blockwork by filling holes and cracks in exposed mortar joints. Cut out defective joints, refill solidly with mortar and tool to form neat concave joint.

3.4 BUILDING IN COMPONENTS

.1 Build in door, screen, and window frames, steel lintels, sleeves, anchor bolts, anchors, nailing strips and other items to be built into masonry.

.2 Do not distort metal frames. Bed anchors of frames in mortar and fill frame voids with mortar or grout as wall is erected.

3.5 BEARING POINTS

.1 Fill concrete block solid with 20 MPa concrete grout at the following locations:
- .1 for two courses below bearing points of structural members;
- .2 behind wall-hung mechanical fixtures;
- .3 and elsewhere as indicated on drawings.

.2 Install building paper over wire mesh reinforcing in the beds below solid block section.

.3 Use 100% solid concrete blocks where indicated.

3.6 CONTROL JOINTS

.1 Provide continuous vertical control joints in concrete block and brick partitions and walls at locations indicated, and at maximum 4.0m O.C. Control joints may be at 6.0m O.C. for autoclaved block only.

.2 Control joints are required at changes in wall height, at pilasters and changes in wall thickness, at movement joints in foundations and floors and roofs, at one side of door or window openings under 1.8m wide, on both sides of openings over 1.8m wide, and adjacent to corners.

.3 Confirm all control joint locations with the Consultant prior to wall construction. Provide drawings marked up to show locations of all control joints.

.4 Form control joints as detailed. Stop masonry reinforcing each side of joints; except where structural reinforcing is required, such as at bond beams.

.5 Provide bond breaker at each control joint, of building paper or black polyethylene. Continue bond breaker over lintels at openings.

3.7 HORIZONTAL REINFORCING

.1 Cavity wall and concrete block walls shall be continuously reinforced and tied together with horizontal masonry reinforcing in every second block bed joint.

.2 Additionally, place masonry reinforcing in first and second bed joints above and below openings. Reinforcing in first bed joint shall be continuous. Second bed joint reinforcing shall extend 600 mm beyond each side of opening.

.3 Place continuous reinforcing in second bed joint below top of wall.

.4 Lap reinforcement minimum of 150mm at splices. Supply & install prefabricated sections at corners and intersection of walls to insure continuity of reinforcing.

3.8 FIRE-RATED PARTITIONS

.1 Block shall be of density required to achieve fire rating, in accordance with the Ontario Building Code.

.2 At door openings in fire rated masonry partitions, fill concrete block solid with 20 MPa concrete for a distance of 400mm at each side and 400mm above openings.

3.9 REINFORCED MASONRY WALLS

.1 Construct reinforced masonry walls to conform to the requirements of the Ontario Building Code and CSA-A371, and as indicated on Structural drawings.

.2 Lay units so as to maintain an unobstructed vertical continuity in the cells. All walls and cross webs shall be fully bedded. No over-hanging mortar or debris shall be allowed inside the reinforced cells unless otherwise on the drawings.

.3 Vertical reinforcing shall be provided full length without splicing. It may be installed after the first 1200mm of masonry is erected. Locate rods accurately in the cells as shown on the Drawings. Hold in position top and bottom. Fill cells containing reinforcement solidly with 20 MPa concrete grout, unless noted otherwise on Structural drawings. Consolidate by puddling when placing and again reconsolidate before plasticity is lost. Place concrete grout in lifts not exceeding 1200mm. Stop each lift 38mm below the top of a masonry unit.

.4 Refer to Structural and Architectural drawings for locations and grout strength.

3.10 CUTTING MASONRY

.1 Cutting of masonry units exposed in finished work shall be done with approved type power saw. Where electrical conduit outlet or switch boxes occur, grind and cut units before services installed. Quick saw not permitted for cutting block above grade.

.2 Obtain Consultants approval before cutting any part or area which may impair appearance or strength of work.

.3 Patching of masonry not permitted without Consultants approval.

3.11 BOND BEAMS

.1 Install concrete block bond beams where indicated and where required for bearing of structural members.

.2 Unless more stringent requirements are noted on Structural drawings, make bond beams of special channel blocks with two 15M reinforcing bars placed in bottom, and filled with 20 MPa concrete grout. Extend a minimum length of 200mm, each side of structural member.

3.12 REINFORCED LINTELS

.1 Install reinforced concrete block lintels at openings where steel lintels are not indicated.

.2 Cast and cure lintels on a plank. Set special channel lintel blocks using specified mortar. Place wood stops at each end of lintel to prevent movement.

.3 Refer to Structural drawings for lintel sizes and dimensions. As a minimum, place 25mm of 20 MPa concrete grout in voids, lay in two 15M reinforcing bars and place concrete to level of block sides. Rod and tamp concrete well without disturbing reinforcing. Allow lintels to cure 7 days before loading.

3.13 COORDINATION

.1 Provide openings in masonry walls where required or indicated. Provide reinforced lintels over all openings in both loadbearing and non-loadbearing walls.

.2 Accurately locate chases and openings, and neatly finish to required sizes. Refer to Mechanical and Electrical drawings and co-operate with all trades.

.3 Where masonry encloses conduit or piping, bring to proper level indicated and as directed. Do not cover any pipe or conduit chases or enclosures until advised that work has been inspected and tested.

.4 Build in frames and anchor bolts, and metal brackets for vanities, benches, counters, etc.

3.14 CLEANING

.1 On completion, remove excess mortar and smears using wood paddles or scrapers.

.2 Point or replace defective mortar to match existing, as required or directed.

.3 Clean concrete masonry walls exposed in the finished work in accordance with manufacture’s recommendations and NCMA TEK Bulletin #8-4A.

.4 Remove dirt and stains from masonry walls exposed in the finished work in accordance with manufacturer’s recommendations and NCMA TEK Bulletin #8-2A.

.5 Remove efflorescence from masonry walls exposed in the finished work in accordance with manufacturer's recommendations and NCMA TEK Bulletin #8-3A.

.6 Repeat cleaning operations until work is satisfactory.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Masonry accessories.
.2 Masonry flashing.

1.2 RELATED SECTIONS

.1	General Requirements	Division 01
.2	Masonry Procedures	Section 04 05 00
.3	Masonry Mortar and Grout	Section 04 05 13
.4	Masonry Anchorage and Reinforcement	Section 04 05 19
.5	Concrete Unit Masonry	Section 04 05 22
.6	Firestopping and Smoke Seals	Section 07 84 00

1.3 REFERENCES

.1 CAN/CSA-A371-04 (R2009), Masonry Construction for Buildings.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Horizontal Control Joint Filler: purpose-made elastomer for minimum compression of 25% of uncompressed size. Emseal Corporation: Greyflex.

.2 Vertical Control Joint Filler: preformed expanding elastomer for minimum compression of 25% of uncompressed size. Emseal Corporation: Greyflex.

.3 Lap Adhesive: recommended by masonry flashing manufacturer.

.4 Compressible Joint Filler at Penetrations and Top of Masonry Partitions:
- .1 AD Fire Protection System Inc.: A/D Firebarrier Mineral Wool Firestopping Insulation.
- .1 Fibrex Insulations Inc.: Fibrex Safing Insulation.
- .2 Roxul Inc.: RXL Safe Fire Stop Batt.

.5 Mechanical Fasteners: stainless steel, self-tapping.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Install continuous control joint fillers in control joints at locations indicated and under shelf angles.

.2 Install compressible joint filler at the top of masonry partitions that are not fire separations. Refer to Section 07 84 00 – Firestopping and Smoke Seals for joint treatment and fire separations.

.3 Install compressible joint filler and acoustical sealant at penetrations through walls and partitions between classrooms, both above and below ceilings.

3.2 CONSTRUCTION

.1 Lap joints 150mm and seal with adhesive.

END OF SECTION

PART 1 – GENERAL

1.1 DESCRIPTION

.1 Coordinate this work with the work of the steel joist supplier. Provide all necessary dimension and structural steel shop drawings to the steel joist supplier for the completion of their work.

1.2 WORK FURNISHED AND INSTALLED

.1 Separate column base plates
.2 Columns, beams, purlins, and girts
.3 Bracing
.4 Steel framing around roof and floor openings
.5 Diagonal supports at columns for deck or slabs
.6 Stair landing beams and hangers for steel stairs
.7 Structural steel door frames and sill angles
.8 Hoist beams
.9 Weldable reinforcing steel bars attached to structural steel
.10 Field connections to concrete and masonry

1.3 WORK FURNISHED AND NOT INSTALLED

.1 Anchor bolts
.2 Connection assemblies set in concrete
.3 Loose angle lintels that bear on concrete or masonry
.4 Shelf angles/plates and wall plates that bear on or are attached to concrete or masonry

1.4 WORK INSTALLED ONLY

.1 Installation of steel joists and steel bridging

1.5 RELATED WORK SPECIFIED SHEWHERE

.1	Grouting under base plates,	Section 03 30 00.
.2	Supply of steel joists,	Section 05 21 00.
.3	Steel deck,	Section 05 31 00.
.4	Metal fabrications,	Section 05 50 00.
.5	Cementitious Fireproofing,	Section 07 81 16.

1.6 REFERENCES

.1 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Quality Steel /

Structural Quality Steels.

.2 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA S16.1, Limit States Design of Steel Structures.

.4 CSA S136, North American Specifications for the Design of Cold Formed Steel Structural Members.

.5 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.

.6 CSA W48.1, Filler Metals and Allied Materials for Metal Arc Welding.

.7 CSA W59, Welded Steel Construction (Metal Arc Welding).

.8 CAN/CGSB 1.171, Inorganic Zinc Coating.

.9 CAN/CGSB 1.181, Ready Mixed Organic Zinc Coating.

.10 CISC/CPMA 1.73a, A Quick-Drying One-Coat Paint for Use on Structural Steel.

.11 CISC/CPMA 2.75, A Quick-Drying Primer for Use on Structural Steel.

.12 ASTM A53/A53M, Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

.13 ASTM A108, Standard Specification for Steel Bars, Carbon and Alloy, Cold Finished.

.14 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength.

.15 ASTM A325, Standard Specification for Bolts for Steel, Heat Treated 120/105 ksi Minimum Tensile Strength.

.16 ASTM A570/A570, Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.

.17 SSPC, Steel Structures Painting Council.

1.7 QUALITY ASSURANCE

.1 Structural steel fabrication shall be carried out by a firm that has been in structural steel business (for buildings) for at least five years and that is certified by the Canadian Welding Bureau under the requirements of CSA W47.1, Division 1 or 2.

.2 Erection of the structural steel and steel joists shall be carried out by the steel fabricator's own forces, unless written permission to sublet the Work is obtained from the Consultant. Welding shall be carried out by CWB approved welders under the supervision of a CWB approved firm.

.3 Engage a Professional Engineer to be responsible for the design, detailing and installation of all connections related to structural steelwork. Before submitting shop drawings, submit a letter signed and sealed by that Engineer stating that he has been engaged to undertake the responsibility for the above. Also submit a copy of that Engineer’s Certificate of Authorization, and proof of his liability insurance When requested, submit calculations signed and sealed by that Engineer. On completion of erection, submit a letter signed and sealed by that Engineer to certify that Work has been completed in accordance with all shop drawings reviewed by the Consultant and the Structural Engineer.

.4 Before the start of fabrication, supply the independent inspection and testing agency with mill test certificates or producer’s certificates satisfactorily correlated to the materials or products to which they pertain. The onus for ensuring that the materials and products can be properly identified according to grade or specification rests with the Contractor.

.5 Do not splice sections without the prior acceptance of the Consultant and the submission of pertinent shop drawings. Accepted splices will be required to develop the section. Each splice shall be given a non-destructive test by an independent inspection company acceptable to the Consultant. Testing shall be at the Contractor's expense. Evaluate results in accordance with CSA W59 and report to the Consultant.

1.8 TOLERANCES

.1 Conform to the fabrication and erection tolerances of CAN/CSA S16.

.2 In addition if more stringent tolerances are specified elsewhere to suit interfacing materials, the latter shall govern in such cases.

1.9 SHOP DRAWINGS

.1 Refer to Section 01 33 00 - Submittals. "Shop drawings" means erection diagrams and shop details. Shop drawings received after noon will be date-stamped as received the following working day.

.2 Submit to the Consultant for review before fabrication, 4 white prints of erection diagrams. Leave room on drawings for the stamps of the Consultant and the Structural Engineer. Check and sign before submission. Only 2 copies will be returned to General Contractor. The first submission of the erection diagrams to include a complete materials list indicating steel grades, paints, etc.

.3 Show orientation of bearing plates on erection drawings.

.4 In addition to beam designation marks, show beam sizes on erection drawings.

.5 Submit to the Consultant for review before the start of Work, 4 white prints of shop drawings. Leave room on drawings for the stamps of the Consultant and the Structural Engineer. Check and sign before submission. Only 2 copies will be returned to General Contractor.

.6 All shop drawings shall bear the seal and signature of the Professional Engineer responsible for designing the connections.

.7 The Professional Engineer designing the connections shall hold a Certificate of Authorization, and shall carry min. $1,000,000.00 in liability insurance.

.8 It is advisable to submit erection diagrams for review before preparing shop details. Include details of special conditions. Make erection diagrams. Copies of section details developed by VX Engineering Inc. will not be accepted as erection diagrams. If required, structural plans will be available “as-is” for use in the preparation of shop drawings provided that the title blocks are removed and provided that the Owner and the Owner’s

Consultants are not held responsible
for any errors or omissions on the drawings. CAD files of the structural sections, elevations and schedules will not be made available for the preparation of shop drawings.

.9 Show the sizes, spacing and the locations of structural steel, connections, attachments, reinforcing and anchorage. Include all necessary plans, elevation and details. Indicate size and type of fasteners. For welded connections use welding symbols in compliance with CISC and indicate clearly the length of weld. Prepare shop drawings using metric sizes and units. All documents shall carry the seal of a Registered Professional Engineer licensed to practice in the Province of Ontario, who shall be responsible for the design of connections and details, and the fabrication, temporary shoring and erection of all structural steel. Show also vent holes required for galvanizing process.

.10 Review of shop drawings by the Consultant and Structural Engineer is a precaution against oversight or error and solely to review conformance with general design intent. It is not a detailed check and must not be construed as relieving the Contractor of responsibility for making the Work accurate and in conformity with the Contract Documents. Design for which the Contractor is responsible under the Contract will not be reviewed. Work done prior to the receipt of the reviewed drawings will be at the risk of the Contractor. Review comments are not authorization for changes to the Contract price.

.11 Provide the office preparing shop drawings with a complete set of Contract Drawings and Specifications plus all Addenda and Change Orders.

.12 Do not release column shop details for fabrication before establishing on site the final elevations of the tops of supporting piers.

.13 Make corrections required by previous review before resubmitting drawings. Clearly indicate all changes and additions to previous submission. Do not add new details to drawings which have been stamped as reviewed or noted.

.14 After review, erection diagrams will be returned to the Contractor stamped to show one of the following:

.1 Reviewe - Reviewed with no comments.
.2 Note - Reviewed with comments noted on drawing. Submit two final record prints as soon as corrections are made.
.3 Resubmit - Reviewed with comments noted on drawing. Correct and resubmit for review.

Conform to the requirements of each authority that has reviewed the drawings.

.15 Allow a minimum of 15 working days for review of each submission of shop drawings in the Structural Engineer's office. Allow more time when large quantities of shop drawings are submitted. Submit in general conformity with the sequence of construction intended. Co- ordinate with the Consultant. Shop drawings received after noon will be date-stamped as received the following working day.

.16 Keep on site at all times a set of shop drawings bearing the review stamps of the Consultant and the Structural Engineer and use only these drawings and the Structural Drawings to erect structural steel. Neatly mark on the Structural Drawings changes issued during the course of construction.

.17 Show details by which steel assemblies, which are set in concrete, are to be connected to the formwork.

.18 If additional instructions are required from the Consultant, allow a minimum of five working days for the Structural Engineer to review and respond to the request for instruction.

1.10 SUBSITUTIONS

.1 Submit all proposals for substitutions to the Consultant in writing in advance of shop drawings. Identify each item clearly. Do not proceed with a proposed change unless it is accepted in writing

.2 Substitution of alternative sections will be allowed provided the new members have equal or greater capacity and stiffness and are of dimensions acceptable at proposed locations.

1.11 SITE CONDITIONS

.1 Determine any potential interference with existing services and protect from disruption and damage.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Rolled shapes and plates.
- .1 Wide flange sections: CAN/CSA G40.21, Grade 350W.
- .2 Hollow structural sections: CAN/CSA G40.21, Grade 350W, Class C.
- .3 Channels, angles and plates: CAN/CSA G40.21, Grade 300W
- .4 Cold formed shapes: ASTM A570/A570M Grade 50, Fy=345MPa
- .5 Standard S beams: ASTM A992, A572, Grade 50, Fy=345 MPa
- .6 Structural pipe: ASTM A53, Grade B, Fy=241 MPa

.2 Welded wide flange shapes: CAN/CSA G40.21, Grade 350W.

.3 Weldable reinforcing steel: weldable steel, grade 400W, deformed bars to CSA G30.18.

.4 Arc welding electrodes and equipment: CSA W48.1. Electrode Classification Number: E480XX.

.5 High-strength bolts: ASTM A325M and CAN/CSA S16. Bolts shall be identifiable by their head markings and galvanized whenever used to connect members which are galvanized or painted with zinc-rich paint.

.6 Machine bolts: ASTM A307.

.7 Anchor bolts: CAN/CSA G40.21, Grade 300W

.8 Stud anchors, headed: ASTM A108, Grades 1010 through 1020, Fy=345 MPa (50 ksi). Lengths of studs given on drawings are the lengths after welding.

.9 Load indicating washers: Coronet - Cooper + Turner

.10 Cast-in-place concrete anchor with threaded bolt: Structural Connection Insert Type EC-2FW - Acrow - Richmond.

.11 Drilled concrete anchor:

.1 Kwik-Bolt 3 – Hilti Carbon steel anchors to be used unless otherwise noted.

.12 Drilled masonry anchor:

.1 Hilti HIT HY20 with threaded HIT-A Rods and screen tube (for hollow masonry).
.2 Hilti HIT HY150 with HAS –E Standard rods (for solid of grouted masonry).

.13 Joint filler for exposed steelwork: Epoxy resin.

.14 Shop primer paint for steel receiving finish coat of paint on site: CISC/CPMA 2-75 except no lead- based paints allowed.

.15 Shop primer paint for steel receiving intumescent paint on site: Primer compatible with intumescent paint to be used. See Section 07800 (Fireproofing).

.16 Shop paint for steel without finish coat: CISC/CPMA 1-73a except no lead-based paints allowed.

.17 Zinc-rich primer and touch-up paint:

.1 inorganic: CGSB 1-GP-171M, or
.2 organic, ready mixed: CAN/CGSB 1.181-92.

.18 Ensure compatibility with specified topcoat.

.19 Galvanizing: CAN/CSA G164

.20 Grating: Galvanized safety grating. Minimum thickness of material 2mm. Banded ends. Bolted connections. Capacity 4.8 kPa unless noted otherwise on drawings. Maximum deflection 1/180th of span. Provide:

.1 Type W/F by Borden Products (Canada) Ltd.
.2 Type 19-2 by Fisher and Ludlow

.21 Checker plate: CAN/CSA G40.21, Grade 300W. Plate with rolled-in embossments to provide non- slip surface.

.22 Sliding bearing assembly: Galvanized top steel plate with a type 304 stainless steel highly polished lower surface and bottom elastomeric pad with a polytetrafluoroethylene (Teflon) upper surface. Static and kinetic coefficients of friction not to exceed 5% under 7MPa to 14MPa working stress. Assembly to have a working stress capacity of 7 MPa)

on lower pad. Elastomeric bottom pad to allow a 2% rotation of upper plate and still maintain a substantially uniform bearing pressure between plate and pad. . Manufactured by:

.1 Fabreeka Canada Ltd.
.2 Goodco Ltd.
.3 Structural Tech Corp. Ltd.

.23 Elastomeric bearing pad: Structural grade 50 durometer neoprene.

.24 Zinc-Rich Shop Primer Paint: CAN/CGSB-1.132.

2.2 CONNECTIONS

.1 Design connections to conform to CAN/CSA S16. Conform also to the CISC Handbook of Steel Construction, except as otherwise required by the specifications.

.2 Retain a Professional Engineer to be responsible for the design of all connections.

.3 In general, make shop and field connections with high-strength bolts or by welding. Use machine bolts only for secondary connections and at slotted holes with finger-tight bolts that are intended to accommodate movement.

.4 Pretension all high-strength bolts used in:

.1 wind bracing connections;
.2 connections where bolts are subject to tensile loadings;
.3 connections using oversized or slotted holes unless finger-tight bolts are required to accommodate movement; and
.4 connections required by CAN/CSA S16 to be pretensioned.

.5 Design non-composite beam connections for an end reaction due to the uniformly distributed load capacity of the member unless a greater reaction is noted on the Drawings.

.6 Use double angle headers or end connection plates whenever possible. Do not use single angle headers for beams greater than 530mm deep. Make minimum depth of headers and end plates one-half the beam depth. Provide seated beam connections with top clip angles. Cantilevered plate connections will only be accepted for secondary members carrying minor loads. Provide all eccentrically loaded spandrel beams with top and bottom flange connections for torsional restraint.

.7 Provide connections designed for a pass-through force equal to the smaller axial force where axial forces occur in beams framing in on opposite sides of a supporting member. Axial force is centred in smaller beam if beam sizes differ.

.8 Install web and flange stiffener plates at moment connections as required by connection design and detail but in every case when indicated on the drawings. If the shear generated in column web exceeds its shear capacity, reinforce the web.

.9 Provide at least one stiffener plate each side of web of beams continuous over columns unless another type of stiffener is shown on the Drawings.

.10 Design gusset plates at compression members for the force equivalent to twice the specified compression member force, or provide stiffeners to prevent gusset plate buckling.

.11 Provide moment connections at splices to maintain continuity of cranked beams. Provide stiffener plates to resist unbalanced flange forces at splices.

.12 Provide all wall supporting members (shelf angles, hangers, stubs, back braces, etc) which are attached to floor beams with adjustable connections capable to compensate for the deflection of the floor beams due to self-weight of concrete slabs. Anticipate beam deflection to be 20 mm. Alternatively, fabricate based on actual deflected shape of the beams as measured after concrete slabs are installed.

.13 Complete welded shop connections prior to galvanizing.

.14 Where slotted holes are required to accommodate deflection, provide slotted holes long enough to allow for deflection indicated plus construction tolerance assuming bolts are in centre of slots. Use A307 bolts. Bolts are to be finger-tight with burred threads to allow for movement during life of structure without bolts loosening.

.15 Where indicated on the drawings, connect to concrete using cast-in weld plates with headed stud anchors. Design and supply assemblies. Determine capacity of each anchor group considering edge distance, spacing and embedment.

.16 Connect new steel members to masonry or concrete using drilled anchors. Design, supply and install anchors. Determine the capacity of each anchor group considering edge distances, spacing, and a factor of safety of 4 minimum against failure. Activate wedge type anchors by applying pre-determined torque recommended by the manufacturer. Do not use epoxy anchors unless approved by Consultant. Do not field weld at connections with epoxy anchors.

.17 Where drilled anchors are shown on the drawings, but the embedment length is not shown, provide manufacturer’s standard embedment length.

2.3 FABRICATION

.1 Conform to CAN/CSA S16 and CSA W59.

.2 Orientate straight beams, which have cambers within allowable mill tolerances so that the resulting beam camber is up.

.3 Install stud anchors in the shop with end welds in accordance with the recommendations of the stud manufacturer. Lengths of studs given on drawings are the lengths after welding. Replace studs that crack in the weld or shank.

.4 Increase thickness of curved sections at no extra cost where necessary to fabricate and galvanize the required curvature or fabricate curved sections from plates at no extra cost where necessary to accommodate the required curvature.

.5 Reinforce holes through webs of beams as indicated on drawings or in accordance with design procedure set forth in the CISC Handbook of Steel Construction provided calculations are submitted as part of the shop drawings.

.6 Provide 16 mm diameter weep holes in base plates at all HSS columns, which are not made watertight or that are to be exposed to temperature changes.

.7 Provide vent holes in HSS sections where required for galvanizing process. Holes are not to exceed 16 mm diameter and are to be located so that any water inside HSS will drain away when HSS is in its final position. After galvanizing, fill vent holes with weld material, grind smooth and touch-up with two coats of zinc-rich paint.

.8 Where shop inspection is required, do not ship material to the site before it has been inspected.

2.4 LINTLS

.1 Structural Drawings do not show all lintels required. Refer to lintel notes and Typical Details on the Drawings.

.2 Provide lintels with a minimum of 150 mm bearing at each end but not less than the length of any specified bearing plate.

.3 .Weld or bolt together multiple member lintels. Provide spacers if separated. If angle seats are at different elevations provide steel packing.

.4 .Connect ends of suspended lintels to the structure and/or build into masonry to provide adequate restraint.

.5 .Connect ends of steel lintels to columns where openings are adjacent to columns.

2.5 PLATES AND ANCHORS

.1 Provide beams bearing on walls with bearing plates and wall anchors as specified.

.2 Weld steel members to bearing plates as required.

.3 Where bearing plate sizes are not noted on the Drawings, design bearing plates for a maximum factored bearing pressure of 1.65 MPa (240 psi) on masonry and 7.5 MPa (1100 psi) on concrete.

.4 Set beam bearing plates 12 mm back from edge of support.

.5 Extend beams for full length of bearing plates.

2.6 SUPPORTS AT COLUMNS

.1 Provide cap plates at tops of columns where required for support of deck, slab, joists or beams.

.2 Provide diagonal or cantilevered angles at sides of columns where required for support of deck or slab.

.3 Provide seat angles for support of masonry lintels above openings adjacent to columns. Unless otherwise noted on the Drawings, provide 76 x 76 x 9.5 steel angles attached to sides of columns. Length of seat to equal width of lintel minus 25 mm.

.4 Provide additional angle welded to column for support of precast or deck interrupted by column.

2.7 PAINTING AND GALVANIZING

.1 Clean steelwork prior to application of paint. Refer to CAN/CSA S16.

.2 Surface preparation in shop for paints shall be as follows:
- .1 Shop paint CISC/CPMA 1-73a: Clean off all grease and oil to SSPC SP1 and remove all loose rust, loose scale, dirt, weld flux, etc. by any suitable method.
- .2 Shop primer paint CISC/CPMA 2-75: Clean off all grease and oil to SSPC SP1. Clean steel to SSPC SP7 Brush-Off Blast Cleaning.
- .3 Zinc-rich primer paint and intumescent paint: Clean off all grease and oil to SSPC SP1. Clean steel to SSPC-SP6 Commercial Blast Cleaning, to an average surface profile of 0.04 mm (1.5 mils) or more.

.3 Apply paint under cover. Steel shall be dry when painted and paint shall be dry before loading for shipment.

.4 Apply zinc-rich primer paint not more than 24 hours after blast cleaning, but prior to any visible rust occurring on the surfaces. Do not apply when relative humidity exceeds 80%. Apply to achieve a dry film thickness of 0.08 mm (3 mils).

.5 Apply one coat of shop paint CISC/CPMA 1-73a to steelwork in the shop with the exception of:
- .1 Members to receive a finish coat of paint on site for which a CISC/CPMA 2-75 shop primer is required
- .2 Members to receive intumescent paint on site for which a compatible shop primer is required
- .3 Members for which zinc-rich paint is specified
- .4 Galvanized members
- .5 Surfaces encased in or in contact with cast-in-place concrete including top flanges of beams supporting slabs
- .6 Surfaces and edges to be field welded for a distance of 50 mm from the joint.
- .7 Contact surfaces of slip-resistant type joints assembled with high-strength bolts.
- .8 Surfaces to receive spray fireproofing

.6 Unless otherwise noted, apply one coat of primer paint (CISC/CPMA 2-75) in the shop for steel to receive a finish coat of paint on site.

.7 Unless otherwise noted, apply one coat of compatible primer paint in the shop for steel to receive intumescent paint on site.

.8 Only paints tested to ASTM E736 and approved by the spray fireproofing supplier may be used for steel which will receive spray fireproofing.

.9 Apply galvanizing to:
- .1 Shelf angles and hangers in exterior walls
- .2 Lintels in exterior walls
- .3 Exposed exterior steel members
- .4 Other steel noted on the Drawings

.10 When welding after galvanizing is in place, grind away galvanizing at areas to be welded. Touch up with two coats of zinc-rich paint.

.11 Apply primer paint to architecturally exposed surfaces without runs or sags. Sand down and repaint areas not acceptable to the Consultant.

.12 Apply touch-up paint after erection to all areas which have been missed, field welded, scraped or chipped using the same paint as the shop coat or primer.

.13 Clean surfaces down to bare metal and apply two coats of zinc-rich touch-up paint to any galvanized surface, which has been damaged or field welded, and which is accepted by the Consultant as being capable of repair without galvanizing.

.14 Clean and prepare surfaces of bolts, which will receive a finished coat of paint in the same manner as the connected steelwork.

.15 At exposed exterior structural steel framing members which are to receive a fire-resistant coating, as specified in Section 09 96 43, apply one coat of zinc-rich primer paint, compatible with specified coating. Over zinc-rich primer, apply "Carboguard 888" primer supplied under Section 09 96 43. Comply with product manufacturer's printed instructions for preparation of steel, application of product (over zinc-rich primer), and handling after application.

2.8 EXPOSED STEEL

.1 Conform to the requirements of the A.I.S.C. Specification for Architecturally Exposed Structural Steel and to the additional requirements given below when fabricating and erecting steel members which will remain permanently exposed to view.

.2 Remove all imperfections which are unsightly from members permanently exposed to view. Remove mill and shop marks.

.3 Provide continuous welding at exposed joints or fill between welds with an approved epoxy resin filler finished to the same profile as the adjacent weld. Joint shall be weathertight and suitable for painting.

.4 Exposed welds shall be smooth. Hide bolts in bolted connections. Where exposed bolted connections are permitted, adjacent bolt heads shall be on same side and extensions of shank beyond nuts shall be uniform and not exceed 20 mm.

.5 Do not mark surface with marks that are visible after painting.

PART 3 – EXEXUTION

3.1 CONSTRUCTION REVIEW

.1 General Review during Construction by the Consultant and Structural Engineer and the services of the independent inspection and testing agencies appointed by the Owner are undertaken so that the Owner may be informed as to the quality of the Contractor's performance and for the protection of the Owner. They will be carried out by examination of representative samples of the Work.

.2 The Contractor will receive copies of the construction review reports and the results of material tests. He will thereby be informed of any defects or deficiencies found. The provision of this information does not relieve the Contractor of his responsibility for the performance of the Contract and he shall implement his own supervisory and quality control procedures.

.3 Bring to the attention of the Consultant and Structural Engineer any defects or deficiencies in the Work, which may occur during construction together with a proposal for remedy. The Structural Engineer will decide what corrective action may be taken. The Consultant will issue the necessary instructions.

3.2 COOPERATION

.1 Cooperate with all engaged on the Project. Exchange with related trades shop drawings and other data required to coordinate and schedule Work. Deliver material for installation by other trades when required.

.2 Provide where shown or required, holes and copings for connection and clearance of the Work of other trades. Show on shop drawings before submitting for review. Holes in members shall not cause any appreciable reduction in strength.

.3 Do not cut holes in the field unless sizes and locations are accepted by the Consultant in each case. Accepted field cutting and welding shall be undertaken by this Trade.

.4 Supply and install framing around openings in steel roof and steel floor decks in accordance with Typical Details and Drawing Notes.

.5 Maintain horizontal bracing and its connections below the underside of the deck so as not to interfere with the seating of the latter.

3.3 EXAMINATION OF WORK

.1 Do not begin operations before making a thorough examination of existing conditions and the Work of related trades. Report inconsistencies before proceeding.

3.4 INSPECTION AND TESTING

.1 The Consultant will appoint an independent inspection and testing agency. Notify the Consultant two weeks in advance of the date when the first Work will be ready for inspection.

.2 Pay for the cost of inspection from the Cash Allowance.

.3 Assist the agency in its work. Do not commence fabrication until details of inspection have been worked out with the inspection agency.

.4 Work will be inspected when erected. Items to be cast into concrete will be inspected on site before being installed.

.5 The inspection agency will submit reports to the Consultant, Structural Engineer, Contractor and Municipal Authorities covering the Work inspected and provide details of errors or deficiencies observed.

.6 Inspection will include:

.1 Checking that the mill test certificates or producer's certificates are satisfactorily correlated to materials and products supplied for the project or that legible markings were made on the material and products by the producers in accordance with the applicable material or product standards. Where this is not possible, notify the Structural Engineer and carry out sample tests as described below when required by the Structural Engineer.
.2 Confirming that all materials meet specifications.
.3 Sampling fabrication and erection procedures for general conformity with the requirements of the Contract.
.4 Checking welders' CWB Certification.
.5 Checking fabricated members against specified member shapes.
.6 Checking fabricated members against allowable sweep and camber.
.7 Checking fabricated members against specified camber.
.8 Visual inspection of all welded connections including spot checking of joint preparation and fit up.
.9 Sample checking bolted joints.
.10 Sample checking stud anchors.
.11 Sample checking of drilled concrete and masonry anchors.
.12 Sample checking that tolerances are not exceeded during erection including fit-up of field welded joints.
.13 Inspection of field cutting.
.14 Shop paint, including surface preparation, and field touch-up.
.15 Galvanizing and field touch-up.
.16 Grouting under base plates and bearing plates.

.7 Arrange for the inspector to be present during the welding of 25% of moment connections and 25% of butt welds in direct tension.

.8 Sample testing: When required, test coupons will be taken and tested in accordance with CSA G40.20 to establish identification. Cut samples from member locations selected by Structural Engineer and provide to inspection and testing agency. Make good the locations if requested, at no extra cost, by adding new plates and welds acceptable to the Structural Engineer. The agency will have the samples tested for mechanical properties and for chemical composition and will classify the steel as to specification.

.9 Arrange for the inspector to start field inspection as soon as each section of the Work is completed, plumbed, bolts tightened and field welding finished.

.10 The inspector will check high-strength bolts in a representative 10% of bolted connections by torque testing each bolt. He will torque test 10% of the remaining bolts at random, but not less than 2 bolts in each connection. He will remove nuts from 1% of all bearing bolts and check that thread is excluded from the shear planes.

.11 The inspector will randomly select and pull test 5% of all types and sizes of drilled in anchors installed on a weekly basis, but not less than one anchor of each type and size. Pull test to twice the design tension capacity of the anchor given by the manufacturer. Submit reports to Consultant within one week of testing. Reports to indicate each anchor location, test load and mode of failure, if applicable. Notify Consultant immediately if any anchor fails the pull test.

.12 The inspector will visually check all the adjustable connections at wall supporting members to ensure the connections have been finalized after the concrete is poured.

3.5 FILED MEASUREMENTS

.1 Make field measurements necessary to ensure the proper fit of members.

.2 Identify on shop drawings dimensions, which have been obtained by field measurement.

3.6 ERECTION

.1 Comply with the requirements of CAN/CSA S16.

.2 Submit a description of proposed erection methods and sequence to the Consultant for his records if requested.

.3 Make adequate provision for all loads acting on the structure during erection. Provide erection bracing to keep the structure stable, plumb and in true alignment until the completion of masonry Work and the completion of floor and roof decks which together provide the permanent bracing. Prepare erection bracing drawings signed and sealed by a professional engineer and keep these drawings on site until erection bracing is no longer required.

.4 Set column base plates with levelling screws to the proper elevation ready for grouting. Lift base plates for inspection when so directed.

.5 Column base plates and beam bearing plates shall be grouted as soon as steelwork is completed. Do not add load on steelwork until grouting is completed and grout strength has reached at least 20 MPa.

.6 Do not make permanent connections until as much of the structure as will be stiffened thereby has been properly aligned.

.7 Adjust and finalize connections at wall supporting elements affected by floor beam deflections after concrete is poured.

.8 Report ill-fitting connections to the Consultant before taking corrective measures.

.9 Do not weld in an ambient temperature below -17°C. Preheat material adjacent to welding areas when ambient temperature is between -17°C and +4oc.

.10 Remove slag from all completed welds so that they may be visually inspected.

3.7 DRILLED ANCHORS

.1 Conform to requirements of manufacturer. Use hammer drill to make holes. Turn off hammer when drilling masonry with voids. Hole diameters must never exceed those required by manufacturer. Tighten all expansion anchors using a torque wrench unless finger-tight is required by the Drawings to allow for movement. Unless otherwise noted on drawings, provide manufacturer’s standard embedment length into solid concrete.

.2 Do not cut reinforcement to accommodate anchors. Relocate anchors, at no extra cost to the Contract, when obstructions prevent drilling holes to required depth in locations specified. Obtain Consultant's approval of new location before drilling hole. Fill all abandoned holes with grout.

.3 Arrange for manufacturer's technical representative to be present during installation of first few anchors of each size and type. Submit site reports by manufacturer to Consultant within one week of each visit. Reports to indicate anchor sizes and types installed, locations, and names of those present during installation.

3.8 SUSPENDED LOADS

.1 Do not overstress members supporting suspended loads. Hanger loads shall not exceed one kN (220 pounds). Loads from mechanical and heavy electrical services suspended from the steelwork shall not exceed the load allowance provided for such services and shall be distributed uniformly. Prevent torsion from hangers connected to beams by alternating their positions on either side of members. Do not apply twisting loads to joists and make attachment using U-bolts with double hangers or other devices that will centre the hanger load on the joist. Loads shall only be suspended directly at the panel points of joists, unless the chords of the joists have been specifically designed to support the concentrated loads.

.2 Steel Beams: Vertical loads must be applied so that they do not cause twisting of the beams or excessive bending of the flanges. Lateral loads are not to be applied to beams unless approved in writing by the Consultant's structural engineer.

3.9 REJECTED WORK

.1 Do not deliver to the site materials, which are known not to meet the requirements of the Specifications. If rejected after delivery, remove immediately from site.

.2 Where review reveals materials or workmanship which appear to have failed to meet the specified quality or tolerances, the Consultant shall have the authority to order tests made of materials; to order detailed field surveys and measurements; to order a structural analysis of the existing elements and to load test the structure. All such Work will be carried out in order to assist in determining whether the structure may, in the opinion of the Consultant, be accepted, with or without strengthening or modification. Testing shall meet the requirements of the Ontario Building Code. All expense incurred shall be chargeable to the Contractor regardless of the results.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Painting and Coating	Section 09 90 00
.2	Electrical	Division 26, 27, 28

1.2 REFERENCES

.1	CAN/CSA O80-Series	Standards for Wood Preservation
.2	CSA O121	Douglas Fir Plywood
.3	CSA O141	Softwood Lumber
.4	CSA O151	Canadian Softwood Plywood
.5	CSA B111	Wire Nails, Spikes and Staples.
.6	National Lumber Grading Authority (NGLA), Standard Grading Rules for Canadian Lumber	

1.3 DELIVERY AND STORAGE

.1 Do not deliver materials until they are required for incorporation into the work.

.2 Protect materials, under weatherproof cover, both in transit and on site.

.3 All exterior and interior finish materials shall, upon delivery, be neatly stored in a dry place and shall be protected from damage due to weather, water, or any other cause.

1.4 PROTECTION

.1 Protect fire-retardant materials against high humidity and moisture.

.2 Protect cabinets with 6 mm plywood or other suitable sheet material.

.3 Protect installed hardware from damage and blemishes.

PART 2 – MATERIALS

2.1 MATERIALS

.1 Wood materials: straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

.2 Lumber grade and moisture content:

.1 Comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code.

.2 Comply with CSA Standard O141 Softwood Lumber. Use only grade marked lumber.

.3 All wood materials:

.1 Well-seasoned NLGA, free from defects which impair strength and durability.
.2 Moisture content limit:
.1 S-GRN: Unseasoned
.2 S-DRY: Maximum 19% moisture content
.3 KD: Maximum 15% moisture content

.4 Pressure Treated Lumber to CSA O80.

.5 Blocking, cant strips, grounds, nailing strips:
.1 NLGA No. 2 Ontario White Pine, No. 2 Red Pine, all complying with the grading rules of the NLGA for Construction,
.2 Douglas Fir dense complying with COFI standard grading and dressing rules.

.6 Douglas Fir plywood:
.1 comply with CSA Standard O121, COFI Exterior.
.2 Western softwood plywood - comply with CSA Standard O151, COFI Waterproof glue WSP. Exposed two sides shall be grade G2S, and exposed one side shall be grade G1S.

.7 Wood preservative
.1 Pentox Green preservative and Osmose Cut End preservative, as manufactured by Osmose Pentox Inc.; Pentox Conservator Clear for painted wood.
.2 For painted surfaces use clear type and for concealed surfaces use green tinted type.

.8 Fire Retardant Treatment: To ULC S102; flame spread rating 25 or less.

.9 Rough hardware:
.1 nails, screws, bolts, lag screws anchors, special fastening devices and supports as required for the erection of all carpentry items.
.2 For preservative treated wood, use only stainless steel hardware, with the following exception:
.1 where galvanized steel items, such as gates, flashings, etc., are being attached to wood, galvanized steel fasteners shall be used.
.3 Do not mix stainless steel with galvanized steel; contact of these dissimilar metals can cause galvanic corrosion.
.4 Stainless steel hardware to be type 317.
.5 Galvanized hardware must be hot-dipped galvanized as follows:
.1 fasteners meeting CAN/CSA-G164 minimum zinc coating of 600 g/m2 (ASTMA153 Class A or B1 G 185)
.2 connectors meeting CAN/CSA-G164 minimum zinc coating of 600 g/m2 (ASTM A653 Class G-185 sheet) or better.
.3 Electroplated galvanized hardware is not permitted.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

.2 Lay out work carefully and to accommodate work of other trades. Accurately cut and fit; erect in proper position true to dimensions; align, level, square, plumb, adequately brace, and secure permanently in place. Join work only over solid backing.

3.2 INSTALLATION – GENERAL

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

.11 Do not regard blocking, strapping and other rough carpentry indicated as complete or exact. Provide rough carpentry items required for the installation of the Work of other Sections.

.12 The use of pressure treated wood is required for the following:

- .1 Wood in direct contact with the ground or framed into concrete below ground level.
- .2 Structural wood elements within 150mm of ground.
- .3 In termite areas, for all structural wood elements within 450mm of ground.
- .4 Wood framing members without a dampproof membrane separating the wood framing member from concrete in contact with the ground.
- .5 Building components where moisture may accumulate.

.13 Aluminum must not be in direct contact with pressure treated wood. Provide minimum 6mm spacing between aluminum products and treated wood, with10mil polyethylene barrier and polyethylene or nylon spacers.

3.3 INSTALLATION - ROUGH CARPENTRY

.1 Blocking and Grounds: Fasten wood nailers, blocking, bucks, grounds curbs, copings and strapping solidly to supporting materials in true planes so that they will remain straight and not be loosened by work of other Trades.

.2 Framing: Do all wood framing in accordance with the Ontario Building Code -latest version, and to CAN 3 086 as applicable.

.3 Wood Cants, Copings: Fasten wood cant blocking to structure with 19 mm. dia. bolts 760mm o.c. Fasten curbs as indicated. Wood cants, curbs and copings to be preservative treated. Plywood to be exterior grade.

.4 Preservative:

.1 Apply preservative to concealed wood members in contact with exterior walls and roof before fixing in place.
.2 Apply preservative to all cut ends of pressure treated wood.
.3 Preserve all other wood indicated to be preserved. Use clear preservative for items to be painted.
.4 Preserve wood by immersing in preservative for at least one hour.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

.1 Provide all casework indicated on drawings. Casework shall have melamine finish at both exposed panels and concealed interior faces and edges.

1.2 RELATED WORK

1.	Rough Carpentry	Section 06 10 00
2.	Resilient Base	Section 09 65 00
3.	Painting and Coating	Section 09 90 00
4.	Electrical Work	Division 26, 27, 28

1.3 QUALIFICATIONS

.1 All Work to conform to minimum standard for premium Grade Work as specified in Quality Standards for Architectural Woodwork prepared by Architectural Woodwork Manufacturers Association of Canada.

1.4 INTENT

.1 The intent of this Section is that the casework shall be manufactured and finished at the plant, delivered to the Site and immediately installed by this Section including provision of necessary strapping, backings, bearers, rough hardware and finish hardware. Touch up finish immediately prior to completion of the Work and leave in perfect condition.

.2 It is also the intent of this Section that all casework be manufactured with low or no VOC products, to minimize VOC emissions in the finished products.

1.5 SUBMITTALS

.1 Submit Shop Drawings of all finish carpentry and in accordance with Section 01 30 00.

.2 Draw Shop Drawings in related and/or dimensional positions with sections. Scale minimum 1:10.

.3 Shop Drawings shall show fabrication details, materials, jointing, description of anchorage and hardware. Dimensions shall be based on actual measurements taken at the Site. Provide details and dimensions for all fittings and the like for mechanical and electrical connections to this work.

.4 Submit product data for all finishes.

.5 Submit samples of materials, construction method and finishes for Consultant's approval.

.6 Submit samples of all hardware.

.7 Submit one full size sample of proposed units of Type selected by Consultant prior to proceeding with the remainder of cabinet work.

1.6 CO-OPERATION

.1 Co-operate with other Sections and do all cutting, fitting and making good of own work for all Sections as may be necessary to carry out the true intent of the Drawings and Specifications. Examine the work and materials installed by others insofar as it affects this Work, and report to Consultant any such work not done properly.

1.7 MEASUREMENTS

.1 Take necessary measurements at the Building of spaces and conditions to which work must conform or through which access is required. Take such measurements prior to fabrication of the Work of this Section and in ample time to avoid delays in the Work.

1.8 DELIVERY AND STORAGE

.1 Do not deliver finished material during rain or damp weather or until "Wet Trades" have completed their work and windows are glazed or covered. Carefully protect from damage of any kind.

1.9 WARRANTY

.1 Provide an extended Warranty to the General Conditions of the Contract to two (2) years from date of Substantial Performance of the Contract.

.2 The warranty shall cover replacing, reworking and/or refinishing to make good defects in architectural woodwork due to faulty workmanship or defective materials, which appear during this two (2) year period. Work showing defects during this period shall be replaced or made good without delay and at no cost to Owner.

PART 2 – MATERIALS

2.1 MATERIALS

1. All wood must be straight and true, dressed 4 sides and conform to details. It must conform to official grading rules of Canadian Lumberman's Association for quality and

moisture content. It must conform to NBC Structural requirements and be grade stamped according to CSA Standards 0140 or 0151. Stained woods and plywoods must be selected for colour and grain uniformity.

2. All materials shall be low VOC products.
3. Softwood Lumber: Conform to CAN/CSA 0141 and National Lumber Grades Authority requirements.
4. Hardwood Lumber: Conform to National Hardwood Lumber Association (NHLA) requirements. Provide stain finish to AWMAC Premium Grade. Select white hard maple moisture content 7% or less in accordance with:
   .1 National Hardwood Lumber Association (NHLA)
   .2 AWI/AWMAC premium grade, moisture content as specified.
5. Hardwood Plywood: Conform to CSA 0115 and AWMAC. Select white hard maple, plain sliced and bookmathed face veneer core as specified. Exposed faces to be natural grade per AWMAC. Interior of cupboard and closet doors to be classified as exposed faces.
6. Canadian Softwood Plywood: Veneer plywood conforming to CSA 0151.
7. Douglas Fir Plywood: Veneer plywood conforming to CSA 0121.
8. Poplar Plywood: Veneer plywood conforming to CSA 0153.
9. Wood Particleboard:

Conform to CAN3-0188.1. fabricated from 100% recycled or recovered wood fibre, containing no added urea formaldehyde, and certified by the Forest Stewardship Council (FSC). Conform to ANSI A208.1/Grade M-2, with formaldehyde emissions of 0.09 ppm or less.

.1 Nu Green 2 Particleboard as manufactured by Uniboard, or equal by Panolam Industries or Flakeboard.

10. Hardboard: Conform to CGSB 11-GP-3M.
11. Nails and Staples: Conform to CSA B111.
12. Glue: Waterproof synthetic resinous glue, of approved type for general carpentry work and thermo-setting type for plastic laminate work, low VOC emitting. Adhesives shall be free of urea formaldehyde. All adhesives to conform to CSA 0112 Series.
13. Melamine Faced Particleboard: Melamine Faced Particleboard: to CAN3-0.188.1-M78, grade "H" particleboard sanded faces, 13 mm, 16 mm, 19 mm, 28.6 mm and 32 mm thickness, faced with laminated plastic. Melamine resin impregnated cover sheet with coloured and/or patterned paper inner layer. Melamine shall be thermally fused to rigid particle board substrate. Melamine faces shall be 120 Gram Weight Paper. Colour to be Hardrock Maple.
14. Melamine Faced Particle Board Edge Banding: Solid polyvinylchloride (PVC), 3 mm thickness x full width of board, wood core, wood grain type to match melamine face by Canada Wood tape or approved colour equal. Edging rigid PVC with a measured degree of hardness of " 95 shore D" and thickness of "3mm (+0.15mm, -0.2mm)" with the primer side having a concave measuring 0.10 to 0.25mm.
14. Finish at Base Framing: Rubber base. Refer to Section 09 65 00.

2.2 CABINET HARDWARE

.1 The hardware specified herein is to be provided as listed. Any proposed substitutions must be submitted to the Consultant for approval prior to shop drawing submission. Proposed substitutions must be equal or better quality than the specified items and will be considered at the Consultant's discretion. Hinges must be as specified.

.2 Furnish and install all hardware to custom millwork as follows:

Hardware for Adjustable Shelves			Finish
Pin Supports	Richelieu	Metal 7mm round	Nickel

Provide associated matching shelf support accessories.

3. Keying:
   - .1 All locks in a room to be keyed alike.
   - .2 Provide 6 extractor keys.

2.3 FABRICATION – GENERAL

.1 Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Do not proceed until remedial instructions are received.

.2 As far as practical, assemble work at the shop and deliver to the job ready for installation. Leave ample allowance for fitting and scribing on the job.

.3 Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs. All fixed elements must be glued and screwed or dowelled to ensure rigid construction.

.4 Comply with glue manufacturer's recommendations for lumber moisture content, glue life, pot life, working life, mixing spreading, assembly time, time under pressure and ambient temperature.

.5 Resilient base around all toe spaces where indicated on the drawings is specified in Section 09 65 00.

2.4 CASEWORK SHELVING UNITS

.1 Casework shall be melamine finish.

.2 All exposed gables and all shelving in open shelving units, shall be thermofused melamine finish. Interiors and concealed gables cabinetry shall be thermofused melamine panels. Melamine to be hardrock maple in colour. Panels to be installed with vertical grain pattern.

.3 All exposed edges of melamine panels to have 3mm PVC edging, in colour to match laminate. All other edges to be sealed and moisture proofed before assembly.

.4 Unless noted otherwise on drawings, provide all floor cabinets with 115mm high base of 19 mm water resistant plywood; melamine panels are not to come into contact with the floor. Provide 115mm high toe space set back from front face of cabinets 115 mm minimum. Provide one coat of sealer to cabinet base; ensure compatibility with base adhesive. Plywood base must be concealed by base.

.5 All cabinet work shall be factory assembled in modular, unitized construction. Carefully machine with dovetailed mortised and tenoned or blind dado joints. Each unit shall be self-supporting and designed to be bolted together with fasteners inside units with plastic plugs over fasteners. All joints to be securely glued. Fabricate units as per Drawings and as specified.

.6 Gables to be 19mm thick panels, with PVC edging on all exposed edges.

.7 Provide top front, top back rails and posts of solid maple hardwood 19mm x 50mm framing members, tongue and grooved together and dadoed to gables.

.8 Bottoms to be 19mm melamine panels, with PVC edging.

.9 Back panels shall be minimum 19mm thick melamine panels with PVC edge trim, four sides. Where back panels are exposed to view, they shall be 19mm melamine faced panels.

.10 Shelves to be 19mm melamine panels, finished all 4 sides edges, with PVC edging on all four edges.

.11 Sit all adjustable shelves on pin hole with clips, recessed into gables.

.12 Depth of shelving are to be as noted on the drawings; full depth of unit, Provide centre pilaster to all shelves 1200mm long or over.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Set and place all materials and components in place, rigid, plumb and secure.

.2 Provide heavy duty fixture attachments for wall mounted cabinets.

.3 Install all shelving.

.4 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Surface preparation.
.2 Underslab vapour retarder.

1.2 RELATED SECTIONS

1.	General Requirements	Division 01
2.	Cast in Place Concrete	Section 03 30 00
3.	Concrete Floor Finishing	Section 03 35 00

1.3 SUBMITTALS

.1 Submit under provisions of Section 01 33 00 – Submittal Procedures.

.2 Submit Product data for the Products specified in this section. Include manufacturer's printed application recommendations and certificate stating that Products meet or exceed specified requirements.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Apply self-adhering sheet waterproofing at substrate temperatures of +4°C or above. Do not apply to frozen concrete.

1.5 QUALITY ASSURANCE

.1 Submit in writing, a certificate stating that the applicator of the waterproofing membranes specified in this section is recognized by the manufacturer as suitable for the execution of the work.

.2 Install the Products of this section in accordance with the printed instructions of the membrane manufacturer and these specifications.

.3 Maintain one copy of the manufacturer's instructions on site.

.4 The membrane manufacturer's representative shall visit the Place of the Work to provide instructions for and supervision of the work of this section prior to the commencement of the work and during its execution.

.5 Waterproofing components shall be produced by one manufacturer, including sheet membranes, liquid sealants, primers, mastics and adhesives.

1.6 STORAGE AND HANDLING

.1 Store self-adhering membrane on pallets and cover if left outside. Keep materials away from sparks and flames. Store where temperature will not exceed 32 °C for extended periods of time.

.2 Store adhesives and primers at temperatures of 5C and above.

.3 Protect materials from direct sunlight until ready for use.

1.7 WARRANTY

.1 Provide a warranty for waterproofing work in accordance with the Contract Requirements, but for the following time periods.

.2 The applicator shall warrant that the waterproofing system shall stay in place and remain watertight for a period of two years.

.3 The manufacturer shall warrant that the waterproofing system shall remain watertight and shall not leak as a result of faulty materials for a period of five years.

.4 Warranties shall be issued to the Owner within two (2) Working Days following the date of Substantial Performance of the Work.

PART 2 – PRODUCTS

2.1 UNDERSLAB VAPOUR RETARDER AND ACCESSORIES

.1 Underslab Vapour Retarder:
- .1 Stego Industries, LLC: Stego Wrap Class A Vapour Retarder.
- .2 W.R. Meadows of Canada, Sealtight Perminator, 0.254mm thick (10mil).

.2 Joint Tape:
- .1 Stego Industries, LLC: StegoTape
- .2 W.R. Meadows of Canada, Sealtight Perminator Tape, 100mm wide.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify substrate surfaces are sound, durable, and free of matter detrimental to adhesion or application of waterproofing system, clean, dry, smooth and free of voids.

.2 Verify items which penetrate surfaces to receive waterproofing are securely installed.

.3 Verify that the floor slab base course is in place and compacted prior to commencing installation of underslab vapour retarder.

.4 Verify that concrete is cured at least 14 days.

.5 Commencement of the work shall mean acceptance of the prepared substrate.

3.2 SURFACE PREPARATION

.1 Protect adjacent surfaces not designated-to receive waterproofing.

.2 Clean and prepare surfaces to receive membranes in accordance with manufacturer's instructions.

.3 Do not apply waterproofing to surfaces unacceptable to manufacturer.

.4 Patch all holes and voids and smooth out any surface misalignments. Remove all sharp protrusions.

3.3 APPLICATION: UNDERSLAB VAPOUR RETARDER

.1 Lay vapour retarder over prepared underslab base course.

.2 Lap sides and ends of sheets 150mm and seal with joint tape.

.3 Seal junctures with walls by folding sheet up for full slab thickness and sealing to wall with joint tape.

.4 Seal around all protrusions.

.5 Where vapour retarder is damaged, patch with a piece of vapour retarder overlapping damaged area by 150mm in all directions. Seal all edges with joint tape.

.6 Install under Ground Floor slab-on-grade except for areas where rigid panel waterproofing is specified.

3.4 INSPECTION AND REPAIR

.1 Inspect and repair waterproofing and vapour retarder system immediately before covering.

.2 Cover tears and inadequate overlays with detail strip and seal the patch edges with pointing mastic.

3.5 BACKFILLING

.1 Backfill against vertical walls immediately after protection board installation.

.2 Use care and caution when backfilling to avoid damaging the applied waterproofing system.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDED

.1 Batt Insulation.

1.2 RELATED SECTIONS

.1	Division 1 - General Requirements.	
.2	Rough Carpentry	Section 06 10 10
.3	Fire Stopping and Smoke Seals	Section 07 84 00
.4	Non – Structural Metal Framing	Section 09 22 00
.5	Mechanical	Division 23

1.3 REFERENCES

.1 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fibre, for Buildings.

PART 2 – PRODUCTS

2.1 INSULATION

.1 Batt Insulation:
- .1 Mineral fibre to CAN/ULC-S702, Type 1-unfaced, thickness as indicated.
- .2 Thermal Resistance: RSI value of 2.1 per 89mm thickness.
- .3 Acceptable Products:
  - .1 CertainTeed Insulation Canada Inc.: Sustainable Insulation Fibre Glass Building Insulation.
  - .2 Owens Corning Canada Inc.: EcoTouch Pink Fiberglas Insulation.

2.2 ACCESSORIES

.1 Insulation Clips: Impale type, perforated 50mm by 50mm cold rolled galvanized carbon steel 0.8mm thick, spindle of 2.5mm diameter annealed steel, length to suit insulation, 25mm diameter washers of self-locking type.

.2 Retaining Mesh: Galvanized steel, hexagonal wire mesh.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify that substrate surfaces, adjacent materials and installation conditions are rec1dy to accept the work of this section. Ensure insulation materials and surfaces are dry.

.2 Beginning of installation means acceptance of substrate and conditions.

3.2 INSULATION INSTALLATION

.1 Supply insulation to Section 06 10 10 - Rough Carpentry as required for building-in to work of that section.

.2 Install insulation to maintain continuity of thermal protection and acoustical separation of building elements and spaces.

.3 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation. Trim insulation neatly to fit spaces.

.4 Do not compress insulation to fit into spaces. Install in spaces without gaps or voids.

.5 Install friction fit insulation tight to framing members.

.6 On sloping surfaces or in ceiling applications retain insulation in place with impale type fastener spaced at 600mm on centre. Adhere fastener to substrate with adhesive compatible with fastener and substrate.

.7 In unfinished unexposed applications retain insulation in place with wire mesh secured to framing members with fasteners appropriate for framing material.

.8 Keep insulation minimum 75mm from heat emitting devices such as recessed light fixtures.

.9 Notify the Consultant upon completion of insulation installation to allow for inspection before work is enclosed and obscured.

3.3 PROTECTION

.1 Protect insulation under provisions of Section 01 56 00 -Temporary Controls.

.2 Protect insulation from harmful weather exposures and physical abuse.

.3 Provide temporary coverings or enclosures when insulation will be subject to damage and cannot be protected by permanent construction immediately after installation.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDED

.1 Sheet vapour retarders.
.2 Vapour retarder accessories.

1.2 RELATED SECTIONS

.1	General Requirements	Division 01
.2	Board Insulation	Section 07 21 13

1.3 REFERENCES

.1 CAN/CGSB-19.21-M87, Sealing and Bedding Compound, Acoustical.
.2 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

PART 2 – PRODUCTS

2.1 SHEET VAPOUR RETARDER

.1 Polyethylene Film: to CAN/CGSB-51.34, 0.15mm thick.

2.2 ACCESSORIES

.1 Joint Sealing Tape: air resistant pressure sensitive adhesive tape, type recommended by vapour retarder manufacturer, 50mm wide for lap joints and perimeter seals, 25mm wide elsewhere.

.2 Sealants: Non-drying, non-hardening synthetic rubber to CAN/CGSB-19.21. Acceptable Product: Tremo Ltd., Tremco Acoustical Sealant.

.3 Staples: minimum 6mm leg.

PART 3 – EXECUTION

3.1 INSTALATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder where indicated on warm side of exterior wall, ceiling and floor assemblies prior to installation of wall finish to form a continuous vapour 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 retarder as follows:
- .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
- .2 At metal stud substrate apply bead of sealant at each stud. Lap sheet over sealant and press into sealant bead. Affix sheet temporarily with joint sealing tape.
- .3 At wood substrate install staples through lapped sheets at sealant bead into substrate.
- .4 Use only enough fasteners to ensure sheet remains in place until wall finish is installed.
- .5 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 At metal stud substrate install joint sealing tape to cover joint completely.
- .5 At wood substrate install staples through lapped sheets at sealant bead into substrate.
- .6 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDED

.1 Firestopping of Penetrations in Rated Assemblies.

.2 Fire Resistive Joint Systems.

.3 Perimeter Fire Containment Systems.

.4 Firestopping of Penetrations in Fire Blocking Compartments.

.5 Smoke Seals

.6 It is the intent of this section of the specifications to establish a single, competent source to be responsible for providing all labour, materials, products, equipment and services, to supply and install firestopping and smoke seals for the area of work, including at the following locations:

- .1 Openings in fire rated walls, floors and roofs both empty and those containing penetrations.
- .2 Gaps between fire rated floor slabs and exterior curtain walls.
- .3 Gaps between fire rated walls and exterior curtain walls.
- .4 Gaps located within expansion joints.
- .5 Openings at each floor level in fire rated shafts or stairwells.
- .6 Gaps between the tops of fire rated walls and underside of fire rated floor or roof assemblies.
- .7 Penetrations through construction enclosing compartmentalized concealed areas (fire blocks), involving both empty openings and openings containing penetrating items.
- .8 Penetrations through smoke barriers.

.7 Note: It is not the intention of this section to delete firestopping work fully specified in the mechanical and electrical specifications. Coordinate with all mechanical and electrical sections to ensure the complete firestopping of the area of work. All firestopping not specifically called for in the mechanical and electrical specifications is to be included under this section.

1.2 RELATED WORK

.1 Fire blocking of concealed spaces:

- .1 Fire separation of concealed spaces shall be provided under applicable specification sections, and as indicated on drawings.

.2 Non-Rated Openings through Floors and Walls:

- .1 Non-rated openings through floors and walls shall be sealed under applicable architectural, mechanical, and electrical specification sections.

.3 Metal sleeves for fire rated openings through floors and walls shall be provided under applicable mechanical and electrical specification sections.

.4 Firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies shall be sealed under applicable mechanical and electrical specifications sections and only in accordance with the equipment or device manufacturers' installation instructions.

1.3 RELATED SECTIONS

.1	Concrete Unit Masonry	Section 04 22 00
.2	Sealants	Section 07 92 00
.3	Gypsum Board	Section 09 29 00
.4	Mechanical work requiring firestopping	Division 20, 22
.5	Electrical work requiring firestopping	Division 26, 27, 28

1.4 REFERENCE STANDARDS/DOCUMENTS

.1	ASTM E814	Test Method of Fire tests of Through Penetration Firestops
.2	ASTM E 2174	Standard Practice for On-Site Inspection of Installed Fire Stops
.3	ASTM E 2393	Standard Practice for On-Site Inspection of Installed Fire Stop Joint System.
.4	ASTM E 2307	Standard Test Method for Determining the Fire Endurance of Perimeter Fire Barrier Systems Using the Intermediate-Scale, Multi Story Test Apparatus (ISMA)
.5	ASTM C 920	Standard Specification for Elastomeric Joint Sealants systems

.1 American Society for Testing and Materials (ASTM):

.1	UL	Fire Resistance Directory
.2	UL 263	Fire Tests of Building Construction and Materials
.3	ANSI/UL 1479	Fire Tests Of Through-Penetration Firestops
.4	ANSI/UL 2079:	Standard for Tests for Fire Resistance of Building Joint Systems

.2 Underwriters Laboratories, Inc. (UL):

.1	ULC	List of Equipment and Materials, Firestop Systems and Components
.2	CAN/ULC-S101	Standard Methods of Fire Endurance Tests of Building Construction and Materials
.3	CAN/ULC-S115	Standard Method of Fire Tests of Firestop Systems

.3 Underwriters Laboratories of Canada (ULC):

.4 Intertek: WH Mark Product Directory

.5 Factory Mutual Approval Guide

1.5 PERFORMANCE REQUIREMENTS

.1 Provide firestopping systems of sufficient thickness, width and density to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with ULC, cUL or WH design numbers.

.2 Provide a seal completely filling all annular spaces to prevent the passage of flame, smoke and gases through the opening in the fire separation in which it is installed.

.3 Provide materials which are compatible with all materials used in the system including materials used in or on penetrating items as well as all construction materials used in conjunction or contiguous with the system.

.4 Accessories:

.1 Provide components for each firestopping system that are needed to install fill materials.
.2 Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire resistance rated systems.
.3 Accessories include but are not limited to the following items:

.1 Permanent forming/damming/backing materials temporary forming materials
.2 substrate primers
.3 collars
.4 steel sleeves

.5 Provide products that upon curing, do not re-emulsify, dissolve, leach, and breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.

.6 Provide firestop sealants sufficiently flexible to accommodate motion such as pipe vibration, water hammer, thermal expansion and other normal building movement without damage to the seal.

.7 Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.

.8 Openings within walls and floors designed to accommodate voice, data and video cabling shall be provided with re-enterable products specifically designed for retrofit.

.9 Penetrations through fire-resistance rated floor-ceiling assemblies contained within chase wall assemblies shall be protected with products tested by being fully exposed to the fire outside of the chase wall.

.10 Provide fire-resistive joint sealants sufficiently flexible to accommodate movement such as thermal expansion and other normal building movement without damage to the seal.

.11 Provide fire-resistive joint sealants designed to accommodate a specific range of movement and tested for this purpose in accordance with a cyclic movement test criteria as outlined in Standard ANSI/ UL 2079.

.12 Provide through penetration firestop systems and fire-resistive joint systems subjected to an air leakage test conducted in accordance with Standards, ANSI/UL1479 and ANSI/ UL2079, respectively, with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the through penetration firestop system or fire-resistive joint system to restrict the movement of smoke. Provide fire-resistive joint systems subjected to an air leakage test conducted in accordance with Standard, ANSI/ UL2079 with published L-Ratings for ambient and elevated temperatures as evidence of the ability of the fire-resistive joint system to restrict the movement of smoke.

1.6 SUBMITTALS

.1 Manufacturer's Data:

.1 Submit manufacturer's specifications, installation instructions and product data for each material required, in accordance with Section 01 33 23.
.2 Include ULC, cUL, or WH tested systems or designs, to show compliance with the Contract Documents.

.2 Shop Drawings: Submit shop drawings showing typical installation details, including reinforcement, anchorage, fastenings and method of installation for each type of firestopping condition.

.3 Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be utilized.

.4 Qualifications: Submit certificate indicating qualifications of installer.

1.7 QUALITY ASSURANCE

.1 Manufacturer: Manufacturer shall be one of the approved manufacturers listed below.

.2 Applicator: Company having a minimum of three (3) years' experience in the installation of materials specified herein, on projects comparable to this project, who is certified, licensed or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install firestop products in accordance with the specified requirements. Installer shall be certified by ULC, or other approved agency.

1.8 REGULATORY REQUIREMENTS

.1 Conform to the Ontario Building Code for fire resistance ratings.

.2 Provide materials, accessories and application procedures which have been listed by ULC, cUL, or tested by a nationally recognized independent testing agency in accordance with ASTM E814, ANSI/UL 1479, CAN4-S115 or ANSI/UL 2079 to achieve the required fire protection rating(s).

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Do not proceed with the installation of firestopping materials when temperatures or weather conditions exceed the manufacturer's recommended limitations for installation.

.2 Ventilate solvent based and moisture-cure firestopping per firestopping manufacturer's instructions by natural means or, where this is inadequate, by forced air circulation.

1.10 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to Site in manufacturer's sealed, undamaged containers, with labels intact. Labels shall identify product and manufacturer, date of manufacture; lot number; shelf life, qualified testing and inspection agency's classification marking, and mixing instructions for multi-component materials.

.2 Handle and store materials in accordance with manufacturer's instructions.

1.11 PROJECT/SITE CONDITIONS

.1 Comply with manufacturer's recommended requirements for temperature, relative humidity and substrate moisture content during application and curing of materials.
.2 Maintain minimum temperature before, during, and for minimum 3 days after installation of materials.
.3 Do not install firestopping products when substrates are wet due to rain, frost, condensation, or other causes.

1.12 SEQUENCING AND SCHEDULING

.1 Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

.2 Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.

.3 Do not install firestopping system until Work within opening has been completed. Coordinate with other applicable Sections.

.4 Schedule installation of safing materials in linear opening at curtain wall prior to construction that limits access to safing slot.

.5 Schedule work of other trades so that firestopping applications can be inspected prior to being covered by subsequent construction.

PART 2 – PRODUCTS

2.1 APPROVED MANUFACTURERS

.1 Provide firestopping silicone sealants, water-based sealants, intumescent sealant, mortars, or firestop devices from one of the following manufacturers:

.1 A/D Fire Protection Systems Inc.
.2 Tremco Fire Protection Systems Group
.3 Hilti (Canada) Corporation
.4 Nuco Inc., Self-Seal Firestops

2.2 MATERIALS

.1 Firestop systems:
- .1 Provide a complete system of asbestos-free firestop systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115, ASTM E814, ANSI/UL 1479, or ANSI/UL 2079, and listed by ULC, cUL, or Warnock Hersey, and approved by jurisdictional authorities and the Consultant.
- .2 Comply with applicable Building Code requirements for locations and ratings.

.2 Materials specified below are as manufactured by A/D Fire Protection Systems Inc. Equivalent products manufactured by one of the approved manufacturers listed above are acceptable.

.3 Silicone Sealants:
- .1 Primerless, single component silicone sealant, curing to durable, flexible, silicone rubber; to ASTM C 920, Type S, Grade NS, class 25; A/D Fire barrier Silicone Sealant or equivalent.
- .2 For use in: openings with penetrating items subject to high movement; multiple penetration systems; for combustible pipes up to 2-in. diameter; in control joints; in curtain wall joints; expansion joints; floor/wall joints; wall/wall joints; head of wall joints; and as a sealant for smoke barrier construction.

.4 Pourable Sealant:
- .1 Single component, water based, elastomeric sealants, forming durable, flexible, watertight bonds; A/D Firebarrier Seal (pourable) and Seal NS (non-slumping) or equivalent.
- .2 Use non-slumping type for vertical applications.
- .3 Water based firestop sealants for use with: control joints; head of wall joints; floor/wall joints; wall/wall joints; multiple penetration systems; plumbing; mechanical; electrical; and where sprayed sealant application is required or desired.

.5 Intumescent Caulk:
- .1 Single component, water based, elastomeric sealant for use in interior building locations; A/D Firebarrier Intumescent Caulk or equivalent.
- .2 For general use as a firestop sealant with: insulated pipes; pipes; electrical cables and conduit; ducts.

.6 Mortar:
- .1 Non-combustible, fibre reinforced, foamed cement mortar; A/D Fire barrier Mortar or equivalent.
- .2 For use in: large openings; static non-moving penetrations such as cable trays; for multiple penetration systems; electrical and communication bundles; conduits; non-combustible sleeves; and insulated pipes.

.7 Collars:

.1 Steel collars with intumescent silicone strip, in diameters to suit pipe sizes; A/D Firebarrier Collar or equivalent.
.2 For use in openings with single combustible pipe penetrations greater than 50mm diameter; confirm maximum pipe diameter (for applicable tested assemblies) with manufacturer.

.8 Pillows:
.1 Self-supporting, sealed polyethylene bags containing intumescent materials and non-combustible insulation; A/D Firebarrier Pillows or equivalent.
.2 For use in openings with: cable tray; multiple cable penetrations; where retrofitting of penetrating items is anticipated; and as a temporary firestop system.

.9 Mineral Wool:
.1 Non-combustible, semi-rigid, preformed mineral wool strips and sheets; A/D Firebarrier Mineral Wool or equivalent.
.2 For use in tested firestop systems, as fire barrier and forming material.

.10 Additional Materials:
.1 All materials shall be by the manufacturer's listed above and shall be components of tested assemblies, acceptable to local authorities having jurisdiction, for the fire rating required.

.11 Fire Stopping:
.1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame and heat in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended.
.2 Acceptable Products:
.1 A/D Fire Protection Systems Inc.: A/D Firebarrier Mineral Wool Fire Stopping Insulation.
.2 Roxul Inc.: RXL Safe Fire Stop Batt.

.12 Smoke Seals: fire resistant material capable of maintaining an effective barrier against smoke and gases.
.1 Fire Rated Sealant - Type 1 (for joints in vertical surfaces): non-sagging, fire rated silicone listed for use in fire separations:
.3 Hilti (Canada) Corporation: CP 601S Elastomeric Firestop Sealant.
.4 3M Canada Inc.: Firebarrier 2000.
.5 Tremco Construction Products: TREMstop Fyre-Sil.
.2 Fire Rated Sealant - Type 2 (for head of wall applications): sprayable single component, water-based, acrylic fire stop sealant.
.6 Hilti (Canada) Corporation: CP672 Firestop Joint Spray.
.7 3M Canada Inc.: 3M FireDam Spray.
.8 Tremco Construction Products: TREMstop Acrylic SP.
.3 Fire Rated Sealant - Type 3 (for joints in horizontal surfaces): self-leveling, fire rated silicone, listed for use in fire separations.
.1 Hilti (Canada) Corporation: CP604 Self-leveling Firestop Sealant.
.2 3M Canada Inc.: Firebarrier 2003.
.3 Tremco Construction Products: TREMstop Fyre-Sil Self Leveling

2.3 ACCESSORIES

.1 Damming and backup materials, supports and anchoring devices: Non-combustible, to manufacturer's recommendations and in accordance with the tested system being installed, and as acceptable to local authorities having jurisdiction.

.2 Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.

.3 Water: Potable.

.4 Tape: Pressure sensitive masking tape as recommended by the firestopping manufacturer.

.5 Fasteners: Provide suitable fasteners, for applicable substrates, for all collars and other field fastened firestopping components.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Examine substrates, openings, voids, adjoining construction and conditions under which the Work is to be installed. Confirm compatibility of surfaces scheduled to receive firestopping.

.2 Verify that penetrating elements are securely fixed and properly located with the proper space allowance between penetrations and surfaces of openings.

.3 Do not proceed with Work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Surfaces to receive firestopping shall be free of dirt, dust, grease, oil, rust, loose materials, form release agents, frost, moisture or any other matter which would impair the bond of firestopping material to the substrate of penetrating item(s).

.2 Prime substrates in accordance with manufacturer's written instructions or recommendations. Confine primers to areas of bond; do not allow spillage or migration onto exposed surfaces.

.3 Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in the actual fire tests are provided.

.5 Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing firestopping seal with substrates.

.6 Installation is not to proceed until submittals have been reviewed and returned by the Consultant.

3.3 INSTALLATION

.1 Manufacturer's Instruction:

- .1 Comply with ULC, cUL, or Warnock Hersey listings and manufacturer's instructions for the type of material and condition of opening in each case.
- .2 Consult with the manufacturer's technical representative to determine proper procedure for conditions not fully covered by printed instructions.
- .3 Record in writing any oral instructions received, with copy to manufacturer.

.2 Firestopping for vertical applications: Non-sag caulk or spray grade sealants, Mortar, Collars or Pillows.

.3 Firestopping for horizontal applications: Non-sag caulk or self-levelling or spray grade sealants, Mortar, Collars or Pillows.

.4 Firestopping for overhead applications: Non-sag caulk or spray grade sealants or Mortar.

.5 Install firestopping with sufficient pressure to properly fill and seal openings to ensure an effective smoke seal. Tool or trowel exposed surfaces. Remove excess firestopping material promptly as the Work progresses and upon completion.

.6 Damming: Provide leak-proof dams as required to seal openings and contain liquid sealants, putty or mortar until cured. Install damming in accordance with manufacturer's instructions.

.7 Damming Boards: Install forming/damming materials and other accessories of type required to support fill materials during their application and in the position needed to produce the shapes and depths required to achieve fire ratings of through-penetration firestop systems.

- .1 Combustible Type: For temporary dams only. Remove after firestopping material has cured.
- .2 Non-Combustible Type: For temporary or permanent dams. Provide non-combustible type wherever damming material cannot be removed after applying firestopping materials.

.8 Void Filler: Use materials recommended by the firestopping manufacturer to seal gaps created by non-combustible type damming boards and to seal around cables, conduits, pipes and where void filler material becomes part of the fire rated assembly.

.9 Sealant:

- .1 Install damming material or mineral wool as required.
- .2 Apply sealant so air voids are not present and sealant is in full contact with penetrating items. Tool sealant to ensure substrate contact.

.3 Remove excess sealant in accordance with manufacturer's recommendations.

.10 Mortar:

.1 Install damming material as required.
.2 Mix mortar in strict accordance with manufacturer's instructions.
.3 Pump, trowel or hand pack mortar through openings to minimum thickness as recommended by manufacturer and as listed by ULC, or cUL, to achieve required fire rating.

.11 Firestopping Mineral Wool:

.1 Install firestopping by compressing material to the minimum required by ULC, cUL, or WH listing.
.2 Apply firestopping in sufficient thickness, depth and density so as to achieve the required fire resistance rating.
.3 Use impaling clips to support and secure firestopping where required by tested system.

.12 Where joint application is exposed to the elements, fire-resistive joint sealant must be approved by manufacturer for use in exterior applications.

3.4 FIELD QUALITY CONTROL

.1 Notify Consultant when completed installations are ready for inspection prior to concealing or enclosing an area containing firestopping materials.

.2 Arrange for inspections by the Owners independent inspection and testing company, appointed and paid for by Owner.

.3 Following field inspections, provide all repair as required to ensure compliance with the Contract Documents.

.4 Keep areas of work accessible until inspection by authorities having jurisdiction

3.5 SCHEDULE

.1 Fire stop for full depth or thickness of the assembly or component being fire stopped.
.2 Apply smoke seal material to both sides of vertical assemblies required to have smoke seals. This applies to all fire separations, whether rated or unrated.
.3 Fire Stop and Smoke Seal At:
  .1 Penetrations through vertical fire separations of masonry, concrete, or gypsum board construction.
  .2 Edge of floor slabs at curtain wall and precast concrete panels.
  .3 Top of fire separations of masonry construction at underside of fluted steel deck assemblies:
    .1 Option No. 1: cUL Design No. HW-D-0098.
      .1 Fire stopping: all specified fire stopping Products.
      .2 Smoke seal: Hilti Type 2 fire rated sealant.
    .2 Option No. 2: ULC Design No. HW23.

.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: 3M Type 2 fire rated sealant.
.3 Option No. 3: cUL Design No. HW-D-0092.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Tremco Type 2 fire rated sealant.

.4 Top of fire separations of gypsum board construction at underside of fluted steel deck assemblies:
.1 Option No. 1: cUL Design No. HW-D-0042.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Hilti Type 2 fire rated sealant.
.2 Option No. 2: ULC Design No. HW21.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: 3M Type 2 fire rated sealant.
.3 Option No. 3: ULC Design No. HW71.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Tremco Type 2 fire rated sealant.

.5 Intersection of fire separations of masonry or gypsum board construction.

.6 Control joints in fire separations of masonry construction.
.1 Option No. 1: ULC Design No. JF83.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Hilti Type 1 fire rated sealant.
.2 Option No. 2: ULC Design No. JF 13
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: 3M Type 1 fire rated sealant.
.3 Option No. 3: ULC Design No. JF 18
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Tremco Type 1 fire rated sealant.

.7 Control joints in fire separations of gypsum board construction: ULC Design No. JF 70.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: 3M Type 1 fire rated sealant.

.8 Joints in horizontal fire separation assemblies - concrete floor slabs:
.1 Option No. 1: ULC Design No. JF82.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Hilti Type 3 fire rated sealant.
.2 Option No. 2: ULC Design No. JF13.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: 3M Type 3 fire rated sealant.
.3 Option No. 3: ULC Design No. JF18.
.1 Fire stopping: all specified fire stopping Products.
.2 Smoke seal: Tremco Type 3 fire rated sealant.

.9 Penetrations through fire-resistance rated floor slabs, ceilings and roofs, and horizontal fire separations.

.10 Openings and sleeves installed for future use through fire separations.

.11 Mechanical assemblies penetrating fire separations: Refer to Division 23 - Heating, Ventilating, and Air Conditioning (HVAC).

.12 Electrical assemblies penetrating fire separations: Refer to Division 26 - Electrical.

3.6 CLEANING AND PROTECTION

.1 Clean all surfaces adjacent to sealed openings to be free of excess firestopping materials and soiling as work progresses.

.2 Upon completion of this work, remove all materials, equipment and debris from the site. Leave work area and adjacent surfaces in a condition acceptable to the Consultant.

.3 Leave installed work with sufficient protection to enable it to remain untouched until project turnover.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Sealants and caulking for exterior wall openings and joints.
.2 Sealants and caulking for interior wall openings and joints.
.3 Sealants and caulking for floor joints.

1.2 RELATED WORK

.1	General Requirements	Division 01
.2	Masonry Procedures	Section 04 05 00
.3	Firestopping and Smoke Seal	Section 07 84 00
.4	Non-Structural Metal Framing	Section 09 22 00

1.3 REFERENCES

.1	CGSB-19-GP-5M-84	Sealing Compound, One Component, Acrylic Base, Solvent Curing.
.2	CAN/CGSB-19.13-M87	Sealing Compound, One-Component, Elastomeric, Chemical Curing.
.3	CAN/CGSB-19.17-M90	One-Component Acrylic Emulsion Base Sealing Compound.
.4	CAN/CGSB-19.21-M87	Sealing and Bedding Compound, Acoustical.
.5	CAN/CGSB-19.22-M89	Mildew Resistant Sealing Compound for Tubs and Tiles.
.6	CAN/CGSB-19.24-M90	Multi-Component, Chemical Curing Sealing Compound.
.7	CAN/ULC-S711.1-05	Standard for Thermal Insulation – Bead-Applied One Component polyurethane Air Sealant Foam, Part 1.
.8	CAN/ULC-S711.1-05	Standard for Thermal Insulation – Bead-Applied Two Component Polyurethane Air Sealant Foam, Part 1 : M.

1.4 APPROVED MANUFACTURERS

.1 The products of the following manufacturers are approved for use subject to meeting the specifications for the particular type of sealants listed below. However, this is not an approval to substitute another type of sealant for those specified unless the material manufacturer requests change in his product in writing to the Consultant.

.1 Canadian General Electric Company Ltd.
.2 Dow Corning Canada Inc.
.3 Tremco

.2 Material manufacturers must be willing to review Shop Drawings and drawing details, visit the site to review sealant installation and provide written reports to the Consultant.

1.5 INSTALLER QUALIFICATIONS

.1 Sealants and caulking shall be installed by a specialized Subcontractor, having skilled mechanics thoroughly trained and competent in all aspects of caulking work, with minimum 5 years experience.

.2 Sealants shall be appropriate for the application and materials to be caulked.

1.6 SUBMITTALS

.1 Submit samples of each sealant, in conformance with Section 01 33 00 – Shop Drawings, Product Data and Samples.

.2 Provide colour cards for Consultants selection.

.3 Submit written adhesion and compatibility approval from the sealant manufacturer for all materials to be sealed.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 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.

1.8 ENVIRONMENTAL AND SAFETY REQUIREMENTS

.1 Comply with requirements of Workplace Hazard Materials Information System (WHIMIS) regarding use, handling, storage, and disposal of hazardous materials, and regarding labelling and provision of material safety data sheets acceptable to the authority having jurisdiction.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Ventilate area of work as required and as may be directed by the Consultant by use of approved portable supply and exhaust fans.

1.9 WARRANTY

.1 Extend Contractor's warranty to five (5) years, in writing. Warranty shall commence on the date of Substantial Performance.

.2 Defective work shall include, but not be restricted to, joint leakage, cracking, crumbling, melting, running, loss of adhesion, loss of cohesion, or staining of adjacent surfaces.

.3 Provide manufacturer's project-specific twenty (20) year non-staining warranty and ten (10) year weather seal warranty for "Type A" sealant listed below.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Sealant Type A: For exterior locations. Non-Staining, primer less, silicone weather-proofing sealant:
- .1 SilPruf SCS9000 NB, manufactured by Canadian General Electric Company Limited, Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
- .2 Spectrem 3, manufactured by Tremco Ltd., and
- .3 conforming to the product properties published.

.2 Sealant Type B: For interior locations. Non-staining, primer less, silicone hybrid sealant:
- .1 SCS7000, manufactured by Canadian General Electric Company Limited.
- .2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
- .3 Spectrem 3, manufactured by Tremco Ltd., and

.3 Sealant Type C: For interior locations where conditions of high humidity exist such as washrooms, showers, Mildew resistant, one component silicone conforming to CGSB 19-GP.22M and ASTM C920:
- .1 CGE SCS1700 Sanitary Sealant,
- .2 Dow Corning 786, or
- .3 Tremco Tremsil 200 White

.4 Sealant Type D: For interior locations. Paintable, non-staining, primer less, silicone hybrid sealant:
- .1 SCS7000, manufactured by Canadian General Electric Company Limited.

.5 Sealant Type E:
- .1 Multi-component, epoxidized polyurethane sealant conforming to CAN/CGSB-19.24, Type 2, Class B, SWRI Certified.
- .2 Dymeric 240, manufactured by Tremco Ltd.
- .3 Contractors Weatherproofing Sealant (CWS) Contractors Concrete Sealant by Dow Corning.

.6 Colours of sealants and caulking when exposed in the finished work to later selection by the Consultant. Allow different colours for different situations and materials. Allow for custom colours for exterior sealants.

.7 Primers for sealing: As manufactured or recommended by the manufacturer of the sealing materials for the specific applications.

.8 Joint backing material:

.1 circular foam strips, of approved manufacture, compatible with sealant and 50% greater width than joint width;
.2 Vertical Surfaces: extruded polyolefin foam, Sof Rod by Tremco Ltd.
.3 Horizontal Surfaces: closed cell polyethylene foam, Standard Backer Rod by Tremco.

.9 Bond Breaker: pressure sensitive plastic tape backing material, which will not bond to sealant; 3M #226 or #481, or Valley Industries #40.

.10 Acoustical Sealant.
.1 To CAN/CGSB-19.21.
.2 Acceptable Product: Tremco Commercial Sealants & Waterproofing, Tremco Acoustical Sealant.

.11 Air Barrier Foam Sealant - One Part.
.1 One part polyurethane insulating foam sealant, to CAN/ULC-S710.1.
.2 Acceptable Products:
.1 Adfast Inc.: ADFOAM 1885-2
.2 Dow Chemical Canada ULC: GREAT STUFF PRO Gaps & Cracks Insulating Foam Sealant.
.3 Zerodraft Products Inc.: Zerodraft Foam Sealant.

.12 Air Barrier Foam Sealant - Two Part.
.1 Two part polyurethane insulating foam sealant, to CAN/ULC-S711.1.
.2 Acceptable Products:
.1 Dow Chemical Canada ULC: FROTH-PAK Foam Sealant.
.2 Zerodraft Products Inc.: Zerodraft Insulating Air Sealant.

.13 Preformed Compressible and Non-Compressible Back-up Materials.
.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
.1 Extruded closed cell foam backer rod.
.2 Size: oversize 30 to 50%.
.2 Neoprene or Butyl Rubber: Round solid rod, Shore A hardness 70.
.3 High Density Foam: Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200kPa, extruded polyolefin foam, 32kg/m; density, or neoprene foam backer, size as recommended by manufacturer.
.4 Bond Breaker Tape: Polyethylene bond breaker tape which will not bond to sealant.

.14 Cleaning material for surfaces to receive sealant to be as recommended by the manufacturer of the sealant.

PART 3 – EXECUTION

3.1 LOCATIONS

.1 Seal all exterior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type A. Areas to be caulked include:
.1 Concrete to metal, masonry, concrete and precast concrete.

.2 Masonry to metal, concrete, precast concrete, and masonry.
.3 Metal to metal, masonry, concrete, and precast concrete.
.4 Around pipes and conduit through foundation walls.
.5 Between hollow metal frames and screens and adjacent materials.
.6 Between metal panels and adjacent materials.
.7 Between window and louvre frames and sills and adjacent materials.
.8 At all control and expansion joints.

.2 Seal all interior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type B. Areas to be caulked include:

.1 Concrete to metal, masonry, concrete and precast concrete.
.2 Masonry to metal, concrete, precast concrete, and masonry.
.3 Metal to metal, masonry, concrete, and precast concrete.
.4 Around pipes and conduit through walls.
.5 Between hollow metal frames and screens and adjacent materials.
.6 Between window and louvre frames and sills and adjacent materials.
.7 At all joints between millwork and masonry, to provide neat junction.
.8 At junction between all counters and/or splashbacks and adjacent substrate with neat 3mm bead.
.9 At all control and expansion joints.

.3 Seal with Sealant Type C at the following locations:

.1 Around access panels in ceramic tile faced walls with a neat 3mm bead.
.2 Around perimeter of piping penetration at tile work.
.3 At junctions between all counter tops and/or splashbacks and adjacent substrate in washrooms, with neat 3mm bead.
.4 At junctions of lavatories, toilets, and other plumbing fixtures and adjacent substrate.

.4 Seal with Sealant Type D at all interior non-moving joints to be painted.

.5 Seal at all other vertical and horizontal joint locations with Sealant Type E.

.6 Refer to Section 07 84 00, Firestopping and Smoke Seal, for location of fire stopping and fire-resistant caulking.

.7 Refer to Section 09 29 00, Gypsum Board, for acoustic sealant work.

3.2 SUPERVISION

.1 Unless specified otherwise herein comply with the recommendations and directions of the manufacturer whose materials are being used on the work.

.2 Arrange for the sealant manufacturer's technical representatives to visit the site prior to the commencement of the sealing to meet with the Contractor and the Consultant.

.3 Sealant manufacturer to visit site periodically and to provide written reports to Consultant ensuring sealant is in accordance with good trade practice, the manufacturer's recommendations and the intent of this Specification.

3.3 PROTECTION

.1 Protect installed work of other trades from staining or contamination.

3.4 PREPARATION

.1 Install sealants only when surfaces and ambient temperatures are suitable for the material used, as per manufacturer's recommendations.

.2 Clean all joints and spaces to be sealed.

.3 Ensure that surfaces are structurally sound, free from grease, chalk or other contaminants which may adversely affect the adhesion of the sealing materials. Use dry oil free clean compressed air stream if necessary to clean out the joint.

.4 Clean surfaces with a solvent or cleaner recommended by the manufacturer of the sealant materials.

.5 Remove chalk lines completely. Do not place clear sealant over coloured chalk lines.

.6 Test materials for indications of staining or poor adhesion before any sealing is commenced.

.7 Submit colour chart to Consultant and obtain his written instructions for colours and locations of colours.

3.5 PRIMING

.1 If recommended by the manufacturer of the sealing materials, prime joints to prevent staining, or to assist the bond, or to stabilize porous surfaces.

.2 Apply primer with a brush which will permit the priming of all joint surfaces.

3.6 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint back-up to achieve correct joint depth and shape, with approximately 30% compression.

3.7 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.8 MASKING

.1 Where necessary to prevent contamination of adjacent surfaces, mask the areas adjacent to the joints with masking tape.

3.9 INSTALLATION

.1 Install joint backing materials at all locations as detailed or where required by sealant manufacturer's printed directions.

.2 Install a bond breaker tape or packing over asphalt impregnated fibre board as recommended by sealant manufacturer.

.3 Ensure that the correct sealant depth is maintained.

.4 Finished joints shall be free of wrinkles, sags, air pockets, ridges and embedded impurities.

.5 Tool all sealant surfaces to produce a smooth surface.

.6 Remove droppings and excess sealant as work progresses and before material sets.

.7 Sealing materials shall be gun grade or tool grade consistency to suit the joint conditions.

.8 Commence sealing only after all adjacent surfaces have been painted under Painting Section.

3.10 CLEANING

.1 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after joint tooling.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Concrete Unit Masonry	Section 04 22 00
.2	Sealants	Section 07 92 00
.3	Door Hardware	Section 08 71 00
.4	Painting and Coating	Section 09 90 00
.5	Electrical	Division 26, 27, 28

1.2 WORK INCLUDED

.1 Supply and install all hollow metal products including doors, frames, transom frames, screens, sidelight and window assemblies with provision for glazed, paneled or louvered openings, fire labelled and non-labelled, as scheduled or shown on the Drawings.

.2 Work shall including the following:

- .1 Door cutouts, complete with reinforcing, stops and closers required for glazing.
- .2 Reinforcing for Finishing Hardware.
- .3 Supply all necessary fastening and anchoring devices for above items.
- .4 Steel closure pieces at metal panels, steel columns, horizontal members, and hollow metal frames and screens. Refer to Drawings.
- .5 Metal panels in hollow metal frames.
- .6 Provision of zinc-rich coating on all exterior steel doors, frames and screens.
- .7 Fire rated and labelled doors, frames, & screens where noted on schedule.
- .8 Supply and install HSS and channel reinforcing members where shown at screens and door frames/sidelights.
- .9 Supply and installation of transfer grilles and door louvres, where indicated on Door and Frame Schedule; fire labelled where door rating is indicated.
- .10 Supply and install door silencers on metal frames.

1.3 REFERENCES

.1	CAN4-S104	Fire Tests of Door Assemblies
.2	CAN4-S105	Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104
.3	CAN4-S106	Standard Method for Fire Tests of Window and Glass Block Assemblies

.4 Canadian Steel Door Manufacturers Association (CSDMA)

- .1 Recommended Specifications for Commercial Steel Doors and Frames
- .2 Recommended Dimensional Standards for Commercial Steel Doors and Frames
- .3 Recommended Specifications for Sound Retardant Steel Doors and Frames
- .4 Canadian Fire Labelling Guide for Commercial Steel Door and Frame Products

.5 Guide Specification for Installation and Storage of Hollow Metal Doors and Frames

.5	CGSB 82.5	Insulated Steel Doors
.6	CSA A101	Mineral Fiber Thermal Insulation for Buildings
.7	CSA W59	Welded Steel Construction (Metal Arc Welding)
.8	ASTM A653	Standard Specification for Steel Sheet, Zinc-Coated Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.9	ANSI A250.4	Test Procedure and Acceptance Criteria for Physical Endurance For Steel Doors Frames and Frame Anchors
.10	ANSI A115.IG	Installation Guide for Doors and Hardware
.11	ANSI A250.11	Recommended Erection Instructions for Steel Frames

1.4 PERFORMANCE

.1 Doors and frames covered by this specification shall be certified as meeting Level “A” acceptance criteria when tested in strict conformance with ANSI-A250.4-2011. Swing Test duration shall be 1,000,000 cycles. For door twist tests maximum deflection is not to exceed 32mm (1¼”) when loaded to 136kg (300 lbs), and permanent deflection is not to exceed 3.2mm (1/8"). Tests shall be conducted by an independent nationally recognized accredited laboratory.

.2 Fire labelled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Consultant. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S104. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service Procedures issued to the manufacturer.

.3 Should any door or frame specified by the Consultant to be fire rated, not qualify for labelling due to design, hardware, glazing or any other reason, advise the Consultant before manufacturing commences.

.4 Core materials for exterior doors shall attain a thermal resistance rating RSI 1.06 (R6.0) when tested in accordance with ASTM C518.

.5 Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.5 QUALITY ASSURANCE

.1 Supply all steel door and frame product from one manufacturer Member Company of the CSDMA.

.2 Manufacturer must be capable of labelling the fire rated doors, frames, and screens, glazed with specified fire glass. Refer to Section 08 81 00 for fire glass specifications. No Georgian Wire Glass will be permitted on the job.

.3 CSDMA Specification 08 11 13 “Commercial Steel Doors and Frames” is the minimum fabrication standard for this section, as if printed in its entirety herein, except where specified otherwise.

.4 Handle and install product in strict compliance with CSDMA 08 11 13, DHI A115.IG and NFPA 60.

.5 A cash allowance is included in the tender price to cover cost of an independent inspection company, to be selected by Consultant. Allowance is the responsibility of the Contractor and any ensuing deficiency correction costs are the responsibility of the supplier and/or the installer(s), as determined by the inspection report. The Owner reserves the right to have inspection include manufacturing facilities, and work in progress for this project, prior to award of contract or Substantial Performance of the contract.

1.6 SUBMITTALS

.1 Submit confirmation that the manufacturer can label all fire rated doors, frames, and screens, glazed with the fire rated glass to be used on the project, for the fire separation required.

.2 Prepare and submit shop Drawings in accordance with Section 01 33 23, and show the following:

- .1 Door and frame schedules, identifying each unit, with door numbers referencing the numbering in the contract documents.
- .2 Provide columns for Stock Code Numbers for both doors and frames.
- .3 Typical and special details; including mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, panelled or louvered) and arrangement of hardware.
- .4 Materials and finishes; including steel, core, material thickness.
- .5 Hardware preparation.
- .6 Frame anchorage details.
- .7 Submit manufacturer's standard catalogue data for specified products demonstrating compliance with referenced standards.
- .8 Other pertinent information

.3 Submit information on standard shop drawing sheets as approved by the Canadian Steel Door and Frame Manufacturers Association.

.4 Shop drawings for hollow metal screens over 8m2 in size, and for all screens which are required by code to be designed as guards at variations in floor level, must be sealed by a professional engineer, registered in the Province of Ontario.

.5 Submit manufacturer's printed installation instructions.

.6 Operation and Maintenance Data: Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.7 PRODUCT HANDLING

.1 Matchmark doors, panels, frames and windows with Stock Code Numbers as shown on the Door Schedule. If Stock Code Numbers are not shown on the Schedule, matchmark with Door Numbers.

.2 Deliver, store and handle components so as to prevent damage, distortion and corrosion.

.3 Store Steel Frames under cover, raised on wood skids at least 100mm above grade, and as required to prevent damage and rusting. Store assembled frames in an upright position. Stack frames to prevent twisting; maximum 5 units per stack. Provide minimum 6mm airspace between frames to permit air circulation. Covers must be vented so as to avoid a build-up of humidity within.

.4 Doors to be delivered to site immediately prior to installation. Store doors protected at corners to prevent damage or marring of finish. Store in upright position, in enclosed, dry space, in a manner to prevent rust and damage. Use vented covers.

1.8 TESTING

.1 Three doors will be selected at random by the Consultant and shall be subjected to destructive testing by an Inspection Company appointed by the Consultant, to verify conformance to the specifications. Replace the doors at no additional cost to the Contract.

1.9 WARRANTY

.1 Provide an extended warranty of three (3) years from date of Substantial Performance against defects of workmanship including failure of welded seams or of reinforced hinge anchorage plates. Work showing defects during this period shall be repaired or replaced without cost to the owner.

PART 2 – MATERIALS

2.1 MATERIALS

.1 General: All materials shall be new and suitable for their various purposes and shall be free from flaws and imperfections.

.2 All doors, frames, and screens shall be from one manufacturer. Only the following manufacturers will be accepted:

.1 Manufacturers:

.1 Fleming Baron Door Products (Assa Abloy)

.2 Daybar Industries Ltd.
.3 All Steel Doors
.4 Gensteel Doors
.5 Trillium Steel Doors
.6 Vision Hollow Metal

.2 Manufacturers must be able to provide and label the fire rated doors, frames, and screens required for this project, using the fire glass specified. If the manufacturer carried in the tender is not capable of providing the fire labelled products, the Contractor will be required to use one of the other listed manufacturers for the work, at no additional cost to the Owner.

.3 Sheet Steel:

.1 General: cold rolled, carbon steel, stretcher levelled. Steel to have hardness of Rockwell 'B' maximum 65 (ASTM E103) suitable for forming and bending without metal or coating fracture.
.2 ASTM A65 3/A653M commercial grade tension levelled hot-dipped galvannealed steel sheet, coating designation Z275

.4 Steel Thicknesses:

.1 Doors:
.1 1.6mm (16 ga) for exterior, high use and oversize doors
.2 1.3mm (18 ga) for other interior doors
.2 Panels: 1.3mm (18 ga)
.3 Frames: 1.6mm (16 ga)
.4 Hinge Reinforcement: 3.5mm (10 ga)

.5 Door Materials:

.1 Washroom, High Use and Oversize Doors:
.1 Includes all exterior doors and all other high use doors, and
.2 all doors over 3m2 and over 1200mm wide or over 3000mm in length
.3 Semi-rigid glass fibre insulation fastened between continuous interlocking steel ribs to prevent sagging or movement.
.4 Doors to be Fleming H-Series, 16 gauge, with continuous welded edge seams.

.2 Other interior doors and panels up to 3m2 and maximum width of 1200mm or maximum length of 3000mm:
.1 Doors to be Fleming D-Series, 18 gauge.
.2 Interior Doors to be reinforced with continuous interlocking steel ribs.

.6 Fire rated doors: in accordance with fire test requirements.

.1 locate U.L.C. label on inside of hinge jamb on frame.

.2 locate U.L.C. label on the top hinged edge of door midway between top hinge and top of door. Doors to be as noted above.

.7 Door Reinforcement: Reinforce all steel doors with 20 ga. vertical interlocking weld steel stiffeners at 150mm o.c., spot welded to face sheets.

.8 Frame reinforcement:

.1 Reinforce frames for high frequency hinge preparation.
.2 Stiffen all mullions and hinge jambs with continuous 3.5mm channel where continuous hinges are required.
.3 Reinforce and provide cut outs and boxes for security devices.
.4 Reinforce for overhead stops.

.9 Exterior Top Caps: galvanized steel caps, flush with top of door.
.10 Zinc Rich Coating: ZRC 221 Cold Galvanizing Compound by ZRC Worldwide, low VOC coating, or equivalent approved by the Consultant.
.11 Metal Filler: Two component epoxy type.
.12 Primer: Rust inhibitive primer
.13 Glass Stop Screws: Oval head, cadium plated, self-tapping steel screws. Other mechanical locking methods may be used but shall be detailed on Shop Drawings for review.
.14 Door Silencers: Rubber - Ives SR64 or approved equal.

2.2 FABRICATION

.1 General

.1 Dissimilar metals in contact, or metals which will be in contact with concrete or masonry when installed, shall be insulated one from another by methods and materials required for such results, as approved by the Consultant.
.2 Components shall be the types and sizes shown on the Drawings.
.3 Reinforce components, where required, for the installation of Finishing Hardware. Drill and tap to suit templates.
.4 Prepare doors and frames for the installation of the security system. Confirm requirements with Consultant.
.5 Ensure adequacy of anchoring devices.
.6 No patching, plugging, skimming or other such means of overcoming defects, discrepancies or errors shall be resorted to without written permission of the Consultant.
.7 Fabricate components from clean steel, free of rust and scale, which has been thoroughly degreased.
.8 The dimensions shown on the Drawings are the full rebate size of the frame.
.9 In addition to specified requirements for hollow metal doors and frames, fire doors and frames shall comply with the Underwriters Laboratories requirements for the specified rating and be provided with the appropriate labels.
.10 All seams in exterior doors, stairwell doors, and all doors over 3m2 and over 1200mm wide or over 3000mm in length, and seams in all frames must be continuously welded. No spot welding will be permitted. All welds must be ground flush. No visible seams will be accepted.

.11 All exterior steel doors, frames and screens to be painted with 2 coats of zinc-rich coating after fabrication and before delivery to site.

.12 All areas where shop applied zinc-rich coating has been damaged on site shall immediately be cleaned and touched up with the same zinc-rich coating product.

.13 Steel framed doors, screens and windows are to be glazed as specified in Section 08 81 00. Exterior and acoustic doors and screens are to be prepared for double glazed units.

.2 Edge Clearances

.1 Unless otherwise specified, allow edge clearances in accordance with Canadian Manufacturing Specifications for Steel Door and Frame Manufacturers Association.

.2 Where hardware items are to be attached to, or mortised into, bottom edges of doors, provide proper clearance between door and floor or threshold to accommodate such hardware.

.3 Hardware Preparation

.1 Refer to Hardware Schedule, included in Section 08 71 00, and prepare doors for hardware listed.

.2 Templated hardware: prepare work in accordance with templates supplied in Section 08 71 00. Prepare doors for mortice locksets according to Hardware Schedule

.3 Reinforce doors and frames for concealed, mortised and surface mounted hardware in
accordance to "Thickness of Steel for Component Parts" in the "Canadian Manufacturing Standards for Steel Doors and Frames", published by the Canadian Steel Door and Frame Manufacturers' Association.

.4 Prepare doors and frames for security system where noted.

.5 At oversized door locations, provide minimum 4 butt hinge preparations.

.6 Prepare all exterior doors and vestibule doors and frames for four hinges.

.4 Hollow Metal Doors and Panels

.1 Doors and panels shall be of seamless, continuously welded construction with no visible seams or joints on faces. Doors to be 44.4mm minimum thickness.

.2 Secure edge seams with suitable continuously welded seams to the approval of the Consultant.

.3 Interlocking seams for doors shall be fully seam welded, for full length of door. All welding to be ground smooth.

.4 Core construction:

.1 Exterior doors to be filled with glass fibre insulation between steel reinforcing. All Type H doors to be steel stiffened as specified herein.

.2 All interior doors shall have steel reinforcing.

.3 Temperature Rise Rated (TRR): Solid slab core of non-combustible, inorganic composite to limit temperature rise on the “unexposed” side of door to 250(C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Consultant

.5 Welds shall be ground, filled, and dressed smooth to provide an invisible joint and smooth flush surface.

.6 Fully reinforce doors as required for specified hardware. All exterior, stairwell, and washroom doors and all doors noted as “high frequency” shall be reinforced with S.W. Fleming high frequency angle top hinge reinforcement, welded to door skin.

.7 Close top and bottom edges of doors with a continuous, recessed, minimum 1.5mm thick steel channel, extending full width of door and welded to both faces. At exterior doors, provide an additional flush closing channel at top edge and, where required for attachment of weather stripping, a flush closure at bottom edge. Provide similar closure channel at all stair doors.

.8 Surround openings in doors with minimum 1.5mm thick steel edge channels, welded to both face sheets.

.9 Vertical edge profile for single acting swing doors: bevelled 3mm in 50mm.

.10 Glazing Stops:

.1 Equip glazed doors with minimum 0.9mm steel glazing stops, mitred and welded at corners. Where least dimension of stop is less than 12mm, make stop from solid square bar.

.2 Glazing stops at outside of exterior doors and at secure side of interior doors shall be rendered non-removable by welding to door. Secure removable stops with screws.

.3 Glazing stops may be mechanically locked in place, providing details have been reviewed on Shop Drawings.

.4 Glazing stops at fire rated doors and screens shall conform to the requirements of the tested assemblies.

.11 Fabricate exterior panels with a full width steel drip on the outer, lower edge.

.12 Doors for installation in channel frames shall be double-depth mortised to accommodate both butt flanges.

.13 Construct fire rated doors to meet fire test requirements and provide U.L.C. labels.

.5 Steel Frames

.1 Frames shall be of sheet steel, formed profiles shown on the Drawings. Fleming D Series for interior, Fleming H Series for exterior.

.2 Fabricate frames in sections as large as practicable to minimize field jointing. Internally reinforce all mullions and hinge jambs with 1.3mm channel.

.3 Steel thickness: 1.6mm (16 ga.) galvanized steel.

.4 Glazing stops shall be as specified for doors above.

.5 Sidelight framing shall be of same metal and thickness as adjacent door frame.

.6 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile; grind welds flush and sand to smooth uniform surface. Provide semi-rigid insulation to exterior frames.

.7 Tack weld two (2) removable 1.2mm steel spreader channels to inside faces of door frames at base, for protection during shipping.

.8 Provide adjustable base clips at bottom of each door jamb for anchorage to floor.

.9 Provide button type rubber silencers; three per strike jamb of single doors: two per head member of double door frames.

.10 Prepare door frames for ANSI strike, where doors to be fitted with latchsets or lockets.

.11 Provide removable mullions where noted. Reinforce removable mullions with 3.5mm channel to prevent forcing of latching hardware.

.12 Gypsum Board finished partitions: At interior frames, provide steel stud adjustable anchors of 1.5mm galvanized supplied loose at a rate of 3 per jamb up to 2.2m high, with one additional per jamb for each 0.6m over 2.2m high

.13 Masonry Anchors:

.1 At interior frames, provide masonry anchors of 1.5mm galvanized corrugated tee anchors or 3mm diameter galvanized wire anchors - supplied loose, at rate of 3 per jamb up to 2.2m high; one additional per jamb for each 0.6m over 2.2m high. Frames for observation windows shall be provided with 2 anchors per jamb.

.2 At exterior frames, provide galvanized tee anchors fabricated from 3mm steel plates, installed at rate of 3 per jamb up to 2.2m high; one additional per jamb for each 0.6m over 2.2m high

.14 Provide two 38mm by 38mm by 4.8mm thick steel stiffening angles in the head member of frames for two or more doors totalling over 1980mm, wide. Provide necessary vertical stiffeners where required and carry to structure above. Provide stiffener angles in all exterior door jamb with sidelights and in all centre mullions between doors.

.15 Mounting bars for sidelights shall be as detailed on the Drawings and shall be completely filled with glass fibre insulation.

PART 3 - EXECUTION

3.1 GENERAL

.1 Store doors and frames as specified under item 1.7, Product Handling, above.

.2 When installing frames during cold weather, installer to coat inside of frames with a corrosion inhibiting bituminous product, prior to installation, to protect against cold weather additives in masonry grout.

.3 Silencers, gaskets, etc., are to be installed in holes in frames prior to installation of frames; so to avoid filling these holes with grout during installation.

.4 Keep steel surfaces free of grout, tar, other bonding materials, and sealers; clean surfaces immediately following installation.

3.2 INSTALLATION

.1 Frame and Screen Installation

.1 Remove all steel spreaders, which are provided to avoid damage during shipping. Provide wood spreaders at base and midpoint of frames. Wood spreaders to be min. 38 x 89mm lumber, notched to clear frame stops; width to

be equal to opening between jambs at header level. Wood spreaders to remain in place until frames are set permanently in walls.

.2 Set frames and screens plumb, square, aligned, without twist and at correct elevation. Maximum allowable limits of distortion shall be as follows:

.1 Plumbness: Not more than 1.6 mm out of plumb, measured using a line from the intersection of vertical members and the head to the floor.
.2 Squareness: Not more than 1.6 mm difference between diagonal measurements between corners.
.3 Alignment: Not more than 1.6 mm, measured on jambs, through a horizontal line parallel to the plane of the wall.
.4 Twist: Not more than 1.6 mm, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall.

.3 At masonry walls, build in frames using the corrugated or wire masonry anchors. Brace frames solidly in position while being built in, with wood spreaders as noted above. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.4 After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting. Fill exterior frames with glass fibre batt insulation. Cooperate with masonry trade to fill interior frames with mortar.

.5 Where large screens are assembled on site, they must be joined by continuously welded seams, ground smooth. Provide formed covers for structural columns built into screens.

.2 Door Installation

.1 Install hollow metal doors plumb and true.
.2 Co-ordinate installation of hardware.
.3 Adjust operable parts to ensure proper operation. Lubricate using a suitable lubricant compatible with door and frame coatings.
.4 Install hollow metal panels with concealed fastenings.

3.3 TOUCH UP

.1 Remove rust, clean and touch up any damaged galvanizing with "ZRC 221" coating.

.2 Remove rust, clean and touch up any damaged paint with approved rust inhibitive primer.

3.4 CLEANING AND PROTECTION

.1 Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged products. Clean installed products in accordance with manufacturer's instructions before Owner's acceptance.

.2 Remove construction debris associated with this work from project site, and dispose of in accordance with applicable laws.

.3 Protect installed products and finished surfaces from damage during construction.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

.1 Supply and installation of door hardware for hollow metal frames.

.2 Supervision and inspection of door hardware installation by hardware supplier.

.3 Supply and installation of automatic operators.

.4 Final inspection and certification by hardware supplier's Architectural Hardware Consultant (AHC).

.5 Door hardware, including all automatic door hardware is carried in the project cash allowance.

1.2 RELATED SECTIONS

.1	Rough Carpentry	Section 06 10 00
.2	Hollow Metal Doors and Frames	Section 08 11 13
.3	Electrical	Division 26

1.3 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

.1 Power supplies, compressor/control boxes, junction boxes installed by Division 26.

1.4 REFERENCES.

.1	CAN/CGSB-69.17-M	Bored and Pre-assembled Locks and Latches
.2	CAN/CGSB-69.18-M/ANSI/BHMA-A156.1	Butts & Hinges
.3	CAN/CGSB-69.19-M/ANSI/BHMA-A156-3	Exit Devices
.4	CAN/CGSB-69.20-M/ANSI/BHMA-A156-4	Door Controls (Closers)
.5	CAN/CGSB-69.29/ANSI/BHMA-A156-13	Mortise Locks & Latches
.6	CAN/CGSB-69.34/ANSI/BHMA-A156.18	Materials & Finishes

.7 Canadian Steel Door & Frame Manufacturers Association (CSDFMA), Canadian Metric Guide for Steel Doors & Frames (Modular Construction

.8 NFPA 80-Standard for Fire Doors and Windows

.9 Door and Hardware Institute Recommended locations for Architectural Hardware for Standard Steel Doors and Frames.

.10 Door and Hardware Institute Recommended locations for Architectural Hardware for Flush Wood Doors.

.11 Door and Hardware Institute Sequence Format for Hardware Schedule.

.12 Door and Hardware Institute Key Systems and Nomenclature.

.13 Door and Hardware Institute Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications.

.14 Door and Hardware Institute Installation Guide for Doors and Hardware.

1.5 GENERAL REQUIREMENTS

.1 Hardware shall comply with requirements of authorities having jurisdiction.

.2 Hardware for doors in fire separations and exit doors shall be certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

.3 All door closers shall have back checking features and shall be of proper size to operate door efficiently.

.4 Confirm all kick plate and threshold sizes before ordering them.

.5 Use no wall stops on drywall.

.6 Exposed screws for installing hardware shall have Phillips or Robertson heads.

.7 Rim panic device strikes shall be mortise type application. Equip panic devices with six bolts.

.8 Confirm degree of swing for door holders, closers, etc.

1.6 SUBMITTALS

.1 Door and Hardware List:

.1 Contractor is to submit a minimum of three (3) separate quotations from three (3) door hardware suppliers, regarding the supply and installation of door hardware, including automatic door hardware, as required for this project.
.2 Pricing is to include the cost to prepare a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant (AHC) and for a minimum of two site reviews by the AHC.
.3 List all items to be furnished and delivered under this section.
.4 Indicate door hardware proposed, identifying each item by manufacturer name, manufacturer's catalogue model number, material, function, finish, location, and other pertinent information.
.5 The list shall be in the same format as the door hardware list bound in this project manual.
.6 Approval of the Final Door Hardware List by the Consultant and the Owner shall not relieve the Contractor from responsibility for providing all required door hardware.

.2 Product Data:

.1 Within five (5) calendar days after award of hardware supply subcontract, submit product data sheets with the finish hardware schedule showing all items of hardware to be used on the project. Identify each hardware item supplied under this section by product number, function, hand and finish. Finish hardware schedule to be in conformance of door and Hardware Institute Standards. Provide copies of catalogue cuts and other data required to identify individual components listed and/or to demonstrate compliance with specified requirements for all items contained in the finish hardware set. Submission of manufacturer's full line brochure is not acceptable.

.3 Samples:

.1 When requested in writing, provide (to the Consultants Site Office) one sample of each hardware item complete with fasteners, within fifteen (15) calendar days of award of a purchase order. Samples to be clearly labelled with their hardware schedule designation, installation location, and manufacturers' name and model number. Samples will be returned; approved samples may be incorporated into the work.
.2 Substitute new samples for those rejected by the Consultant.
.3 Do not supply door hardware to the site until all samples are approved by the Consultant.

.4 Templates:

.1 Furnish templates within ten (10) calendar days of being requested by the Consultant and/or door and frame manufacturer, the Contractor must submit templates for door and frame preparations and/or mounting of finish hardware items, and identify each template by label indicating applicable specification paragraph number, brand name & number, door number & hardware package number.

.5 Keying Schedule:

.1 Provide three (3) copies of keying schedule for review prepared and detailed in Reference 1.5.5. Include all special keying notes and stamping instructions. Locks and cylinders are not to be ordered until the key schedule has been approved by the owner.

.6 Wiring Diagrams:

.1 Furnish a written description of the functional use of all electrical hardware. Include door and frame elevations showing the location of each item of electrical hardware to be installed, including a diagram showing number and size of all conductors. Include drawings showing all terminal connections.

.7 Operations and Maintenance Data:

.1 Prior to Substantial Performance, provide the following information for inclusion in the Maintenance manuals, in accordance with Section 01 78 00, Closeout Submittals:

.1 Name of hardware distributor, address and contact name
.2 Copy of final "as-built" finish hardware schedule
.3 Wiring diagrams, elevations, risers, point to point
.4 Copy of final keying schedule
.5 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
.6 Maintenance instructions for each product
.7 Catalogue cut sheets and product specifications for each product
.8 Parts list for each product
.9 Installation instructions for each product

.10 A copy of the certification letter from the AHC, confirming the correct supply and installation of hardware, as required by Subsection 3.3, below.

.8 Maintenance Materials:

.1 Provide maintenance materials, in accordance with Section 01 78 00, Closeout Submittals.
.2 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.
.3 Supply five sets of other special parts or tools required for proper maintenance and adjustment of door hardware, including those used for locks/passage/privacy, all type of door closers, and all exit devices.

1.7 QUALITY ASSURANCE

.1 Contractor shall coordinate a hardware pre-installation meeting with hardware installer, hardware supplier and hardware sub-consultant (original hardware specifier). Payment for original hardware sub-consultant's time to attend meeting shall be paid for through the cash allowance included for inspections (except where hardware supplier is also the hardware sub-consultant). Review installation procedures with the hardware suppliers.

.2 Supplier and installer shall hold regular review meetings during the installation period. Submit minutes of meetings to the Consultant.

.3 Supplier Qualifications:

.1 Successful hardware distributor to have a minimum of five (5) years experience in the door and hardware industry. The distributor to have on staff an Architectural Hardware Consultant (A.H.C.) who will be responsible for scheduling, detailing, ordering and co-ordination of the finishing hardware for this project. This individual shall be required for jobsite visits, as outlined below and when so requested by the Architect.

.4 Designated Installer:

.1 Hardware Installers must have a minimum of five (5) years experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the Hardware Distributor.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Marking and Packaging:

.1 All cartons shall be marked with heading number, door number, and key-set symbol where applicable in original packaging provided by the manufacturer. Pack packaged hardware in suitable wrappings and containers to protect it from damage during shipping and storage. Accessories, fastening devices and other loose items shall be enclosed with each applicable item of hardware.

.2 Delivery:

.1 Deliver hardware to those who are to install it, complete with keys, templates and installation instructions together with all required screws, expansion shields, anchors, jigs and other related accessories for satisfactory attaching or installing hardware.

.3 Storage:

.1 Store in a clean, dry room with lockable man door and adequate shelving to permit organization so item numbers are readily visible.

1.9 WARRANTY

.1 Provide warranties by the accepted manufacturers:

.2 Where manufacturer's standard warranty period exceeds these requirements, it shall prevail.

Hardware Item	Length of Warranty
Mortise Hinges	Lifetime
Locks (ND-Series)	7 yrs
Locks (All other Series)	2 yrs
Exit Devices	3 yrs
Door closers -mechanical	10 yrs
Door Operators - Electro mechanical	2 yrs
Door Hold open Devices - Electro mechanical	2 yrs
Overhead stops/holders	2 yrs
Floor/Wall stops	2 yrs
Electric Strikes/Key Switches/Power Supplies	2 yrs

.3 Door hardware warranties shall cover all defects in material and workmanship that become apparent during the warranty period and such defects shall be made good or the defective product shall be replaced, to the satisfaction of the Owner and at no cost to the Owner.

1.10 MAINTENANCE

.1 Maintenance Service:

.1 After the building is occupied arrange an appointment with the Owner's maintenance staff for instruction of proper use, servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.

.2 Extra Materials:

.1 Provide Owner with maintenance materials as specified above.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Products listed in the finishing hardware schedule are from the manufacturers listed below (substitutions may be submitted for review and acceptance):

ITEM	MANUFACTURER NAME
Full Mortise Hinges	Ives
Locksets, Latchsets/Deadbolts	Schlage
Exit Devices	Von Duprin
Cylinder	Best
Flush Bolts/Constant Latching Flush Bolts Door	Ives
Closers	LCN
Overhead Door Holders/Stops	Glynn Johnson
Door Pulls/Flatware	Canadian Builders Hardware
Wall/Floor Stops	Ives
Weather/Smoke/Sound Seals	KN Crowder
Door Sweeps/Thresholds	KN Crowder
Automatic Door Operators/Actuators	LCN
Electric Strikes	Von Duprin
Power Supplies	Von Duprin

2.2 MATERIALS

.1 Screws and Fasteners:

.1 All screws shall be matching finish to their product and shall be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors shall be attached with sex nuts and bolts.

.2 Materials - Acceptable Manufacturers (Note: Supply all products in a given category from the same manufacturer):

.1 Mortise Hinges:

.1 Furnish three knuckle concealed bearing hinges with NRP option on all reverse bevel doors with locking hardware. Hinge width to accommodate door closer projection, door trim and allow for 180-degree swing. Doors up to 2286mm in height, supply 3 hinges, doors greater than 2286mm in height add one hinge for every additional 760mm of door height. Doors 925mm wide and less furnish 114 mm high hinges, doors greater than 925mm wide furnish 127mm high hinges, heavy weight or standard weight as specified. Supply ferrous (steel), stainless steel material for all interior and/or fire-rated doors and stainless steel for exterior doors. Supply: Ives Hinges, 5BB1, 5BB1HW

.2 Locksets/Passage Sets/Privacy Sets:

.1 Cylindrical-Lever:

.1 Standard duty commercial exterior and interior cUL listed for all functions up to 3-hour doors. Levers to be solid pressure cast zinc with no plastic inserts. Grade 2 lever sets to have through bolts to prevent chassis rotation with internal components and chassis constructed of cold rolled steel with zinc dichromate plating to resist corrosion. Lever sets to have independent heavy duty compression springs as well as precision laser cut stainless steel spindles with interlocking on keyed side.

Supply: Schlage “AL” series

.2 Cylindrical:

.1 Extra heavy duty residential, commercial, institutional and industrial applications. Latch bolts to be steel with minimum ½” throw deadlocking on keyed and exterior functions. ¾” throw anti-friction latchbolt on pairs of fire doors. Provide manufacturer’s standard wrought box strike for each latch or lock, with curved lip extended to protect frame. Locks and latchsets tested to exceed 3,000,000 cycles. Lock case to be steel, incorporate one piece spring cage and spindle. Precision solid brass 6-pin cylinder with nickel silver keys available in all Schlage keyways. All levers to be solid with no plastic inserts.

Supply: Schlage “ND” series

.3 Strike Plates:

.1 Provide lockset and latchset strike plates with lip centre dimensions sized to minimally clear trim. Where strike lip extends beyond the projection of the casing or other trim, provide curved lip strikes. Strike plates applied to inactive leaf of paired openings to have flat lip sized to fit flush with the face of the door skin.

.3 Exit Devices/Exit Device Trims/Mullions:

.1 Heavy Duty

.1 Exit device to be cUL listed for panic hardware and fire exit hardware. Supply exit devices and fire exit devices featuring coil compression springs on all device mechanism subassemblies and dead latching mechanisms for all active latchbolts. Supply exit devices with smooth mechanism case and “the quiet one” fluid dampener to eliminate noise associated with exit device operations. Non-handed device with touchpad assemblies with no exposed fasteners and cast end caps, reinforced aluminum with stainless steel touchpad and raised edge to minimize pinching. Roller strikes to be standard on all rim and surface

vertical rod devices. Doors greater than 915mm wide supply long bar exit devices, doors greater than 2134mm high supply extension rods for required series. 1,000,000cycle testing independently certified by ETL.

Supply: Von Duprin 98 series

.2 Device Trim:

.1 Supply device trim featuring recessed cylinder mounting and coil compression spring design with shear pin protection for all lever designs. Similar lever designs for exits as specified for locksets.

Supply: Von Duprin 996 series

.4 Door Closers/Auto Door Operators:

.1 Door closers to have the following features (see separate closer sections below for further information):

.1 fully hydraulic, rack and pinion action with high strength cast iron cylinders and one piece forged steel pistons.
.2 Include high efficiency, low friction pinion bearings.
.3 hydraulic fluid of a type requires no seasonal adjustments, ULTRA X TM fluid has constant temperature control from -35o C to +49o C
.4 hydraulic regulation controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench.
.5 separate adjustments for backcheck, general speed and latch speed.
.6 door closers with special template (ST-) numbers include all required associated product, information sheets and instructions.
.7 size 1 manual door closers to provide less than 5 pounds opening force on a 900mm door leaf.
.8 door closer with Pressure Relief Valves are not accepted.
.9 door closer bodies, arms, covers to be powder coated.
.10 closers with painted finishes shall exceed a minimum 100-hour salt spray test, as described in ANSI A156.18 and ASTM B117.
.11 closers detailed with plated finishes shall include plated covers (or finish plates), arms and visible fasteners.

.2 Medium Duty Mechanical:

.1 Non-sized (1-6) and non-handed cylinder body to have 1 ¼" piston diameter with 5/8" single heat-treated shaft. Track closer cylinder body non-sized (2-4) or (1-2). Closers to have forged main arm and forearm, forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply: LCN 1460 HD series

.3 Heavy Duty Mechanical:

.1 Non-sized (1-6) and non-handed cast iron cylinder body to have 1½" piston diameter with 3/4" double heat-treated pinions shaft witn 5/8" full compliment bearings. XP closer hydraulic regulation controlled by tamperproof, non-critical screw valves, abrasion resistant Vitron "O" ring, adjustable with a hex wrench. Closers to have forged steel main arm and forearm (forged steel main arm and foreoarm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever forged arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply: LCN 4040XP series

"NOTE: ALL LOW ENERGY OPERATORS SUPPLIED AND INSTALLED BY THIS

.4 SECTION" .4 Heavy Duty Electric Operator:

.1 Two in one swing door auto door operator, cUL listed for fire door applications.

.1 fully hydraulic, rack and pinion action with high strength cast iron cylinders and one piece forged steel pistons.
.2 include high efficiency, low friction pinion bearings.
.3 hydraulic fluid of a type requires no seasonal adjustments, ULTRA X TM fluid has constant temperature control from -35o C to +49o C
.4 hydraulic regulation controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench.
.5 separate adjustments for backcheck, general speed and latch speed.
.6 door closers with special template (ST-) numbers include all required associated product, information sheets and instructions.
.7 size 1 manual door closers to provide less than 5 pounds opening force on a 900mm door leaf.
.8 door closer with Pressure Relief Valves are not accepted.
.9 door closer bodies, arms, covers to be powder coated.
.10 closers with painted finishes shall exceed a minimum 100-hour salt spray test, as described in ANSI A156.18 and ASTM B117.
.11 closers detailed with plated finishes shall include plated covers (or finish plates), arms and visible fasteners.

.2 Medium Duty Mechanical:

.1 Non-sized (1-6) and non-handed cylinder body to have 1 ¼" piston diameter with 5/8" single heat-treated shaft. Track closer cylinder body non-sized (2-4) or (1-2). Closers to have forged main arm and forearm, forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply :LCN 1460 HD series

.3 Heavy Duty Mechanical:

.1 Non-sized (1-6) and non-handed cast iron cylinder body to have 1½" piston diameter with 3/4" double heat-treated pinions shaft witn 5/8" full compliment bearings. XP closer hydraulic regulation controlled by tamperproof, non-critical screw valves, abrasion resistant Vitron "O" ring, adjustable with a hex wrench. Closers to have forged steel main arm and forearm (forged steel main arm and foreoarm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever forged arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply: LCN 4040XP series

"NOTE: ALL LOW ENERGY OPERATORS SUPPLIED AND INSTALLED BY
THIS SECTION"

.4 Heavy Duty Electric Operator:

.1 Two in one swing door auto door operator, cUL listed for fire door applications.
- .1 Provisions for separate conduits to carry high and low voltage wiring in compliance with the National Electrical code.
- .2 Push 'n go permits non-switch activation.
- .3 Electromechanical unit with microprocessor control.
- .4 Tested internally to over ten million cycles.
- .5 Certified by cUL for use on labeled doors.
- .6 Adjustable hold open period Of 2 to 30 seconds in automatic or manual mode.
- .7 Push applications

Supply: 9131 series

.5 Actuators:

.1 Wall Type

.1 Wall plate switch to be hard-wired either 12VDC or 24VDC actuator with round, stainless steel touch plate in 4 ½" diameter. Engraved blue filled handicap symbol conforms to most accessibility codes. Units to include heavy grade components for vandal resistant mounting and weather resistant switch standard.

Supply: LCN 8310-856, 8310-874

.5 Overhead Door Stops/Holders:

.1 Heavy Duty Surface Mounted:

.1 Surface overhead stops/holders to be stainless steel base, non-handed for single-acting doors with a heavy-duty channel/slide-arm design and offset jamb bracket to allow for simple field modifications of functions. Channel to be surface mounted to the door with thru bolts and the jamb bracket is surface mounted to the jamb.

Supply: Glynn-Johnson 900 series

.2 Heavy Duty Concealed Mounting:

.1 Concealed overhead stops/holders to be stainless steel base, non-handed for single or double-acting doors with a low profile channel, mortised in the door and jamb bracket is mortised in the doorframe. Unit to be fully concealed when door is in the closed position. Units to be field adjustable for function changes if required.

Supply: Glynn-Johnson 100 series

.6 Door Pulls/Flatware/Coat Hooks:

.1 All flatware to be of stainless steel material, .050 gauge.

Supply as Specified: CBH 903 T304 B4E (Kickplates 40mm less door width single door and 25mm less door width double doors) CBH 380 door push/pull plates, cut for cylinder where specified with deadlocks.

.7 Floor/Wall Stops:

.1 Floor Stops: No floor stops permitted.
.2 Wall Stops (No Button on Locking Hardware):

.1 Wall stops to be constructed of stainless steel or brass/bronze base with special retainer cup that makes the rubber stop tamper resistant. Convex design of rubber bumper.

Supply as Specified:Ives WS401CVX, WS407CVX

.3 Wall Stops (Projecting Button on Locking Hardware):

.1 Wall stops to be constructed of bass/bronze base with special retainer cup that makes the rubber stop tamper resistant. Concave rubber bumper to avoid damage to locks with projecting buttons.
Supply: Ives WS401CCV

.8 Weather/Smoke/Sound Seals:

.1 Supply: KN Crowder W-21 (head/jamb seal)

.9 Electric Strikes, Electro-Magnetic Door Holders:

.1 Grade 1, electric strikes to be cUL listed burglary-resistant and electric strike for fire doors and frames. A label for single doors and B label for double doors. Electric strikes to be stainless steel construction, non-handed available in 12V or 24V AC or DC with continuous duty solenoid and accept ¾" throw latchbolts. Strike box to be adjustable to compensate for any misalignment of the door or frame with two piece plug connector for ease of installation.

Supply: Von Duprin 6000 series

.2 Electro-Magnetic Door Holders:

.1 Provide floor and wall mounted units to hold door in open position and to release and automatically close under fire alarm conditions. Electromagnet shall be protected against transients and voltage surges up to 600 volts. Power requirements, tri-voltage.

Supply: LCN-SEM 7800 series

2.3 FINISHES

.1 Unless otherwise specified, all finishes to be brushed chrome (626).

.2 Finishes are specified as follows:

ITEM	BHMA#	DESCRIPTION	BASE MATERIALS
Hinges	652	satin chrome plated	steel
Lock Trim	626	satin chrome plated	brass/bronze
Exit Devices	626	satin chrome plated	brass/bronze
Door Closer	689	powder coat aluminum	steel
Magnetic Wall Holders	689	powder coat aluminum	steel
Door Pulls	630	satin stainless steel	stainless steel
Protective Plate	630	satin stainless steel	stainless steel
Door Stops/Holders			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Miscellaneous			
Mullions	689	powder coat aluminum	steel stainless
Electric Strikes	630	satin stainless steel	steel

2.4 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

.1 Meet with the Owner to finalize keying requirements and obtain keying instructions in writing as outlined in Division 01. Furnish interior cylinders to the existing key system; all permanent core cylinders will be by Owner.

.2 Provide temporary construction keying system during construction period at all locks. Permanent keys will be furnished to the Owner's Representative prior to occupancy. The Owner or Owner's Security Agent will void the operation of the construction keys.

.3 Permanent cylinders to be keyed by factory, combined in sets or subsets, master keyed or great grand master keyed, as directed by Owner.

.4 Furnish keys in following quantities, furnish a sum total of three (3) change keys per cylinder. This sum total of keys to be cut and furnished as directed by Owner. Any unused balance of cut change keys shall be furnished as key blanks directly to Owner with the cut Keys.

.5 All keying requirements to be confirmed by Owner.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Ensure that doors and frames are properly prepared and reinforced to receive finish hardware prior to installation.

.2 Ensure that door frames and finished floor are sufficiently plumb and level to permit proper engagement and operation of hardware.

.3 Submit in writing a list of deficiencies, determined as part of inspection required, to supervising consultant prior to installation of finished hardware.

3.2 INSTALLATION

.1 Hardware Installers must have a minimum of five (5) years experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the hardware distributor.

.2 Install hardware at mounting heights as specified in the manufacturers templates or specific references in approved hardware schedule or approved elevation drawings.

.3 Where mounting height is not otherwise specified, install hardware at mounting heights as per referenced standards.

.4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.

.5 Ensure that all locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. Handing is part of installation procedure.

.6 Ensure that all exit devices are of the correct hand and adjust device cam for proper outside trim function prior to installation. Handing is part of installation procedure.

.7 Follow all manufactures installation instructions. Adjustment is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.

.8 Delayed action door closers are to be adjusted to forty (40) second delay for handicapped accessibility and movement of materials. Time period to be approved by Owner.

.9 Install head seal prior to installation of "PA"-parallel arm mounted door closers and push side mounted door stops/holders. Trim, cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.

.10 Counter sink through bolt of door pull under push plate during installation.

.11 Install blocking material of sufficient type and size in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.

3.3 FIELD QUALITY CONTROL

.1 Verify each door leaf opens closes and latches properly. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation, owner to sign off on verification of operation. Verify electric door release hardware operates properly upon activation of the fire alarm system.

.2 Finishing Hardware supplier's Architectural Hardware Consultant shall perform on-site inspections every two weeks during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.

.3 Upon completion of finish hardware installation, the Architectural Hardware Consultant and the Contractor shall inspect work and provide a list of all hardware deficiencies. The Architectural Hardware Consultant shall re-inspect when notified by the Contractor as to the clearing of deficiencies. Final inspection must ensure all hardware items operate as per manufacture requirements. Coordinate inspections with manufacturer's representatives as required to establish warranties.

.4 Once any deficiencies have been corrected, the Architectural Hardware Consultant and the Contractor shall certify in writing that all hardware items and their installation are in accord with requirements of Contract Documents.

3.4 ADJUSTING AND CLEANING

.1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.

.2 Adjust doors with self closing devices or automatic closing devices for proper operation after the HVAC system is balanced and adjusted. Verify spring power of non sized door closers is properly adjusted.

.3 All hardware to be left clean and free of disfigurements.

.4 Instruct Owner's personnel in the proper operation, adjustment and maintenance of hardware.

.5 Check all locked doors against approved keying schedule.

3.5 PROTECTION

.1 Protect hardware from damage during construction. Wrap locks panic hardware, fire exit hardware, door pull trim with kraft paper or plastic bubble materials to protect finish from damage until date of substantial completion. Remove and reinstalling or where necessary, using temporary hardware to maintain finish in new condition and maintain manufacturer's warranty.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

1.	Rough Carpentry	Section 06 10 00
2.	Gypsum Board	Section 09 29 00
3.	Acoustic Ceilings	Section 09 51 00

1.2 REFERENCES

1.	CSA S136	North American Specification for the Design of Cold-Formed Steel Structural Members
2.	CAN/ULC-S101	Standard Methods of Fire Endurance Tests of Building Construction and Materials
3.	AISI	North American Standard for Cold-Formed Steel Framing – Product Data
4.	ASTM International	
.1	A653/A653M	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.2	A641/A641M	Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
.3	A792/A792M	Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
.4	A1003	Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic coated for Cold-Formed Framing Members
.5	C645	Standard Specification for Nonstructural Steel Framing Members
.6	C754	Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products
.7	C840	Standard Specification for Application and Finishing of Gypsum Board
.8	C841	Standard Specification for Installation of Interior Lathing and Furring
.9	C844	Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster
.10	C1002	Standard Specification for Steel-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster bases to Wood Studs or Steel Studs
.11	ASTM E90	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
.12	ASTM E413	Classification for Rating Sound Insulation
.13	E488	Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
.14	E1190	Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members

.5 Canadian Sheet Steel Building Institute (CSSBI:

.1 Lightweight Steel Framing Technical Bulletin Volume 7, Number 1, Maximum Height Tables for Interior Non-Loadbearing Partitions.

1.3 QUALITY ASSURANCE

.1 Fire-Test-Response Characteristics:

.1 For fire-resistance-rated assemblies that incorporate non-loadbearing interior steel framing, provide materials and construction identical to those tested in assembly indicated according to CAN/ULS-S101.

.2 STC-Rated Assemblies:

.1 For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413.

1.4 DELIVERY AND STORAGE

.1 Handle and store materials carefully to prevent damage.

.2 Obtain approval of proposed locations for stockpiling material. Provide any necessary temporary covers, skids and the like.

.3 Do not install damaged or deteriorated material but remove from Site.

1.5 RELATIONS WITH OTHER TRADES

.1 Coordinate with other trades for the locations of items to be framed in and framed around.

.2 Co-ordinate with mechanical and electrical Trades to ensure that all services are installed prior to application of wall board.

.3 Coordinate with mechanical and electrical trades for locations of access panels. Install access doors and panels supplied by those trades.

.4 Co-ordinate with forces installing insulation and vapour barrier in exterior soffits.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Metal framing shall be as manufactured by Bailey Metal Products or approved alternate; to ASTM C645.

.2 Metal Studs and Track: minimum 0.455mm (18 mils) galvanized steel; depths as indicated on drawings, [41mm] [64mm] [92mm] [152mm].

.3 Metal Furring Channels: minimum 0.455 (18 mils) sheet galvanized steel channel and accessories as manufactured by Bailey Metal Products, or approved alternate; to ASTM C645.

.4 Cold Rolled Furring Channel: 20mm, x 12.7mm zinc coated channel weighing minimum 0.446 kg per m.

.5 Cold Rolled Carrying Channel: 38mm x 15mm zinc coated channel weighing min 0.707 kg per m.

.6 Hanger wire: minimum 3.77mm (9ga) galvanized steel wire.

.7 Tie Wire: minimum 1.5mm (16 ga) galvanized soft annealed steel.

.8 CGC Brand Screws (or approved equal) of type recommended by the board manufacturer.

.9 Thermal Break: Permanent adhesive faced rubberized cork, 3 mm thick by width of stud on channel to be used between masonry in exterior wall and metal furring channels.

.10 Ceiling Anchors: Self drilling tie wire anchors, Phillips "Red Head" T-32 or approved equal.

PART 3 - EXECUTION

3.1 GENERALS

.1 Provide plumb, straight, level, rigid, and secure installation. Failing to achieve this result shall be cause for rejection and reinstallation of this work.

.2 Where walls run parallel and under steel joists, the joists shall be framed both sides and enclosed with gypsum board to provide sound barrier between rooms.

3.2 CEILING SUSPENSION

.1 Do not regard grillage system indicated on drawings as exact or complete. The Specification for metal framing contained in CGC Gypsum Construction Handbook and ASTM C840 shall govern installation conditions not covered by this Specification. The more stringent specifications shall apply.

.2 Hangers:

.1 Install hangers for suspended wallboard ceilings to support the grillage independent of walls, columns, pipes, ducts and the like. Erect plumb and securely anchor to the structure. Submit details of proposed method to the Consultant for approval. If so requested, test hangers to prove that anchorage is adequate to support the proposed loading. Erect hangers plumb and securely anchor to structural steel or support channels fastened to structural steel (DO NOT FASTEN TO STEEL DECK).

.2 Space hangers at 1200mm maximum o.c. along the carrying channels and not more than 150mm from ends (or as required to conform with fire tested assemblies where applicable).

.3 Carrying Channels:

.1 Space channels at 1200mm maximum o.c. (or as required to conform with fire tested assemblies where applicable).
.2 Run channels transversely to structural framing members.
.3 Where splices are necessary, lap members at least 200mm and wire each end with two laps; avoid clustering or lining up splices.
.4 Attach to hangers by bending hanger under runner and securely wire in place with a saddle tie.
.5 Provide 25mm clearance between channels and abutting walls and partitions.

.4 Cross Furring
.1 Install drywall screw channels transversely across runner channels, joists or other supports.
.2 Space drywall screw channels at 600mm o.c. and not more than 150mm from perimeter walls. Provide 25mm clearance between channels and abutting walls and partitions. Use closer spacing if so noted on drawings.
.3 Secure drywall screw channels to each support with approved clip or attachment; splice joints by messing minimum 200mm and tying channels together with double strand 16 gauge tie wire.
.4 Level drywall screw channels to a maximum tolerance of 4mm over 3600mm.
.5 Drywall shall not be fixed directly to open web steel joists and the like. Provide cross furring as specified.

.5 Openings
.1 Frame openings with suitable channels; check clearances with respective Trades. Provide support for edges of boards at all cut-outs and openings in ceilings.
.2 Provide all additional hangers and supports for fixtures as required.
.3 Provide additional hangers and framing for enclosure of radiant heating panels.

.6 Bulkheads
.1 Fur out bulkheads in areas indicated and as required to conceal mechanical, electrical or other services in rooms where drywall finishes are scheduled, and elsewhere if called for on drawings.
.2 Use methods and materials as previously specified in this section.

3.3 STEEL STUD SYSTEM (PARTITION) INSTALLATION

.1 Conform to the guidelines for metal framing contained in The Gypsum Construction Handbook, CSA A.82.31, and these specifications. The most stringent requirements shall apply.

.2 Attach metal runners at floor and ceiling to structural elements with suitable fasteners located 50mm from each end and spaced 600 mm. o.c. with toggle or molly bolts spaced 400mm o.c.

.3 Position studs vertically, engaging floor and ceiling runners, and spaced 400mm o.c., unless otherwise noted on drawings. When necessary, splice studs with 200mm nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements.

.4 Where studs are installed directly against exterior walls install rubberized cork stip between studs and wall surfaces to provide thermal break.

.5 Anchor studs for shelf-walls and those adjacent to door and window frames, partition intersections and corners to ceiling and floor runner flanges with an approved crimping tool. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bent at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header.

.6 Stiffen partitions exceeding 3m long or 2.7m high with 19mm. cold rolled channels. Fix horizontally and provide the number of rows necessary to ensure a rigid installation. Provide other partition reinforcing necessary to support wall hung components, cupboards, closets and the like. Use 2 studs at jambs of openings and corners.

.7 Where horizontal runs of service lines are to be installed within the partition, erect studs with web openings aligned.

.8 Provide reinforcing and necessary stiffeners to support hollow metal frames and screens. Reinforcing to be capable of supporting screens rigidly and solid without deflection.

3.4 CHASE WALL INSTALLATION

.1 Align two parallel rows of floor and ceiling runners spaced apart as indicated. Attach to concrete slabs with concrete stub nails or power driven anchors 600 mm o.c. Attach to suspended ceilings with toggle or molly bolts 400mm o.c. Attach to wood framing with suitable fasteners 600mm o.c.

.2 Align metal studs vertically in runners, 200mm o.c. with flanges in the same direction and with studs on opposite sides of chase directly across from each other. Anchor studs to floor and ceiling runner flanges with an approved metal crimping tool.

.3 Cut cross bracing to be placed between rows of studs from gypsum panels, 400mm high by chase wall width. Space braces at quarter points not to exceed 600mm o.c. vertically and attach to stud webs with six 25mm screws 200mm o.c. maximum on each side.

.4 Bracing with 64mm metal studs may be used in place of gypsum panels. Anchor web at each end of metal brace to stud web with two 10mm pan head screws. When chase wall studs are not opposite, install metal stud cross braces 400mm o.c. horizontally and securely anchor each end to a continuous horizontal 64mm runner screw-attached to chase wall studs with the cavity.

.5 Adapt cross bracing as necessary to avoid interference with service.

3.5 WALL FURRING INSTALLATION

.1 Direct Furring Channel Attachment - Attach metal furring channels, vertically or horizontally spaced 400mm o.c. to masonry or concrete surfaces with hammer-set ro power-driven fasteners or concrete stub nails staggered 600mm o.c. on opposite flanges. Nest channels 200mm at splices and anchor with two fasteners in each wing. Where furring channel is installed directly to exterior wall, install thermal break strip between

furring channel and wall. For horizontally placed channels attach maximum 100mm from floor and ceiling.

.2 Bracketed Furring Channel Attachment:

.1 Attach adjustable wall furring brackets with serrated edges up, 900mm o.c. horizontally, 1200mm o.c. vertically, within 100mm of columns or other abutting construction, within 150mm of floor and ceiling, and as required above and below openings. Use 50mm cut nails in mortar joints of brick or clay tile or concrete block, or in field of lightweight aggregate blocks; use 16mm concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Place fastener in top hole of bracket.

.2 Lay cold-rolled channels horizontally with flanges down, on furring brackets, plumb with other channels, and tie with double strand 16 ga. or triple strand 18 ga. wire at each junction with cold rolled channel.

.3 Free Standing Furring - In locations where wall furring is indicated as self-supporting, use steel studs and furring channels installed to provide a rigid frame to receive wall board.

3.6 CONSTRUCTION OF SOUND ATTENUATED PARTITIONS

.1 Where sound insulated drywall partitions are indicated on the drawings, provide double stud wall, offsetting studs and wrapping acoustic insulation between studs.

3.7 CONSTRUCTION OF FIRE RATED PARTITIONS

.1 Where fire rated construction is required, the framing shall be governed by rating required and material used in approved assemblies.

.2 Provide 1 hour rated beam enclosures, where required, to ULC design.

3.8 CONSTRUCTION OF SUSPENDED AND FURRED CEILINGS

.1 Apply gypsum panels of maximum practical length with long dimension at right angles to drywall furring channels. Position end joints over furring channel web and staggered in adjacent rows.

.2 Fasten panels to drywall furring channels with screws spaced a maximum of 300mm o.c. in field of panels and along abutting ends and edges.

.3 Provide framing and drywall finish in stairwells, where required to enclose underside of stairs and landings.

.4 Where noted on plans, provide bulkheads with steel framing and drywall finish.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

1.	Rough Carpentry	Section 06 10 00
2.	Acoustic Ceilings	Section 09 51 00
3.	Painting and Coating	Section 09 90 00

1.2 REFERENCES

.1 ASTM International:

1.	ASTM C1396	Standard Specification for Gypsum Board
2.	ASTM C840	Standard Specification for Application and Finishing of Gypsum board
3.	ASTM C1629	Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fibre-Reinforced Cement Panels.

.2 CAN/ULC-S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials

.3 Gypsum Association:

.1	GA-214	Recommended Levels of Gypsum Board Finish
.2	GA-216	Application and Finishing of Gypsum Panel Products

.4 The Gypsum Construction Handbook - CGC Inc.

1.3 DELIVERY AND STORAGE

.1 Handle and store materials carefully to prevent damage. Materials must be delivered to site in their original, unopened packages.

.2 Obtain approval of proposed locations for stockpiling material. Materials must be stored in an enclosed shelter providing protection from exposure to the elements. Provide any necessary temporary covers, skids and the like.

.3 Store all panels flat.

.4 Do not install damaged or deteriorated material but remove from Site.

.5 Materials as delivered shall bear manufacturer's name, brand name of material and where applicable, ULC designation.

1.4 ENVIRONMENTAL CONDITIONS

.1 Do not apply gypsum board or joint filler to surfaces that are damp or contain frost.

.2 During gypsum panel application and joint finishing, temperatures within work areas shall be within the range 12 degrees C. to 25 degrees C.

.3 Provide adequate ventilation to carry off excess moisture

1.5 RELATIONS WITH OTHER TRADES

.1 Co-ordinate with mechanical and electrical Trades to ensure that all services are installed prior to application of wall board.

.2 Coordinate with mechanical and electrical trades for locations of access panels. Install access doors and panels supplied by those trades.

.3 Co-ordinate with forces installing insulation and vapour barrier in exterior soffits.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 All materials to conform to ASTM C1396 unless specified otherwise. Except where noted otherwise, products listed herein are produced by Canadian Gypsum Company (CGC). Equivalent products from Georgia Pacific (GP) and Certainteed will be accepted, subject to acceptance of equivalency by the Consultant.

.2 Gypsum panels:

.1 Typical panels to be 16mm thick abuse resistant and mould resistant, to ASTM C1629. Sheetrock Mold Tough Abuse Resistant Firecode Core gypsum panels or GP ToughRock Fireguard X Mold-Guard Abuse Resistant gypsum board.

.2 Panels in gypsum board ceilings at high ceilings may be 13mm thick mould resistant panels; CGC Sheetrock Mold Tough or GP ToughRock Mold-Guard.

.3 Refer to notes below regarding gypsum panels in washrooms.

.3 Metal Studs and Channels: minimum 0.455mm (26 ga) galvanized steel as manufactured by Bailey Metal Products or approved alternate; to ASTM C645.

.4 Metal Furring Channels: minimum 0.455 (26ga) sheet galvanized steel channel and accessories as manufactured by Bailey Metal Products, or approved alternate; to ASTM C645.

.5 Cold Rolled Furring Channel: 20mm, x 12.7mm zinc coated channel weighing minimum 0.446 kg per m.

.6 Cold Rolled Carrying Channel: 38mm x 15mm zinc coated channel weighing min 0.707 kg per m.

.7 Cold Rolled Carrying Channel: 28 ga. galvanized steel with perforated flanges; one piece per location.

.8 Control Joint: CGC No. 093.

.9 Hanger wire: minimum 3.77mm (9ga) galvanized steel wire.

.10 Tie Wire: minimum 1.5mm (16 ga) galvanized soft annealed steel.

.11 Screws: CGC Brand Screws (or approved equal) of type recommended by the board manufacturer.

.12 Thermal Break: Permanent adhesive faced rubberized cork, 3 mm thick by width of stud on channel to be used between masonry in exterior wall and metal furring channels.

.13 Joint Treatment Material:

- .1 Joint compound, topping compound, laminating compound; to ASTM C474 and C475.
- .2 Use material recommended by board and tape manufacturer for the proposed use.
- .3 CGC Sheetrock or Durabond Setting-Type, for use with CGC fibreglass drywall tape.

.14 Reinforcing Tape:

- .1 Paper or fibreglass mesh tape, as recommended by the panel manufacturer for the panel type.

.15 Finish materials

- .1 Over surface of glass mat faced boards, use level 5 finisher such as CGC Tuff Hide.

.16 Acoustic sealant: Quietseal Pro as manufactured by Quietrock, or equivaltent as manufactured by CGC, Tremco or Presstite Division of Interchemical Corporation for acoustic partitions.

.17 Acoustic Insulation: AFB acoustic fire batt by Roxul or Thermafiber SAFB Sound Attenuation Fire Blankets (unfaced) from Owens Corning, to thickness shown on drawings, and as required to obtain required S.T.C. rating.

.18 Ceiling Anchors: Self drilling tie wire anchors, Phillips "Red Head" T-32 or approved equal.

.19 Access Panels: Refer to mechanical and electrical.

PART 3 - EXECUTION

3.1 GENERAL

.1 Provide plumb, straight, level, rigid, and secure installation. Failing to achieve this result shall be cause for rejection and reinstallation of this work.

.2 Conform to The Gypsum Construction Handbook, ASTM C840, and these specifications. The most stringent requirements shall apply.

.3 Where walls run parallel and under steel joists, the joists shall be enclosed both sides with gypsum board to provide sound barrier between rooms. Fill with minimum 100 mm acoustic batt insulation.

.4 Install access panels supplied by mechanical and electrical contractors. Rigidly secure panel frames to furring or framing systems.

3.2 CEILING SUSPENSION

.1 Do not regard grillage system indicated on drawings as exact or complete. The Specification for metal framing contained in CGC Gypsum Construction Handbook and ASTM C840 shall govern installation conditions not covered by this Specification. The more stringent specifications shall apply.

.2 Hangers

.1 Install hangers for suspended wallboard ceilings to support the grillage independent of walls, columns, pipes, ducts and the like. Erect plumb and securely anchor to the structure. Submit details of proposed method to the Consultant for approval. If so requested, test hangers to prove that anchorage is adequate to support the proposed loading. Erect hangers plumb and securely anchor to structural steel or support channels fastened to structural steel (DO NOT FASTEN TO STEEL DECK).

.2 Space hangers at 1200mm maximum o.c. along the carrying channels and not more than 150mm from ends (or as required to conform with fire tested assemblies where applicable.

.3 Carrying Channels

.1 Space channels at 1200mm maximum o.c. (or as required to conform with fire tested assemblies where applicable).

.2 Run channels transversely to structural framing members.

.3 Where splices are necessary, lap members at least 200mm and wire each end with two laps; avoid clustering or lining up splices.

.4 Attach to hangers by bending hanger under runner and securely wire in place with a saddle tie.

.5 Provide 25mm clearance between channels and abutting walls and partitions.

.4 Cross Furring

.1 Install drywall screw channels transversely across runner channels, joists or other supports.

.2 Space drywall screw channels at 600mm o.c. and not more than 150mm from perimeter walls. Provide 25mm clearance between channels and abutting walls and partitions. Use closer spacing if so noted on drawings.

.3 Secure drywall screw channels to each support with approved clip or attachment; splice joints by messing minimum 200mm and tying channels together with double strand 16 gauge tie wire.

.4 Level drywall screw channels to a maximum tolerance of 4mm over 3600mm.

.5 Drywall shall not be fixed directly to open web steel joists and the like. Provide cross furring as specified.

.5 Opening

.1 Frame openings with suitable channels; check clearances with respective Trades. Provide support for edges of boards at all cut-outs and openings in ceilings.

.2 Provide all additional hangers and supports for fixtures as required.

.3 Provide additional hangers and framing for enclosure of radiant heating panels.

.6 Bulkheads

.1 Furr out bulkheads in areas indicated and as required to conceal mechanical, electrical or other services in rooms where drywall finishes are scheduled, and elsewhere if called for on drawings.

.2 Use methods and materials as previously specified in this section. Drywall panels at bulkheads shall be as specified for walls.

3.3 STEEL STUD SYSTEM (PARTITION) INSTALLATION

.1 Conform to the guidelines for metal framing contained in The Gypsum Construction Handbook, CSA A.82.31, and these specifications. The most stringent requirements shall apply.

.2 Attach metal runners at floor and ceiling to structural elements with suitable fasteners located 50mm from each end and spaced 600 mm. o.c. with toggle or molly bolts spaced 400mm o.c.

.3 Position studs vertically, engaging floor and ceiling runners, and spaced 400mm o.c., unless otherwise noted on drawings. When necessary, splice studs with 200mm nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls install rubberized cork stip between studs and wall surfaces to provide thermal break.

.4 Anchor studs for shelf-walls and those adjacent to door and window frames, partition intersections and corners to ceiling and floor runner flanges with an approved crimping tool. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bent at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header.

.5 Stiffen partitions exceeding 3m long or 2.7m high with 19mm. cold rolled channels. Fix horizontally and provide the number of rows necessary to ensure a rigid installation. Provide other partition reinforcing necessary to support wall hung components, cupboards, closets and the like. Use 2 studs at jambs of openings and corners.

.6 Where horizontal runs of service lines are to be installed within the partition, erect studs with web openings aligned.

.7 Provide reinforcing and necessary stiffeners to support hollow metal frames and screens. Reinforcing to be capable of supporting screens rigidly and solid without deflection.

3.4 CHASE WALL INSTALLATION

.1 Align two parallel rows of floor and ceiling runners spaced apart as indicated. Attach to concrete slabs with concrete stub nails or power driven anchors 600 mm o.c. Attach to suspended ceilings with toggle or molly bolts 400mm o.c. Attach to wood framing with suitable fasteners 600mm o.c.

.2 Align metal studs vertically in runners, 200mm o.c. with flanges in the same direction and with studs on opposite sides of chase directly across from each other. Anchor studs to floor and ceiling runner flanges with an approved metal crimping tool.

.3 Cut cross bracing to be placed between rows of studs from gypsum panels, 400mm high by chase wall width. Space braces at quarter points not to exceed 600mm o.c. vertically and attach to stud webs with six 25mm screws 200mm o.c. maximum on each side.

.4 Bracing with 64mm metal studs may be used in place of gypsum panels. Anchor web at each end of metal brace to stud web with two 10mm pan head screws. When chase wall studs are not opposite, install metal stud cross braces 400mm o.c. horizontally and securely anchor each end to a continuous horizontal 64mm runner screw-attached to chase wall studs with the cavity.

.5 Adapt cross bracing as necessary to avoid interference with service.

3.5 WALL FURRING INSTALLATION

.1 Direct Furring Channel Attachment - Attach metal furring channels, vertically or horizontally spaced 400mm o.c. to masonry or concrete surfaces with hammer-set ro power-driven fasteners or concrete stub nails staggered 600mm o.c. on opposite flanges. Nest channels 200mm at splices and anchor with two fasteners in each wing. Where furring channel is installed directly to exterior wall, install thermal break strip between

furring channel and wall. For horizontally placed channels attach maximum 100mm from floor and ceiling.

.2 Bracketed Furring Channel Attachment

.1 Attach adjustable wall furring brackets with serrated edges up, 900mm o.c. horizontally, 1200mm o.c. vertically, within 100mm of columns or other abutting construction, within 150mm of floor and ceiling, and as required above and below openings. Use 50mm cut nails in mortar joints of brick or clay tile or concrete block, or in field of lightweight aggregate blocks; use 16mm concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Place fastener in top hole of bracket.

.2 Lay cold-rolled channels horizontally with flanges down, on furring brackets, plumb with other channels, and tie with double strand 16 ga. or triple strand 18 ga. wire at each junction with cold rolled channel.

.3 Free Standing Furring - In locations where wall furring is indicated as self-supporting, use steel studs and furring channels installed to provide a rigid frame to receive wall board.

3.6 APPLICATION OF GYPSUM BOARD

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply all gypsum board parallel to framing. Position all ends over studs. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Stagger joints on opposite sides of partition.

.4 Apply single, double or triple layers of gypsum board to metal furring as indicated using screw fasteners.

.5 Maximum screw spacing for single-ply gypsum board and face ply of 2-ply gypsum board to be 300mm o.c.

.6 Maximum spacing of screws for base-ply of 2-ply gypsum board over steel framing to be 300mm o.c. along edges of the gypsum board and 600mm o.c. into stud or furring channel in the field of the gypsum board.

.7 Use cement board as backer board wherever tile is to be installed to walls of shower partitions.

3.7 ADHESIVE APPLICATION

.1 Where gypsum board is called to be laminated to masonry walls, application shall conform to Gypsum Association Publication GA-216-2013, Section 11, “Adhesive Application of Gypsum Panel Products to Interior Masonry, Concrete, or Brick Walls”.

.2 Do taping and filling, as specified below, for paint finish.

3.8 CONSTRUCTION OF SOUND ATTENUATED PARTITIONS

.1 Where sound insulated drywall partitions are indicated on the drawings, provide double stud wall, offsetting studs and wrapping acoustic insulation between studs. Apply one layer of specified soundproof wallboard, on both faces of wall.

.2 Install sound attenuation batts to completely fill void between studs.

.3 A 6mm continuous bead of acoustical sealant around perimeter of wall at web of top and bottom tracks and end studs. Lay gypsum board into position forcing caulking bead to fill space between gypsum board and structure.

.4 Seal full perimeter for cut-outs around electrical boxes and ducts with acoustical sealant.

3.9 CONSTRUCTION OF FIRE RATED PARTITIONS

.1 Where fire rated construction is required, the thickness and number of layers of board shall be governed by rating required and material used in approved assemblies.

.2 Provide 1 hour rated beam enclosures, where required, to ULC design.

3.10 CONSTRUCTION OF SUSPENDED AND FURRED CEILINGS

.1 Apply gypsum panels of maximum practical length with long dimension at right angles to drywall furring channels. Position end joints over furring channel web and staggered in adjacent rows.

.2 Closely fit together, ends and edges but not forced together.

.3 Fasten panels to drywall furring channels with screws spaced a maximum of 300mm o.c. in field of panels and along abutting ends and edges.

.4 Provide control joints in ceilings as noted but maximum 7500 mm o.c. each way or at change in direction.

.5 Provide framing and drywall finish in stairwells, where required to enclose underside of stairs and landings.

.6 Where noted on plans, provide bulkheads with steel framing and drywall finish.

3.11 WALL FURRING

.1 Apply gypsum panels parallel to framing. Position all edges over drywall furring channels with joints staggered in successive courses.

.2 Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Fasten panels to channels with screws spaced a maximum 300mm oc.

3.12 APPLICATION OF ACCESSORIES

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Joints shall be made tight, accurately aligned and rigidly secured.

.2 Reinforce all vertical and horizontal exterior corners with cornerbead fastened with screws 200mm oc on both flanges along entire length of bead.

.3 Where assembly terminates against masonry or other dissimilar material, apply ledge trim over panel edge and fasten with screws or staples spaced 300 mm. oc.

.4 Power drive screws at least 9mm. from edges or ends of panel to provide uniform dimple 0.8mm deep.

.5 Where recessed reglets are noted on drawings, built into drywall assembly to provide edges flush with drywall.

3.13 TAPING AND FILLING

.1 Finish in accordance with GA-214, as follows:

.1 Exposed gypsum board to Level 5 finish, suitable for finish painting with semi-glass and gloss coatings. Use full skim coat of joint compound over entire surface to achieve smooth and uniform appearance.
.2 Concealed gypsum board to minimum Level 1 finish. Where a fire-resistance rating is required, finishing level must conform to ULC rated assembly design.

.2 Finish face panel joints and internal angles with joint system consisting of self-adhering cross-fibre fibreglass joint tape and joint compound installed according to manufacturer's directions and feathered out into panel faces. Note: If self-adhering joint tape is not used, taping compound will be required.

.3 Be sure drywall surface is dry and clean.

.4 Center and apply CGC Fiberglass Drywall Tape directly over joint, pressing firmly to ensure even adherence to surface. Eliminate wrinkles by pressing entire length of tape with drywall knife. Avoid overlapping tape at intersections. Cut tape with drywall knife.

.5 Cover taped joint with a layer of setting-type joint compound, forcing compound through the tape with a drywall knife or trowel to completely fill and level the joint. Allow joint to dry, and sand lightly. Apply second coat of setting-type or drying-type joint compound, feathering approximately 50mm beyond first coat. Let dry and sand lightly as required.

.6 To finish inside corners, bend tape with to form a “U” shape. Apply tape along one side only. Press tape into corner for approximately 30mm, then apply the other side. Work downward, alternating sides in this manner until tape is pressed firmly in place. Apply setting-type joint compound as specified above, first on one side for the length of the corner and then repeating the process on the second side.

.7 Finish fastener heads, corner bead and trim as required with two to three coats of joint compound, feathered out onto panel faces and sanded to a smooth surface.

.8 Provide skim coat over entire face of boards to ensure smooth surface for painting.

.9 Fill screw head depressions to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.10 Sand dried taping compound lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

.12 Painting shall be done in accordance with Section 09 90 00

END OF SECTION

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

.1	General Requirements	Division 01
.2	Concrete Finishing	Section 03 35 00
.3	Concrete Unit Masonry	Section 04 05 22
.4	Joint Sealants	Section 07 92 00
.5	Gypsum Board	Section 09 29 00
.6	Portland Cement Terrazzo Flooring	Section 09 66 13
.7	Washroom Accessories	Section 10 28 13

1.2 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)

- .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
- .2 CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
- .3 CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
- .4 CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
- .5 CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).

.2 American Society for Testing and Materials International (ASTM)

- .1 ASTM C144-04, Specification for Aggregate for Masonry Mortar.
- .2 ASTM C207-06, Specification for Hydrated Lime for Masonry Purposes.
- .3 ASTM C847-06, Specification for Metal Lath.
- .4 ASTM C979-05, Specification for Pigments for Integrally Coloured Concrete.

.3 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-51.34-M86(R1988) , Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .2 CGSB 71-GP-22M-78(AMEND.), Adhesive, Organic, for Installation of Ceramic Wall Tile.
- .3 CAN/CGSB-75.1-M88, Tile, Ceramic.
- .4 CAN/CGSB-25.20-95, Surface Sealer for Floors.

.4 CSA Group (CSA)

- .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
- .2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.5 South Coast Air Quality Management District (SCAQMD), California State

.1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

.6 Terrazzo Tile and Marble Association of Canada (TTMAC)

.1 Tile Specification Guide 09 30 00 2006/2007, Tile Installation Manual.

.2 Tile Maintenance Guide 2000.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

.1 Include manufacturer's information on:

.1 Ceramic tile, marked to show each type, size, and shape required.

.2 Chemical resistant mortar and grout (Epoxy and Furan).

.3 Cementitious backer unit.

.4 Dry-set cement mortar and grout.

.5 Divider strip.

.6 Elastomeric membrane and bond coat.

.7 Reinforcing tape.

.8 Levelling compound.

.9 Latex cement mortar and grout.

.10 Commercial cement grout.

.11 Organic adhesive.

.12 Slip resistant tile.

.13 Waterproofing isolation membrane.

.14 Fasteners.

.3 Provide samples in accordance with Section 01 33 00- Submittal Procedures.

.1 Base tile: submit, 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

.2 Floor tile: submit, 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

.3 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

.4 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

.4 Closeout Submittals in accordance with Section 01 78 00 – Closeout Submittals.

.1 Submit three (3) copies of TTMAC Hard Surface Maintenance Guide, for inclusion in maintenance manuals.

.2 Provide document listing specific warnings of any maintenance products or practices that could possible damage the finish work.

1.4 QUALITY ASSURANCE

.1 Quality Assurance Submittals:

.1 Manufacturer's Instructions: manufacturer's installation instructions.

.2 Manufacturer's Field Reports: manufacturer's field reports specified.

.3 The work of this section shall be carried out by a company that is a member in good standing of the Terrazzo, Tile and Marble Association of Canada.

.4 This work shall be done under proper supervision by person's skilled in the methods following the recommendations of the manufacturer of the Products involved and having a minimum of two years proven experience.

.5 The ceramic tile Subcontractor shall provide proof of having successfully completed at least two years proven experience.

.6 Epoxy grout installation shall be carried out only by an installer experienced in the use of this Product with strict conformance to the manufacturer's installation and cleaning recommendations.

.7 The epoxy grout manufacturer/supplier shall visit the site prior to commencement of grouting to review installation and cleaning procedures with the ceramic tile Subcontractor.

.8 Prevent any traffic over completed floors for a period of 72 hours after completion.

.9 Provide protection of finished floors subject to construction traffic.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with Manufacturer's written instructions.

1.6 AMBIENT CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.

.2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.7 MOCK-UPS

.1 Construct mock-up panels in accordance with Section 01 45 00 – Quality Control.

.2 Construct mock-up panels of finished ceramic tile work, 2.5m by 2.5m in size, of each ceramic tile type.

.3 Construct mock-up panels where directed by the Consultant.

.4 The procedure for Cleaning the grout from the tile shall be carried out in the presence of the Owner's representative, the Consultant, and the Contractor for a minimum of three washes.

.5 Allow 48 hours for inspection of mock-up panels by the consultant before proceeding with work.

.6 When accepted, mock-up panels will demonstrate minimum standard for this work. The approved mock-up panels may remain as part of the finished work.

1.8 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00- Closeout Submittals.

.2 Provide minimum 2 boxes of each type and colour of tile required for project for maintenance use. Store where directed.

.3 Maintenance material same production run as installed material.

.2 Provide four copies of the TTMAC Maintenance Guide, latest edition, for inclusion in the Maintenance Manual.

.3 Give specific warning of any maintenance practice or material which may damage or disfigure the finish work or alter the coefficient of friction (i.e. slip resistance) of the finished surface.

1.9 WARRANTY

.1 Provide a warranty for ceramic tile work in accordance with the General Conditions, but for a period of three (3) years.

.2 The warranty shall cover the complete installation provided under this section against defective material and workmanship.

PART 2 PRODUCTS

2.1 WALL TILE

.1 Ceramic Wall Tile (CWT): to CAN/CGSB-75.1, Type 5, Class MR 4, modified square edges. Matching edge trim to suit application.

.1 Acceptable Products for washroom walls:

.1 Unicolour Series, Porcelain Wall Tile.

.1 Supplied by Olympia Tile and Stone.; Tel: 416-785-6666.
.2 Size: 10cm x 40cm.
.3 Finish: Matte.
.4 Installation: Vertical Stackbond.
.5 Colours:
.1 CWT1 Field Colour: Light Grey.
.2 CWT2 Accent Colour: Dark Grey.

2.2 BASE TILE

.1 Base: All materials to match porcelain floor tile, interior and exterior corners, trims and shapes indicating field colour or accent bands as indicated on drawings.

.2 At POR floor tile and CWT walls, provide 100mm high POR base with continuous metal top edge described below under 2.8 Accessories.

2.3 TRIM SHAPES

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use slip resistant trim shapes for horizontal surfaces of showers, and drying area curbs.

.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.4 Internal and External Corners: provide trim shapes as follows where indicated.

.1 Bullnose shapes for external corners including edges.

.2 Coved shapes for internal corners.

.3 Special shapes for:

.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.

.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.

.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.

.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

2.4 MORTAR, ADHESIVE MATERIALS AND MIXES

.1 Cement: to CSA-A5, type 10.

.2 Sand: to ASTM C144, passing 16 mesh.

.3 Hydrated lime: to ASTM C207.

.4 Latex additive: formulated for use in cement mortar and thin set bond coat.

.5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

.6 Adhesives: to be supplied by grout supplier.

.1 Maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.7 Mortar Bed for Floors: 1 part Portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Use latex additive in modification of mortar bed. Alternatively use Flextile Ltd., 4:1 Dry Pack Mortar and No.44 Latex Additive. Or Flextile Ltd., 4:1 Dry Pack Mortar and No. 43 Latex Additive.

.8 Levelling coat: 1 part Portland cement, 4 part sand, minimum 1/10 part latex additive, 1 part water including latex additive. Alternatively use Flextile Ltd., No.59 Flex-Flo or No.5900 Flex-Flo Plus.

.9 Measure mortar ingredients by volume.

.10 Dry Set Mortar: mix to manufacturer's instructions.

2.5 BOND COAT

.1 Dry set cement mortar: to ANSI A108.1.

.2 Organic adhesive: to ANSI A136.1 CGSB 71-GP-22M.

.1 Maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.3 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.

.4 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:

.1 Compressive Strength: 246 kg/cm^2.

.2 Bond Strength: 53 kg/cm^2.

.3 Water Absorption: 4.0% Max.

.4 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.

.5 Smoke Contribution Factor: 0.

.6 Flame Contribution Factor: 0.

.7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.

.8 Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.5 Chemical-Resistant Bond Coat:

.1 Epoxy Resin Type: CTI A118.3.

.2 Furan Resin Type: CTI A118.5.

.3 Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

2.6 GROUT

.1 Colouring Pigments:

.1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.

.2 Colouring pigments to be added to grout by manufacturer.

.3 Job coloured grout are not acceptable.

.4 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.

.2 Cement Grout: to ANSI A108.1.

.1 Use one part white cement to one part white sand passing a number 30 screen.

.3 Commercial Cement Grout: to CTI A118.6.

.4 Dry-Set Grout: to CTI A118.6.

.5 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

.6 Chemical-Resistant Grout:

.1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.

.2 Furan grout: to CTI A118.5.

2.7 ACCESSORIES

.1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

.2 Divider strips:

.1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.

.3 Cleavage plane: polyethylene film to CGSB 51-34.

.4 Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m^2

.5 Transition Strips: purpose made metal extrusion; anodized aluminum type.

.6 Reducer Strips: purpose made metal extrusion; anodized aluminum type; maximum slope of 1:2.

.7 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

.1 Control joints: Schluter Systems “Dilex-AKWS” movement joint, 6mm wide, with aluminum anchors perforated for bonding into mortar and PVC movement material forming joint surface. Colour to be selected by Consultant, to match grout as closely as possible.

.8 Sealant: in accordance with Section 07 92 00- Joint Sealants.

.8 Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168.

2.8 MIXES

.1 Cement:

.1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.

.2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.

.3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.

.6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.

.7 Measure mortar ingredients by volume.

.2 Dry set mortar: mix to manufacturer's instructions.

.3 Organic adhesive: pre-mixed.

.1 Adhesives: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.4 Mix bond and levelling coats, and grout to manufacturer's instructions.

.5 Adjust water volumes to suit water content of sand.

2.9 PATCHING AND LEVELLING COMPOUND

.1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.

.2 Tensile strength - 7 MPa.

.3 Flexural strength - 7 MPa.

.4 Density - 1.9.

.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.10 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.

.2 Materials containing acid or caustic material are not acceptable.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 WORKMANSHIP

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.

.2 Apply tile or backing coats to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.8 Make internal angles square, external angles bullnosed.

.9 Use bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.10 Install divider strips at junction of tile flooring and dissimilar materials.

.11 Allow minimum 24 hours after installation of tiles, before grouting.

.12 Clean installed tile surfaces after installation and grouting cured.

.13 Make control joints at 5.5m maximum in each direction or a length to width ratio of 2.5 to 1. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00- Joint Sealants. Keep building expansion joints free of mortar and grout.

3.3 WALL TILE

.1 Install in accordance with TTMAC detail

3.4 FLOOR SEALER AND PROTECTIVE COATING

.1 Apply in accordance with manufacturer's instructions.

3.5 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

.1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 EXAMINATION AND PREPARATION

.1 Surfaces shall be clean, dimensionally stable, cured, and free of contaminants such as oil, sealers and curing compounds.

.2 Concrete Substrate Finish: Cure concrete for a minimum of 28 days.
- .1 Thin-set applications: steel trowel and fine broom finish.
- .2 Mortar bed applications: screed finish.
- .3 Mortar bed applications with a cleavage membrane: Steel trowel finish.

.3 Substrate Surface Variation:
- .1 Mortar bed applications: 6mm in 3000mm maximum.
- .2 Thin-set applications: 3mm in 3000mm and 1.5mm in 305mm maximum.
- .3 Vertical surfaces: 3mm in 2400mm.

.4 Examine areas in which the work of this section is to be applied and notify the Consultant of any deficiencies which must be corrected before work can commence.

.5 Do not proceed with the work until improper conditions are corrected.

.6 Protect other work during installation and protect tile work until properly set, grouted and sealed.

.7 Co-ordinate the work of this section related to the work of other sections.

.8 Apply a leveling coat on uneven surfaces, or surfaces which do not guarantee a plumb or level finish to the tile.

3.7 INSTALLATION AND WORKMANSHIP

.1 Apply tile or backing coats to clean and sound surfaces.

.2 Bring every fourth course, vertical and horizontal, to plumb and level continuous lines.

.3 Thoroughly back-up with mortar all cove, cap, nosing, trimmer, and moulded or shaped pieces and secure firmly in place.

.4 Fit tile around corners, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth, even, and free from chipping. Edges resulting from splitting are not acceptable. Rub exposed edges smooth with abrasive stone.

.5 Leave or cut opening to correct sizes to receive accessories, fittings, or other built-in work.

.6 Drill tile for hardware and for pipes where possible. Otherwise, at pipes and fittings, fit tile closely so that escutcheons cover cut edges of tile.

.7 Maximum finished surface tolerance shall be 1:800.

.8 Make joints between tile uniform, plumb, straight, true, even and flush with adjacent tile with a tolerance of 1mm per 3mm of joint width.

.9 Ensure sheet layout is not visible after installation. Align patterns. Align joints of wall tile with floor tile.

.10 Lay out tiles so that fields are centred on areas, and according to the drawings with perimeter and cut tiles a minimum 1/2 size. Maintain height of panels in full courses to nearest indicated dimension.

.11 Keep 2/3 of the depth of grout joints free of setting material.

.12 Sound tiles after setting and replace hollow- sounding units to obtain full bond.

.13 Make internal angles square, external angles rounded.

.14 Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.15 Install divider strips at junction of tile flooring and dissimilar materials.

.16 Allow a minimum of 24 hours after installation of tiles before grouting. Grouting shall be in accordance with manufacturer's directions. Fill joints solidly.

.17 Finished grout shall be uniform in colour, smooth and without voids, pinholes or low spots. Cover setting bed completely.

.18 Protect tiles from grout staining. Test in advance and pre-seal tile if required. Follow grout manufacturer=s recommendations for grout and residue removal. Remove excess grout and polish with clean cloths.

.19 Clean installed tile surfaces after installation and grouting has cured. Final cleaning is specified in Section 01 74 00 – Cleaning and Waste Management.

.20 Finished tile work shall be free of tiles which are pitted, chipped, cracked or scratched.

.21 Install expansion joints where indicated. Install specified control joints at 6000mm on centre in each direction unless indicated otherwise. Make joint width same as tile joints. Where indicated, fill control joints with sealant in accordance with Section 07 92 00 - Sealants. Keep building expansion joints free of mortar and grout. Match colour of sealant to colour of grouted joints.

.22 Caulk around piping and fittings extending through tiled surfaces. Tool to a smooth, flush surface, free from air bubbles and contamination. Provide backer rod under sealant.

.23 Protect installed areas from traffic until setting materials have cured for the periods specified in the TTMAC Tile Installation Manual.

.24 Barricade grouted areas to prevent foot traffic for 24 hours after grouting.

3.8 CLEANING

.1 Proceed in accordance with Section 01 74 00 - Cleaning and Waste Management.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Gypsum Board	Section 09 29 00
.2	Mechanical Equipment	Division 20, 22
.3	Electrical Equipment	Division 26, 27, 28

1.2 CEILING SYSTEMS

.1 This Specification includes the ceiling assembly systems listed below, noted in schedules and shown on reflected ceiling plans, including ceiling panels, suspension system and trim.

.2 Ceiling systems shall be 610mm x 1220mm lay in exposed Tee system, non- rated.

1.3 REFERENCE STANDARDS

.1	ASTM C635	Specifications for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
.2	ASTM C636	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
.3	CAN/CGSB 92.1	Sound Absorptive Prefabricated Acoustical Units

1.4 DESIGN

.1	N.R.C. Range:	Unless otherwise noted under description of ceiling system the N.R.C. Range shall be 60-65 (Table 1 of CAN/CGSB 92.1).
.2	Ceiling S.T.C.:	Unless otherwise noted under description of ceiling system the S.T.C. rating shall be 35 or better.
.3	Light Reflectance:	Unless otherwise noted under description of ceiling system, panels shall have a light reflectance co-efficient designation of L.R.1 (0.75 minimum). Table 3 of CAN/CGSB 92.1 refers.

1.5 SHOP DRAWINGS

.1 Reflected ceiling plans indicate proposed layout but this shall not relieve Contractor of responsibility for co-ordination of the work and provision of Shop Drawings where field conditions call for variation from proposed layout.

.2 Submit shop drawings accurately locate lighting fixtures, ventilating grilles, sprinkler heads, exit lights and other ceiling fittings.

.3 Conform to Section 01 33 23 – Shop Drawings, Product Data and Samples.

3.6 SAMPLES

.1 Upon award of the Contract submit duplicate 300mm by 300mm sample panels of each acoustical unit proposed for installation in the project. All panels subsequently used on the job shall match the approved sample.

.2 Submit one representative model sample of each suspension system members for approval prior to commencement of installation.

.3 Ceiling system sample shall show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes and acoustical unit installation.

3.7 DELIVERY AND STORAGE

.1 Transport, handle and store material in manner to prevent warp, twist and damage to tile and board edges and surfaces in accordance with the manufacturer's recommendations.

.2 Any warped and/or damaged boards, tile and trim shall be rejected and be replaced by new, straight, undamaged and acceptable materials at no cost to the Owner.

.3 Store material in warm, dry place away from water and the elements. Protect against undue loading stresses and shock.

.4 All packaged material shall be delivered in original manufacturers' wrappers and containers with labels and seals intact.

3.8 PROTECTION

.1 Exercise care in the execution of work under this Section to prevent damage to finished surfaces and adjacent work, and mechanical and electrical installations.

3.9 EXTRA PANELS

.1 Provide 2 full boxes of acoustic panels of each type specified for use in maintenance work. Obtain receipt from the Consultant or Owner’s representative on site.

.2 Do not use panels supplied to Owner for maintenance work to make good any damaged or removed tile required by Contract.

.3 Clearly label all boxes and delivery and store the boxes as directed by the Owner.

3.10 SPECIAL CLEANING

.1 Clean, repair or replace dirty, discoloured or defective units or exposed suspension members to Consultant's satisfaction.

3.11 ENVIRONMENT AND REGULATORY REQUIREMENTS

.1 Commence installation after building enclosed and dust- generating activities completed.

.2 Permit wet work to dry prior to commencement of installation.

.3 Maintain uniform minimum temperature of 15 deg. C. and humidity of 20% to 40% prior to, during and after installation.

.4 Comply with Ontario Hydro Electrical Inspection Bulletin No. 30-4-3 regarding support of luminaires in suspended ceilings. Submit to the Consultant a certificate confirming that the ceiling support grid provides support for lighting fixtures in accordance with Ontario Hydro requirements.

.5 Deliver finish materials in unopened packaging provided by manufacturer.

.6 Store materials in work area 48 hours prior to installation, in protected dry areas.

6.1 QUALITY ASSURANCE

.1 Installer is to be experienced in performing work of this section and who has specialized in installation of work similar to that required for this project.

.2 Installer is to have a minimum of five (5) years of experience in performing the work described.

6.2 WARRANTY

.1 The Warranty stipulated in the General Conditions of the Contract shall be deemed to include the following definition in reference to Work specified in this Section. The following will be considered defects without being limited thereto:

.1 Failure of the suspended ceiling to remain water level.
.2 Lifting or sagging of tile and board between supports.
.3 Staining and discolouration of factory finishes.
.4 Development of corrosion of galvanized ferrous metal.
.5 Development of cracks, splits and other surface deterioration in acoustic panels.
.6 Failure of hanging wire anchorage.

.2 The warranty period shall be two (2) years, commencing on the date of Substantial Performance of the Work.

.3 Warranties shall be issued to the Owner within two (2) Working Days following the date of Substantial Performance of the Work.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Acoustic Ceiling Panels (ACT and ACT-N):
- .1 Typical non-fire rated ceilings, to CAN/CGSB-92.1
- .2 Type: Mineral composition acoustical units, sag resistant.
- .3 Pattern: Non-directional fissured.
- .4 Edge type: Square Lay-in.
- .5 Colour: White.
- .6 Thickness: 16mm minimum.
- .7 Size: 610mm x 1220mm. Refer to architectural reflected ceiling plans for location and layout.
- .8 Shape: Flat
- .9 Flame spread rating of 25 or less.
- .10 Smoke developed class of 50 of less.
- .11 Acceptable Products:
  - .1 Armstrong World Industries Canada Ltd., Cortega No.823.
  - .2 Equivalents by CGC Interiors and CertainTeed Ceilings may be submitted for review but may not be considered or accepted.

.2 Suspension:
- .1 Acceptable Products, contingent on compatibility with specified ceiling tiles:
  - .1 Armstrong World Industries Canada Ltd.: Prelude ML Exposed Tee System. The Prelude XL suspension system can be supplied and installed in lieu of the Prelude ML suspension system, as long as the Prelude XL system is compatible with the Armstrong Cortega 823 acoustic ceiling panels.
  - .2 Equivalents as noted above under paragraph 1.11 by:
    - .1 CGC, Suspension system Donn “DX” 24mm wide faced T-bar.
    - .2 CertainTeed Ceilings: Classic Aluminum Capped Hook System.
    - .3 Chicago Metallic Corporation: Series 1200 Suspension System.
- .2 Exposed interlocking tee grid system, formed out of cold rolled zinc-bond steel 0.54mm thick. Provide fire rated grid where fire ratings noted.
- .3 Main Tees: 38mm x 25.4mm double web rectangular bulb top with capping plate in precoat baked-on white paint finish and incorporating holes for hangers and slots for connecting pieces, and capable of supporting 12.5 kg per 1200mm. for continuous spans and 6.5 kg per 1200mm span for single span without exceeding a deflection of 1/360 of the span.
- .4 Standard Cross-Tees: 25.4 x 25.4mm double web, bulb top, capping plate in precoated white baked-on finish, capable of supporting 11.3 kg per 600mm span without exceeding a deflection of 1/360 of span, and with positive interlock with main tees.
- .5 Structural Cross-Tees as main tees, but with crimped ends for lapping bottom flange of main tees and interlocking tack ends to engage slots in main tees.
- .6 Accessories:
  - .1 Splice plate, clips, screws, etc. as required to complete the installation. All galvanized finish.
- .7 Concealed flat spline: 0.71mm flat steel spline.

.8 Edge Trim:
- .1 0.635mm zinc bonded, cold rolled steel mould.
- .2 Trim shall be minimum 22mm x 22mm angles.
- .3 Provide 50mm wide shadowline trim at perimeter of corridor ceilings.

.9 Finish to tees and edge trim: flame resistant white baked enamel satin finish to match panel finish, 2 coats on exposed surfaces, 1 coat elsewhere.

.10 Carrying Channels: 38mm x 19mm cold rolled galv. weighing 1.042 kg per metre.

.11 Tie Wire: 1.6mm galvanized soft annealed steel

.12 Hangers: 2.6mm galvanized steel wire.

.13 Screws: Corrosion resistant, self-tapping Philips truss head, of length and gauge to suit installation.

.14 Ceiling Hanger Pins (for fixing to metal): capacitor discharge ceiling hanger pins, by Continental Studwelding Ltd., or approved equivalent, of type approved by Consultant.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

.1 Employ mechanics skilled in this Trade and install work in strict accordance with the system manufacturer's printed directions to produce a first class, true finish, free from dropping, warpage, soiled or damaged tile.

.2 Make provisions for thermal movement.

.3 Install hanger inserts in a manner approved by Consultant.

.4 Locate hangers directly over Main Tees and as close to intersections as possible. Secure hangers firmly to concrete inserts, steel joists and beams, bracing, etc. Do not install hangers to metal deck, provide separate grid off joists if required.

.5 Erect ceiling grid plumb and square with accurately fitted locked-in joints in true alignment, secure and rigid and with provision for thermal movement. Water level ceiling to tolerance of 1mm in 1m and maximum deviation of 4mm. from mean level.

.6 Frame around recesses fixtures, diffusers, grilles, and the like and provide heavier section hangers and supports as necessary to support same. Provide hanger within 150mm. of each fixture corner.

.7 Consult with Electrical and Mechanical Trades for requirements and provide access to valves and switches.

.8 Ensure that all hangers and carrying members are designed and spaced to support entire ceiling system including recessed lighting fixtures. Note, weight of fixtures is approximately 9-13.5 kg.

.9 Install panels only after all mechanical and electrical equipment, conduits, piping, telephone distribution, etc. are in place.

.10 Co-ordinate ceiling work to accommodate components of other sections, to be built into acoustical ceiling components, such as light fixtures, diffusers, speakers and sprinkler heads.

.11 Neatly cut acoustical units to fit tightly around all building elements that penetrate ceiling.

3.2 INSTALLATION OF LAY-IN SUSPENSION SYSTEM

.1 Install suspension system in accordance with ASTM-C636 except where specified otherwise. Install suspension system to manufacturer's instructions and certification organization's tested design requirements where referenced.

.2 Generally hangers shall be spaced at not more than 1200mm o.c. directly above main runner tees, except at fixtures, where they shall be 600mm o.c. or closer as required to adequately support fixtures. Locate hangers as close as possible to tee junctions. Locate first hanger within 300mm of perimeter wall.

.3 Install main tee runners continuous at 1200mm o.c. with interlocking structural cross-tees each side of fixtures at right angles to main tees. Install standard cross-tees generally at 90 degrees to main tees and as required to achieve pattern shown on reflected ceiling plans. Secure joints by web of tees; snaplock into place forming rigid connections. Main tees shall be as long as possible with butt ends joined by means of splice plates locked into webs.

.4 Frame up around light fixtures, grilles, diffusers, speakers, openings, etc. as required.

.5 Secure edge moldings to walls, bulkheads and other vertical surfaces at perimeter edges of acoustic ceilings. Note special moldings required.

.6 Securely fix hangers to tees by bending ends 90 degrees at the correct height and inserting through holes in top of main tees, then wiring around open side at least 3 turns twisting ends together. Flats shall be bolted to tees. Secure to concrete inserts in similar manner.

.7 Do not erect ceiling suspension system until work above ceiling has been inspected by the Building Inspector.

.8 Do not secure hangers to fluted steel floor or roof deck. Secure hangers to overhead structure using attachment methods as required for particular structure and acceptable to the Consultant. Where structural spacing exceeds ceiling hanger spacing, provide double carrying channels nested and placed perpendicular to and on top of bottom flange of steel beams or on top of the lower chords of the open web steel joists, and secured to each joist with three loops of 1.2mm galvanized soft steel wire.

.9 Where obstructions interfere with the placement of ceiling hangers, provide double carrying channels nested and hung from the structure above on both sides of the obstruction.

.10 Provide isolation hangers at all hangers where indicated as required for specific ceiling assemblies.

.11 Install hangers on main tees spaced at maximum 1200mm centres and within 150mm from ends of main tees and tee splices.

.12 Lay out with border units not less than 50% of standard unit width and according to reflected ceiling plans.

.13 Ensure suspension system is coordinated with location of related components.

.14 Install typical wall moulding to provide correct ceiling height.

.15 Completed suspension system shall support super-imposed loads, such as lighting fixtures, diffusers, grilles, speakers and other ceiling mounted fixtures.

.16 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture. Install an additional hanger immediately above each fastener for ceiling mounted curtain tracks.

.17 Interlock cross member to main runner to provide rigid assembly. Ensure all main tee splices and cross tee end clips are fully engaged.

.18 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

.19 Finished ceiling system shall be square with adjoining walls and level within 6mm in 3000mm.

3.3 LAY-IN PANEL INSTALLATION

.1 End panels shall not be less than half full size and installation in each area shall be symmetrical, with end tiles and abutting opposite vertical wall surface to be of the same width. Do all necessary cutting and fitting neatly and accurately to suit grid openings and accommodate fixtures, grilles, detectors, speakers and the like located on the ceiling panels.

.2 Lay directionally patterned acoustic panels in one direction, parallel to the longest direction of the grid concerned.

.3 Place panels between tees so that edges bear evenly on flanges.

.4 Confirm with reflected ceiling plans.

.5 Provide fire rated enclosures as required around light fixtures and mechanical equipment in fire rated ceilings, according to applicable ULC Design Criteria.

.6 Where mechanical equipment is located above the ceiling, panels shall be suitably and inconspicuously marked by the use of small colour-coded stickers. Mechanical equipment to be located shall include valves, dampers, heat exchangers, heat pumps, VAV boxes, electrical disconnects, as applicable, and other such equipment not visible from below.

3.4 CLEANING

.1 Upon completion, clean acoustic tile of all finger marks and other defacements.

.2 Remove all accumulated rubbish and excess materials from the site.

.3 Clean acoustic tile and replace any damaged tiles immediately before occupation of building by Owner.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Architectural Casework — Section 06 41 13

1.2 SCOPE OF WORK

.1 Resilient Rubber Base.

1.3 REFERENCE STANDARDS

.1 ASTM Standards:

.1	F 141	Resilient Floor Coverings
.2	F 386	Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
.3	F 511	Quality of Cut (Joint Tightness) of Resilient Floor Tile
.4	F 710	Standard Practice for Preparing Concrete Floors to Receive Resilient
.5	F 1344	Flooring Specification for Rubber Floor Tile
.6	F 1861	Specification for Resilient Wall Base
.7	F 2055	Size and Squareness of Resilient Floor Tile by Dial Gage Method
.8	E 662	Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
.9	E 1907	Methods of Evaluating Moisture Conditions of Concrete Floors to Receive Resilient Floor Coverings
.10	F 970	Standard Test Method for Static Load Limit
.11	F2034	Standard Specification for Linoleum Sheet Floor Covering

.12 CAN/ULC-S102.2 Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies

.13 RFCI:

- .1 IP #1 Recommended Installation Practice for Homogeneous Sheet Flooring.
- .2 Recommended Work Practices for Removal of Resilient Floor Coverings

1.4 SUBMITTALS AND SAMPLES

.1 Submit samples as per Section 01 33 23 – Shop Drawings, Product Data and Samples.

.2 Submit samples of rubber floor base.

.3 Submit product technical data sheets indicating material performance criteria, physical characteristics and requirements.

.4 Submit manufacturer's written installation recommendations and requirements.

.5 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 EXTRA MATERIALS

.1 Provide extra materials of resilient tile flooring and base.

.2 Provide one 3600mm length of each type and colour of resilient base required for this Project for maintenance use.

.4 Extra materials shall be from same production run as installed materials.

.5 Store where directed by the Owner.

.6 Material to be in wrapped packages or fully labelled as to product and colour.

1.6 WARRANTY

.1 Submit manufacturer's warranty warranting material and performance for a minimum period of five (5) years for all resilient products, following the date of Substantial Performance of the Work.

.2 Installation Warranty: Submit the flooring contractor's installation warranty agreeing to repair or replace work which has failed a as result of defects in workmanship. Failure shall include, but not limited to, tearing, cracking, separation, deterioration or loosening from substrate, seam failure, ripples, bubbling or puckering.

.3 Installation Warranty Period: Two (2) year limited warranty commencing on Date of Substantial Completion from flooring contractor.

.4 Warranties shall be issued to the Owner within two (2) Working Days following the date of Substantial Performance of the Work.

4.7 QUALITY ASSURANCE

.1 Installer is to be experienced in performing work of this section and who has specialized in installation of work similar to that required for this project.

.2 Installer is to have a minimum of five (5) years of experience in performing the work described.

PART 2 – PRODUCTS

4.1 MATERIALS

.1 Primers and Adhesives:
- .1 Solvent-free white acrylic.
- .2 Supply and install as recommended by manufacturers of resilient sheet flooring, vinyl composite flooring, and base.
- .3 Rubber base adhesive: Mapei Ultrabond ECO 575 or equivalent.
- .4 Adhesive must produce good and permanent waterproof bond between wall surfaces and cove base.

.2 Resilient Base (RB or RB100): to CAN/CSA-A126.5, Type 1, rubber.
- .1 Manufacturer: Tarkett, Rubber Baseworks with toe/cove base.
- .2 Minimum 1200mm length and 100mm high by 3mm thick, with grooved back.
- .3 Colour: To be confirmed by the Consultant from the standard range.

PART 3 - EXECUTION

3.1 INSPECTION AND TESTING

.1 Perform bond testing to confirm compatibility between concrete and adhesives.

3.2 INSTALLATION – GENERAL

.1 Do not start installation of resilient flooring until all other trades have completed their work and just prior to completion of building.

.2 Obtain approval from manufacturers for all adhesives, caulking, patching and levelling agents, and installation methods, before proceeding with the work of this section.

.3 Ensure flooring materials are clean of any contaminants which would interfere with proper bonding.

3.3 PREPARATION

.1 On concrete, level depressions and cracks with non-shrinking latex joint filler. Patching and levelling products must be compatible with adhesives; obtain approval from manufacturer of adhesive. Do not use products containing gypsum.

.2 Report large cracks to Consultant. Do not proceed until remedied. Prime surface with approved primer.

.3 Thoroughly clean concrete floors of any substances deleterious to bond of adhesive.

.4 Close off areas where work is in progress to prevent deposit of dust or grit on slabs where flooring is being laid.

.5 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.6 Clean surfaces thoroughly of any dirt, oil, grease and other material which may affect adhesive bonding and cause telegraphing. Apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler has cured and is dry.

.7 Prime concrete to manufacturer's printed instructions.

3.4 APPLICATION - RUBBER BASE

.1 Fill cracks and level irregularities of surfaces to which base is to be applied with filler approved by adhesive manufacturer so as to provide solid backing over entire area behind base.

.2 Cement cove base to vertical surfaces so that gaps do not occur behind base, so that front lip of base cove bears firmly and uniformly on floor surface, and so that good and permanent bond is produced between base and surface to which it is applied.

.3 For right angled external corners use preformed matching cove corner units. Make end joints flush with gap.

.4 At wall ends and openings where ends of preformed corners come close together or touch or overlap, cut each corner unit equally so that a neat, inconspicuous joint is formed in middle of wall end or opening or so that filled gap, if gap is necessary, is not less than 38mm wide and located in middle of wall or end of opening.

3.5 CLEANING AND PROTECTION

.1 Remove surplus adhesive from face of material as work progresses.

.2 Upon completion of work remove all markings and heel scuffs. Broom clean.

.3 Prior to occupation by Owner, broom clean all resilient floors and remove all noticeable stains and marks. Remove all surface soil, debris, sand and grit by dust mopping, sweeping or vacuuming the floor.

.4 All wet mopping will be done by the custodian staff.

.5 Protect new floors from time of final set of adhesive until Project completion.

.6 Prohibit traffic on floor for 72 hours after installation.

.7 Protect floors by lapping joints of protection material a minimum of 150mm, sealing with non-asphaltic tape.

.8 Remove excess adhesive from floor, base and wall surfaces without damage, as work progresses.

.9 Clean and seal resilient base surface to flooring manufacturer's instructions immediately after installation.

.10 Apply sealers and waxing as directed by the manufacturer.

.11 Final cleaning is specified in Section 01 74 00 – Cleaning and Waste Management.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Portland cement terrazzo floor finish – new work to match existing Portland cement terrazzo flooring. Note: New terrazzo flooring (depth to match existing as noted on the drawings) is to be supplied and installed to infill the entire floor areas in the washrooms so that new colours and patterns match existing adjacent terrazzo floor patterns and colours in the adjacent corridors.
.1 Terrazzo underbed.
.2 Terrazzo accessories.

1.2 RELATED SECTIONS

.1	Division 01	General Requirements
.2	Concrete Floor Finishing	Section 03 35 00
.3	Sealants: Caulking	Section 07 92 00

1.3 REFERENCES

.1 ASTM D2370-92, Test for tensile Properties of organic coatings.
.2 CAN/CGSB-2.107-92, General Purpose Build Liquid Detergent.
.3 CAN/CGSB-25.20-95, Surface Sealer for Floors.
.4 CAN/CSA-A5/A8/A362-M88, Portland Cement/Masonry Cement/ Blended Hydraulic Cement.
.5 CAN/CSA-A23.1/A23.2-M90, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
.6 TTMAC-Hard Surface Maintenance Guide.
.7 TTMAC- Specification Guide 09400 – Portland Cement Terrazzo.

1.4 SUBMITTALS

.1 Shop Drawings:
  .1 Submit Shop Drawings in accordance with section 01 33 00 – Submittals.
  .2 Indicate layout of dividers strips.

.2 Samples:
  .1 Submit samples in accordance with section 01 33 00 – Submittals.
  .2 Submit duplicate 300 mm by 300 mm by 20 mm thick samples of each color terrazzo selected by the consultant.

.3 Maintenance instructions:
  .1 Provide maintenance instructions in accordance with section 01 78 00 – Closeout Submittals.
  .2 Provide four copies of the TTMAC Hard Surface Maintenance Guide, latest edition, for inclusion in the Maintenance Manual.

.3 Give Specific warning of any maintenance procedure or material which may damage or disfigure the finished work, or alter the coefficient of friction (i.e., slip resistance) of the finished surface.

1.5 QUALITY ASSURANCE

.1 The work of this section shall be executed by a company that is a member in good standing with the terrazzo, Tile Marble Association of Canada.
.2 The work shall be done under proper supervision by persons skilled in the methods and following the recommendations of the manufacturer of the products involved and having a minimum of two years proven experience.
.3 The terrazzo subcontractor shall provide proof of having successfully complete at least three projects of similar size and scope.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at terrazzo installation area above 12C for 24 hours before, during and 24 hours after installation.

PART 2 – PRODUCTS

2.1 MATERIALS

.2 Cement: to CAN/CSA-A5, type 10 grey for underbed and white for topping.
.3 Sand, fine and coarse aggregates to CAN/CSA-A23.1.
.4 Water: potable.
.5 Marble Chips: Grade chips in accordance with TTMAC standards.
.6 Pigments: non-fading mineral pigments in selected colors.
.7 Divider Strips: 2 mm thick zinc with depth of 32 mm.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

.1	Concrete Unit Masonry	Section 04 22 00
.2	Structural Steel	Section 05 12 00
.4	Rough Carpentry	Section 06 10 00
.5	Hollow Metal Doors and Frames	Section 08 11 13
.6	Gypsum Board System	Section 09 29 00
.7	Shop Priming Specified in various Sections of the Specification.	
.8	Factory applied paint coatings unless otherwise specified.	
.9	Mechanical	Division 20, 22
.10	Electrical	Division 26, 27, 28

1.2 SCOPE OF WORK

.1 With exceptions specified above or specifically called for in other Sections of the Specification, all paintwork is included in the scope of this Section of the Specification. Colours will be specified at a later date by the Consultant.

.2 In locations where Drawings do not call for paint or similar finish on walls and/or ceilings, the intent of this Specification is that items, new work and existing surfaces in areas affected by the Work of this project, including miscellaneous metal work, shall be painted.

.3 Work includes moisture testing and surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces, and specific pre-treatments, sealing, and priming of surfaces.

.4 Check conditions of all existing surfaces to be repainted before commencing new work, including assessing the level of degradation of the surface, the type of coating existing, and the thickness of the existing coating. Perform adhesion tests on all existing coatings to be repainted to ensure that surfaces are sound and well adhered before applying new coatings. It is expected that the Contractor will have visually assessed the existing conditions during the pre-tender site visit, and no contract extras will be considered for addressing conditions which were readily apparent at that time.

.5 Paint all new exterior surfaces which normally require painting, including hollow metal doors, screens, galvanized steel lintels, ladders and hardware and gas lines.

.6 Perform interior painting called for in Room Schedule and Door Schedule and noted on drawings. Paint all new walls, ceilings, bulkheads, and all surfaces which normally receive a paint finish, whether noted on schedules, or not noted. Walls shall be completely painted before installation of tackboards, whiteboards/markerboards and millwork, etc.

.7 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (other than stainless steel, anodized aluminum and

baked enamel) to be painted to match the surfaces on which they occur, unless otherwise directed by Consultant.

.8 For special painted graphics, colour changes, accent stripes, etc. see drawings.

.9 In all renovated areas, paint affected walls as specified for new construction. All other walls in the room are to be cleaned and painted with one coat. If more than one colour is used in the room, confirm colours with Consultant.

.10 Paint exposed drywall and the like in locations where finish is not otherwise specified or noted. Do not paint such surfaces in mechanical shafts, unless specifically noted.

.11 Paint all exposed structural steel and steel roof deck and mechanical ducts in finished areas.

.12 Paint exposed structure and metal deck in all mechanical and storage rooms, except Water Meter and Electrical Rooms.

.13 Paint pipes, conduit, ducts and related thermal insulation and all prime painted mechanical and electrical equipment and supports located in mechanical and electrical rooms and in all locations where Drawings call for paint or similar finish on walls and/or ceilings. Paint all mechanical equipment exposed on the roof. Exposed pipes shall be painted to Owner's Colour Coding/Piping schedule to suit use (i.e. hot water, etc.), included below.

.14 Paint all gas piping, inside and out, whether exposed or concealed. Do not paint other pipe, conduit, ducts, insulation and the like where concealed above ceilings or in service shafts.

.15 Make good paint finish on shop coated work where damaged.

.16 Paint visible portions of steel shelf angles, lintels and structural steel.

.17 Paint edges and all faces of metal doors.

.18 Paint interior of ducts and diffusers visible from exterior on room side.

.19 Painting, as referred to herein shall include paint, enamel, stain, varnish and other finishes herein specified and normally applied to the various materials by the painting Subcontractor.

1.3 REFERENCE STANDARDS

.1 Do painting and finishing to CAN/CGSB-85-GP series standards including Appendix A and to material manufacturer's instructions and to The Master Painters Institute (MPI) Architectural Painting Specification Manual and Maintenance Repainting Manual, except where specifically specified otherwise. The most stringent standards shall apply.

.2 All coatings must conform to Regulation SOR/2009-264, Volatile Organic Compound (VOC) Concentration Limits for Architectural Coatings Regulations, and the VOC limits set therein.

.3 All paints and coatings used must conform to Green Seal Standard GS-11 for paints and coatings based on performance requirements and reduced use of hazardous substances and reduced volatile organic compounds.

1.4 QUALIFICATIONS

.1 The Painting Subcontractor must be a member in good standing of the Ontario Painting Contractors' Association and have a minimum of ten (10) years proven satisfactory experience.

.2 Manufacturer's Qualifications: The paint Products of the Paint Manufacturer shall be as listed in Chapter 5 - Approved Products List of the MPI Manual.

1.5 INSPECTION

.1 A cash allowance has been included for independent painting inspections. The cost of the painting inspection is to be paid from the Cash Allowance included in the Contract. Refer to Section 01 10 10 – Project Instructions.

.2 Prior to commencing the work of this section the painting Subcontractor shall arrange for OPCA inspection in accordance with the requirements of the OPCA Quality Assurance Program.

.3 Painting shall not commence until the inspection company has been notified and the Inspector makes the initial site visit.

.4 Supply the Inspector with a schedule of materials intended for use on the job at the commencement of the painting.

.5 The Inspector will issue Inspection Reports during the Project. On completion of the job, the final Inspection Report will be issued.

1.6 WORK ENVIRONMENT

.1 Do not apply paint finish in areas where dust is being generated.

.2 Maintain environmental conditions within limits recommended by manufacturer, for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

.3 Conform to requirements of MPI Architectural Specification Manual including recommendations for surface preparation.

.4 Temperature: No painting shall be performed when surface and ambient temperatures are below 5^0C. The minimum temperature for Latex paints shall be 10^0C for both interior work and exterior work.

.5 Relative humidity shall not be higher than 85%.
- .1 Moisture Content of Surfaces:
- .2 Tests shall be by electronic moisture meter.
  1. Plaster and Gypsum Board and Cement Board: Maximum moisture content of 12%.
  2. Concrete and Concrete Masonry Units: Maximum moisture content of 12% for solvent type paint. Concrete and masonry walls must be installed at least 28 days and must be visually dry on both sides before painting commences.
  3. Wood: Maximum moisture content of 15%.
  4. Concrete Floors: Shall be tested for moisture by Acover patch test@.

.6 Lighting: Painting shall not proceed unless the permanent lighting is in place and operational or a minimum of 161 lm/m5 lighting is provided on the surfaces to be painted.

.7 Ventilation: In areas where painting is proceeding provide adequate continuous ventilation and heating to maintain temperatures above 7^0C for 24 hours before, during and 24 hours after paint application.

.8 Do not paint exterior work immediately following rain, frost or dew. Do not paint interior work where condensation has formed or is likely to form. Proceed only when proper environmental conditions are achieved.

.9 Avoid applying paint to surfaces when exposed to direct sunlight.

1.7 ACCEPTANCE OF WORK IN PLACE

.1 Submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing painting work. Painting may not commence without submission of this confirmation.

.2 Receipt of this confirmation will be considered a prerequisite for certification of payment for this work.

.3 Notify the Consultant, in writing, immediately if any existing condition is encountered that will prevent the attainment of satisfactory results in this work

1.8 REGULATORY REQUIREMENTS

.1 Conform to requirements of applicable Volatile Organic Compound (VOC) concentration limits for Architectural Coatings Regulations.

.2 Conform to the latest edition of Industrial Health and Safety Regulations issued by authorities having jurisdiction regarding site safety, including, but not limited to, ladders, scaffolding, and ventilation.

.3 Conform to requirements of local authorities having jurisdiction regarding the storage, mixing, application, and disposal of all paint and related waste materials.

.4 Notify the OPCA on award of contract and make application for assignment of an inspector using the appropriate forms.

.5 Fully cooperate at all times with the requirements of the OPCA in the performance of their duties, including providing access and assistance as required to complete inspection work.

1.9 SUBMITTALS

.1 Samples:

- .1 Submit triplicate samples consisting of 300mm x 200mm panels of each type of paint finish specified.
- .2 Panels shall be of same material as that on which sample coatings are to be applied in the field where possible.
- .3 Identify each sample as to job, name of paint manufacturer, finish, colour, name and number, sheen and gloss units and name of Contractor.
- .4 Retain one set of approved samples on site until completion of the Work.

.2 Submit manufacturer's data sheets for each paint product, including:

- .1 Product characteristics.
- .2 Surface preparation instructions and recommendations Primer requirements and finish specifications.
- .3 Storage and handling recommendations.
- .4 Application methods.
- .5 Cautions.
- .6 VOC data.
- .7 Complete Material Safety and Data Sheets (MSDS) for each product.

.3 Submit written confirmation of acceptance of existing conditions, as specified above.

1.10 STORAGE AND HANDLING

.1 Store paint and painter's materials in clean, dry locations approved by the Consultant. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

.2 All paint shall be in unopened containers, labelled with:

- .1 manufacturer's name,
- .2 product name, product type,
- .3 instructions for surface preparation and product application,
- .4 VOC content,

.5 environmental issues,
.6 batch date, and
.7 colour name and number.

.3 Provide C02 fire extinguisher minimum 9 kg capacity in paint storage area.

.4 Dispose of materials in accordance with the requirements of authorities having jurisdiction.

.5 Paint materials shall be delivered to the job site in original sealed and labeled containers bearing the manufacturer's name, type of paint, brand name, colour designation, and instructions for mixing and reducing, and application requirements.

.6 Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion. Take appropriate precautions, including no smoking restrictions, where toxic and explosive solvents are used.

1.11 SIGNS

.1 Provide legible signs throughout the Work reading "WET PAINT" in prominent positions during painting and while paint is drying.

.2 Use 75mm high letters on white card or board.

1.12 TEMPORARY COVERS AND PROTECTION

.1 Protect floors and other surfaces with temporary covers such as dust sheets, polyethelene film or tarpaulins. All to Consultant's approval.

.2 Mask identification plates occurring on equipment, switch boxes, and fire rating labels, etc. which require painting.

.3 Protect, remove and replace hardware, accessories, lighting fixtures, and similar items as required except primed for paint door closers which shall be painted. Light switches and electrical communication outlet plates to be removed and reinstalled on completion of painting.

.4 Keep oily rags, waste and other similar combustible materials in closed metal containers; take every precaution to avoid spontaneous combustion, remove waste and combustible materials daily.

.5 Clean surfaces soiled by spillage of paint, paint spattering and the like. If such cleaning operations damage the surface, repair and replace damaged work at no cost to the Owner.

1.13 RETOUCHING

.1 Do all retouching, etc. to ensure that the building may be handed over to the Owner in perfect condition, free of spatter, finger prints, rust, watermarks, scratches, blemishes of other disfiguration.

.2 After fully decorating and retouching a room or other area, notify Consultant. After inspection and final approval by Consultant post sign 'DECORATING COMPLETE - NO ADMITTANCE WITHOUT PERMISSION'.

1.14 TEST AREAS

.1 In areas to be repainted, test existing coatings for adhesion before applying new coatings, in accordance with the recommended practices in the MPI Repainting Specification Manual. Check for loose paint using a scraper and check for adhesion by cutting through the coatings and performing duct tape tests, or other acceptable means of testing adhesion. Once adequate adhesion is confirmed, apply a test section of the proposed new coating, allow to dry, and perform adhesion tests in area of new coating to confirm compatibility with existing coatings before proceeding with repainting work. Perform tests in all areas and on all surface types to ensure positive repainting results. Advise Consultant of any areas in which existing or new coatings fail adhesion tests. Do not proceed with the work until a recommended course of action is agreed upon by all parties. Commencement of work will signify acceptance of existing conditions.

.2 In areas of new construction, A room or area in the building will be designated by the Consultant as a test area to establish standard of workmanship, texture, gloss and coverage.

.3 Prior to any painting being started, request a meeting on Site between Consultant, Contractor, and Subcontractor and Inspector to review conditions, surfaces, anticipated problems and to clarify quality of workmanship acceptable to Consultant.

.4 Apply finishes to each type of surface within room with correct material, coats, colour, texture and degree of gloss in sample area and have same approved prior to providing Work of this Section.

.5 Retain test area until after completion of Work. Test area to be minimum standard for the Work.

.6 Failure to comply with the above will be cause for Consultant to request all Work previously painted to be repainted.

1.15 WASTE MANAGEMENT AND DISPOSAL

.1 Remove and dispose of excess material and waste resulting from the work of this Section.

.2 All excess materials and empty containers shall be removed from the site and disposed of or recycled in accordance with local regulations.

.3 Obtain information regarding applicable Provincial and local government regulations for disposal of paint, stain, wood preservative finishes, and related thinners and solvents.

.4 All waste materials shall be separated and recycled. Collect waste paint by type and provide for delivery to recycling or collection facility. Materials that cannot be reused shall be treated as hazardous waste and disposed of in an appropriate manner.

.5 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.6 Cleaning and Disposal Procedures:
- .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
- .2 Retain cleaners, thinners, solvents, and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
- .5 Ensure empty paint cans are dry prior to disposal or recycling.
- .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .7 Set aside and protect surplus and uncontaminated finish materials not required by the Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

1.16 MAINTENANCE MATERIALS

.1 Provide one sealed can, one litre capacity, of each product in each colour used in the Work for Owner's use in maintenance Work.

.2 Container to be new fully labelled with manufacturer's name, type of paint, and colour.

.3 Maintenance material shall be of the same run as the installed material.

1.17 WARRANTY/GUARANTEE

.1 Provide a warranty, valid for three (3) years from date of Substantial Performance, or from date of completion of Work if work is not complete at date of Substantial Performance, will be required.

.2 Subcontractor’s shall warrant that the work has been performed in accordance with the standards and requirements of the MPI Architectural Painting Specification Manual, most recent edition.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Paint and finishing materials - highest grade, first line quality, low VOC products provided by any of the following manufacturers:

.1 Benjamin Moore & Co.
.2 The Sherwin-Williams Company
.3 Dulux Paints/PPG Canada

.2 Paints, enamels, fillers, primers, varnishes and stains - ready mixed products of one of the manufacturers listed. Substitutes will not be allowed.

.3 Thinners, cleaners - type and brand recommended by the paint manufacturer, or Inspector.

.4 Only products manufactured by paint manufacturer stated at time of submission of samples will be allowed on Site unless other materials specifically specified herein. No painting to be performed until paint manufacturer identified and acceptance received from the Consultant and Inspector.

.5 Deliver materials to Site in original unbroken containers bearing brand and maker's name. The presence of any unauthorized material or containers for such, on Site shall be of sufficient cause for rejection of ALL paint materials on Site at that time, and all previous painted work repainted with proper material.

2.2 COLOUR SCHEDULE

.1 Consultant will provide detailed colour schedule at a later date. Conform to schedule including patterns, colours, and locations for all finishes.

.2 A minimum of ten (10) paint colours may be selected by the Consultant.

.3 In each room, the Consultant may select one wall where an accent colour may be applied.

.4 Refer to room finishing notes for detailed application instructions.

2.3 FINISHING SYSTEMS

.1 Interior Work:

.1 Gypsum Board:
.1 Walls (typical): INT 9.2M Institutional Low Odour/ Low VOC, semi-gloss finish, 1 coat Primer; MPI #149, Finish: 2 coats MPI #147.
.2 Walls (corridors, service rooms): INT 9.2F Epoxy-Modified Latex (over latex primer sealer), Semi-Gloss finish. Acceptable paint: Sherwin-

Williams, Pro Industrial Zero VOC Waterborne Catalyzed Epoxy or Equivalent.

.3 Ceilings (typical): 2 coats of one of the following:
2 coat Dulux Lifemaster Interior Acrylic Ceiling Flat # 59170 Zero VOC or equal by one of the approved manufacturers.

.4 Ceiling (corridors, mechanical, electrical, custodian and washrooms): INT 9.2F Epoxy-Modified Latex (over latex primer sealer), Flat Finish. Acceptable paint: Sherwin-Williams, Pro Industrial Zero VOC Waterborne Catalyzed Epoxy or Equivalent.

.5 All drywall, whether requiring finish painting or not, must receive prime coat.

.2 Concrete Block, paint (typical):

.1 INT 4.2E (modified), Institutional Low Odour/ Low VOC, semi-gloss finish, 4 coat system.
.2 2 coats latex blockfiller; MPI #4.
.3 2 coats finish; MPI #147.
.4 Provide gloss finish, MPI #148, where noted as “gloss” in Room Finish Schedule.

.3 Concrete Block, glaze and wet areas:

.1 INT 4.2J (modified), Epoxy-modified Latex Finish, 4 coat system
.2 2 coats latex blockfiller; MPI #4
.3 2 Coats epoxy-modified latex finish; MPI #115
.4 Provide in all corridors, custodian room, mechanical room and washrooms, and where noted as “glazed” in Room Finish Schedule.
.5 Acceptable Paint: Sherwin-Williams, Pro Industrial Zero VOC Waterborne Catalyzed Epoxy or Equivalent.

.4 Cast in Place Concrete walls, ceilings:

.1 INT 3.1M Institutional Low Odour/ Low VOC, semi-gloss finish.
.2 1 coat MPI #149.
.3 2 coats MPI #147.

.5 Woodwork (Opaque Finish):

.1 INT 6.4T Institutional Low Odour/ Low VOC, semi-gloss finish.
.2 1 coat latex primer MPI #39.
.3 2 coats institutional low VOC latex finish; MPI #147.

.6 Stain Finish:

.1 LEED Complaint Stain.
.2 Coats Varnish, Water Based, clear gloss; MPI #130.

.7 Ferrous Metal:

.1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish.
.2 1 coat MPI #107.
.3 2 coats MPI #147.

.8 Shop Primed Ferrous Metal:

- .1 INT 5.1S Institutional Low Odour/ Low VOC, semi-gloss finish.
- .2 Confirm type of shop primer used with structural steel supplier.
- .3 Confirm compatibility of all coatings with manufacturers.
- .4 Touch up prime coat where damaged, with compatible primer, type MPI#107.
- .5 2 coats interior latex, MPI #147

.9 Galvanized Metal:

- .1 Includes all hollow metal doors, frames and screens and pipe rails.
- .2 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
- .3 1 coat galvanized Primer MPI #134
- .4 2 coats Acrylic Semi-Gloss MPI #147

.10 Insulation on Pipes & Ducts:

- .1 INT 6.8F Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat Primer MPI #17
- .3 2 coats Acrylic Semi-Gloss MPI #147

.11 Mechanical Equipment:

- .1 Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 As specified for metal types.

.12 Piping, Conduit & Ductwork (uncoated):

- .1 INT 5.3N Institutional Low Odour/ Low VOC, semi-gloss finish
- .2 1 coat galvanized Primer MPI #134
- .3 2 coats Acrylic Semi-Gloss MPI #147

.13 Surfaces behind grilles, within 30mm of grille:

- .1 INT 5.3N Institutional Low Odour/ Low VOC, flat finish
- .2 1 coat galvanized Primer MPI #134
- .3 2 Coats Acrylic Flat, Black; MPI #143

.14 Concrete Floors:

- .1 1 Coat Water-Borne Epoxy (diluted 10-20% with water) MPI #115
- .2 2 Coats Water-Borne Epoxy MPI #115
- .3 VOC emissions of coating not to exceed 200 g/l.

.15 Zinc-Coated Metal:

- .1 INT 5.3M with Epoxy-Modified Latex (over water based galvanized primer), Semi-gloss Finish.
- .2 Acceptable Paint: Sherwin-Williams, Pro Industrial Zero VOC Waterborne Catalyzed Epoxy, or Equivalent.

.16 Exposed Steel Floor and Roof Deck and Steel Floor and Roof Structure:

- .1 INT 5.1CC, Waterborne Dry Fall (over galvanized steel or quick dry shop primer, Flat Finish.

.17 High Temperature Pipe and Fittings: INT 5.2A Heat Resistant Enamel, Semi-gloss Finish.

.18 NOTE: Use heat resistant paint where required.

.3 Paint systems are to be of premium grade.

.4 Use low odour, zero VOC products.

PART 3 - EXECUTION

3.1 PREPARATION OF SURFACES

.1 Prepare surfaces in accordance with the following standards and to MPI Architectural Specification Manual Chapters 2 and 3; the most stringent requirements shall apply. Preparation of surfaces must be reviewed with painting inspector. Prepared surfaces must be inspected before application of prime coat.

.1 Prepare wood surfaces to CGSB 85-GP-IM. Use CAN/CGSB 1.126 vinyl sealer over knots and resinous areas. Use CGSB 1-GP -103M wood paste filler for nail holes. Tint filler to match.

.2 Touch up damaged spots of shop paint primer on steel with CAN/CGSB 1.40M to CGSB 85-GP-14M.

.3 Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16M. This includes wiped coated steel surfaces.

.4 Prepare masonry and concrete surfaces to CGSB 85-GP-31M.

.5 Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound for stained woodwork.

.6 Prepare concrete floors to CGSB 85-GP-32M.

.7 Prepare copper piping and accessories to CGSB 85-GP-20M.

.8 Apply prime coat on wood scheduled for paint finish before installation.

.9 Back prime wood scheduled for transparent finish. Do not prime surfaces scheduled for transparent finish.

.10 Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mould, mildew, mortar, efflorescence, and sealers from existing surfaces to assure sound bonding to tightly adhering old paint.

.11 Scape peeling paint off existing masonry surfaces and apply a compatible masonry sealer, approved for use by the paint manufacturer, before applying new coatings.

.12 Glossy surfaces must be clean and dull before repainting. Wash with abrasive cleanser, or, wash thoroughly and dull by sanding.

.13 Spot prime any existing bare areas with an appropriate primer.

.14 Check for compatibility between existing and new coatings by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow surface to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

.15 NOTE: ABOVE NOTED SURFACES MAY NOT ALL BE APPLICABLE TO THIS PROJECT.

3.2 APPLICATION

.1 Apply coatings in accordance with manufacturer's printed instructions.

.2 Use suitable, clean equipment in good condition.

.3 Maintain dust-free suitable conditions on the surfaces free from machine, tool or sandpaper marks, insects, grease, or any other condition liable to impair finished work to prevent production or good results.

.4 At all hollow metal doors and frames, prime coat must be inspected and signed off by painting inspector before painting work may proceed.

.5 Apply evenly, uniform in sheen, colour and texture, free from brush or roller marks, well brushed or rolled in and free of crawls, runs, join marks or other defects.

.6 Permit paint to dry between coats. Touch up uneven spots after applying first coat. Tint various coats of multiple coat work in light shades of the final colour selected, to distinguish between coats.

.7 Give Consultant and Inspector due notice and sufficient opportunity (minimum 48 hours) to inspect each coat. Do not proceed with subsequent coat until preceding coat approved. Consultant reserves the right to order complete retreatment if this condition is not observed.

.8 Painting coats are intended to cover surfaces perfectly; if in painter's opinion, formula specified is inadequate to provide a first class finished surface, report to the Consultant and have formulas rectified before commencing work. Surfaces imperfectly covered shall receive additional coats at no additional cost. Provide additional coat where ever dark colours are used.

.9 Use paint unadulterated. Use same brand of paint for primer, intermediate and finish coats. Factory mix all paints.

.10 Paint finish shall be applied by roller except in the case of wood trim, door frames, base board and similar work of small surface area which shall be painted by brush. Do not use roller for applying finish other than paint.

.11 Spray painting will not be permitted unless specifically approved in writing by the Consultant in each instance. Consultant may withdraw approval at any time and prohibit spray painting for reasons such as carelessness, poor masking or protection measures, drifting paint fog, disturbance to other Trades, or failure to obtain a dense, even, opaque finish. Spray painting shall be full double coat, i.e. at least two passes for each coat. Do not use spray or roller on wood or metal surfaces, brush only unless approved in writing by Consultant.

.12 Paint entire surfaces, including areas where millwork or other items are to be installed.

.13 Finish edges of doors with paint or stain treatment as required to match face of door. Seal hidden edges of wood doors with one coat of shellac and one coat gloss varnish or two coats paint. Repaint tops and edges of wood doors after fitting.

.14 Even up stained woodwork in colour as required by nature of wood and as directed by Consultant. Apply same finish on trim, fitments cupboards and other protecting ledges as on surrounding work, disregard sight lines.

.15 Carefully hand smooth and sandpaper wood between coats (including priming). Apply one coat sealer before applying first coat paint filler to knots or sap blemishes on wood surfaces to receive paint or stain finish.

.16 After first coat, fill nail holes, splits and scratches, using putty coloured to match finish.

.17 Remove rust, oil, grease and loose shop paint from metal work by brushing or with wire brushes and make good shop coat before proceeding with final finish. Feather out edges to make touch up patches inconspicuous.

.18 Clean castings with wire brush before application of first paint coat.

.19 Do not etch galvanized metal. Use zinc rich primer. This includes metal door frames and the like with wiped zinc coating.

.20 Note that primer is required on all hollow metal doors, frames and screens. Three coat system is required. Sand between all coats.

.21 Remove form oil or parting compounds from concrete surfaces. Use Xylol or approved compound.

.22 Paint interior of pipe spaces, ducts, etc. visible through grilles or through linear metal ceilings in black matt finish.

.23 Conform with Consultant's colour schedule and exactly match approved samples.

.24 Mechanical and Electrical Pipes, Ducts and Conduits:

.1 Commence Work when piping installation is complete in the area concerned.
.2 Do not paint plated or other prefinished surfaces, unless otherwise noted.
.3 Paint conduit in same colour as background paint.
.4 Apply formulae specified even though surface prime painted at shop prior to delivery. Touch up shop priming where damaged.
.5 Use heat resistant epoxy paint on pipes and surfaces where operating surface temperature exceeds 65 degrees C.
.6 Paint exposed pipes and ducts and their supports and related items in colours to suit colour coding included below; confirm with Consultant. Refer to Mechanical Division 20 for further instructions.

3.3 COLOUR CODING OF PIPING

.1 The following is a preliminary list of painting requirements for piping. All colours are to be confirmed by the Owner prior to commencing this work.

FUNCTION	COLOUR	WHERE EXPOSED	WHERE CONCEALED	DIRECTION INDICATION
Natural Gas	Yellow	Solid	Solid	-
Stand Pipe System	Red	Solid	Solid	-
Heating Water Supply	Dark Green	Solid	12" Band Every 20'	At minimum of every 20', Direction Arrow 9" Long, 1" wide
Heating Water Return	Pale Green	Solid	12” Band Every 20'	
Chilled Water Supply	Orange	Solid	Solid	
Chilled Water Return	Orange	Solid	Solid	
Cooling Water To Tower	Buff	Solid	Solid	
Cooling Water From Tower	Buff	Solid	Solid	
Domestic Hot Water	Dark Blue	Solid	Band Every 20'	At minimum of every 20', Direction Arrow 9" Long, 1" wide
Domestic Cold Water	Pale Blue	Solid	Band Every 20'	

3.4 REPAIRS

.1 Cracks occurring in walls or ceilings requiring patching during "Warranty Period" shall be repainted in such a way that the patch is not visible at a distance of 1m.

.2 If patch painting is not acceptable, repaint entire wall, or ceiling.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 White Markerboards/Writing Boards
.2 Tackboards
.3 Trim and Accessories

1.2 RELATED WORK SPECIFIED ELSEWHERE

.1 Rough Carpentry Section 06 10 00
.1 For blocking and grounds.

1.3 SUBMITTALS

.1 Submit Shop Drawings in accordance with Section 01 33 23. Indicate field dimensions on shop drawings.

.2 Shop drawings to show sizes, types, layouts, and installation details.

.3 Submit samples of visual display boards as requested by the Consultant.

.4 Include copies of trade literature, outlining the care and maintenance of the installation, in Maintenance Manual.

1.4 STORAGE

.1 Deliver units fully assembled to the maximum extent practical.

.2 Store all materials within the building in clean, dry area, and in accordance with manufacturer's recommendations.

.3 Store material in manner which will not damage, mark or cause other defects detrimental to the finished appearance. Provide such protection as necessary to guard against damage and marring from this and other trades. Maintain such protection until ordered removed by the Consultant.

1.5 WARRANTY

.1 Extend the Warranty period stipulated in the General Conditions of the Contract to two (2) years.

.2 Writing boards shall carry a 25-year warranty against defects appearing under regular classroom usage and wear. All Warranties to be given in writing.

PART 2 – PRODUCTS

2.1 MATERIALS AND ACCEPTABLE MANUFACTURERS

.1 Materials listed herein are as manufactured by:
- .1 For Markerboards (WB):
  - .1 ASI Visual Display Products.
  - .2 Equivalent products as supplied by Global School Products Inc. and Martack Specialties Ltd. are acceptable.
- .2 For Tackboards (TB):
  - .1 ASI Visual Display Products.
  - .2 ASP Architectural School Products.

.2 Markerboards (WB):
- .1 22 gauge white porcelain enamel writing board on steel for markers and magnetic for display.
- .2 12mm thickness composed of magnetic porcelain enamel surface fused under high heat to a high quality enameling steel surface face sheet with 11mm impregnated tentest core with balancing zinc coated steel back-up sheet.
- .3 Porcelain Enamel: To Porcelain Enamel Institute Standards PEI S104 with regards to durability, smoothness of texture, colour continuity. Gloss factor of 6-8 as measured by 45 degree glossometer:
  1. Surface finish for dry erasable markers and suitable for use as a projection screen: white colour.
- .4 The full perimeter of markerboards is to be framed with standard aluminum perimeter trim and provide for extruded marker tray at the full length of markerboards.

.3 Tackboards (TB):
- .1 Materials:
  - .1 Laminating Adhesive: to manufacturer's standards.
  - .2 Mounting Adhesive: to manufacturer’s standard.
  - .3 Joint Reinforcement: concealed mechanical jointing system to provide straight, rigid, continuously supported, tight butt, flush joints at surface.
  - .4 Anchor Clips, Brackets and Fasteners: concealed type for fixed mounting.
- .2 Facing - Natural cork tackboards (TB): single layer natural cork, fine grain large granular sheet, 6 mm thick, natural colour, laminated to backing as specified below.
- .3 Classified as to surface burning characteristics in accordance with CAN/ULC-S102, flame spread 55, smoke developed 55-70, fuel contributed 20.
- .4 Backing: Particleboard: to CAN3-O188.1, Grade R, 6mm thick.

.4 Supply and install magnetic white markerboards (WB) and tackboards (TB). Markerboards and tackboards are to be of sizes indicated on drawings.

.5 All exposed aluminum to have clear anodized satin finish, AA-A41, in accordance with AAMA-611, clear satin anodic finish,

.6 Standard Aluminum Trim and accessories for each markerboard (WB) and tackboard (TB) to be Series 200, as follows:
- .1 Perimeter Trim to WB and TB: No.205.

Extruded Marker tray for WB: No.212, complete with end pieces.

.7 Joints to be absolutely flush and level, plumb and true with edges finished square and fitted as closely as possible. Use concealed joint fasteners. Internal butt joints are to be provided at tackboards.

.8 Mounting heights of markerboards and tackboards shall be as directed by Consultant, or as indicated on drawings.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Supply all labour, materials, anchors, fasteners necessary to complete the installation of chalkboards, whiteboards, and tackboards throughout the project. All installations to be done by tradesmen experienced in this type of work.

.2 Erect all units plumb, level and accurately in locations shown on the Drawings or as directed by Consultant. Securely and permanently fix to the wall surfaces with concealed fasteners.

.3 Include for extended aluminum jambs, trim, track and marker trays and accommodate all other special conditions as required.

.4 Accurately cut, machine and fit to form tight flush hairline connections all joints in trim and rails. Corners of trim to be square and true and mitre cut. Cap ends of rails with cast aluminum end fittings.

.5 Joints to be tight hairline flush butt joints properly aligned.

.6 Adjust all operation hardware for smooth, trouble free operation.

.7 Do not install finished materials until overhead work such as acoustic ceiling, electrical, mechanical and painting have been completed.

3.2 CLEANING

.1 Leave trim and board surfaces clean and free of stains or marks.

.2 Completely cover all markerboards with "Pliofilm" immediately after installation. Remove cover at time of occupancy.

END OF SECTION

PART 1 - GENERAL

3.1 SECTION INCLUDES

.1 Phenolic-core toilet partitions.
.2 Phenolic-core urinal screens.

3.2 REFERENCES

.1 References, General: Versions of the following standards current as of the date of issue of the project or as required by applicable code apply to the Work of this Section.

.2 ASTM International (ASTM):
- .1 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .3 ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .4 ASTM A743/A743M - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
- .5 ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings.
- .6 ASTM B221 - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.3 International Code Council (ICC)/American National Standards Institute (ANSI):

.4 ICC/ANSI A117.1 - Accessible and Usable Buildings and Facilities, as applicable to toilet compartments designated accessible.

3.3 RELATED SECTIONS

.1 Section 09 30 13 - Tiling, coordination with layout and installation.

.2 Section 10 28 13 - Washroom Accessories, for accessories.

3.4 SUBMITTALS

.1 Submit under provisions of Section 01300.

.2 Product Data: Manufacturer's data sheets on each product to be used, including:
- .1 Preparation instructions and recommendations.
- .2 Storage and handling requirements and recommendations.
- .3 Installation methods.

.3 Shop Drawings: Submit manufacturer's shop drawings for each product specified, including the following:
- .1 Plans, elevations, details of construction and attachment to adjacent construction.
- .2 Show anchorage locations and accessory items.
- .3 Verify dimensions with field measurements prior to final production of toilet compartments.

.4 Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

.5 Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

3.5 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Minimum 10 yearS experience manufacturing similar products.

.2 Installer Qualifications: Minimum 2 yearS experience installing similar products.

.3 Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.

.4 Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.

.5 Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
- .1 Finish areas designated by Architect.
- .2 Do not proceed with remaining work until workmanship is approved by Architect.
- .3 Refinish mock-up area as required to produce acceptable work.

3.6 PRE-INSTALLATION MEETINGS AND COORDINATION

.1 Convene minimum two weeks prior to starting work of this section.

.2 Coordinate requirements for blocking, reinforcing, and other concealed supports to ensure that toilet compartments can be supported and installed as indicated.

3.7 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

.2 Handling: Handle materials to avoid damage.

3.8 PROJECT CONDITIONS

.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

3.9 SEQUENCING

.1 Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

3.10 WARRANTY

.1 Manufacturer's Warranty: Provide manufacturer's standard form in which manufacturer warrants against defects in materials and workmanship during the following period:

.1 Phenolic-Core Toilet Partitions: 25 years.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Acceptable Manufacturer: Manufacturer: Provide listed products of Hadrian Manufacturing Inc., 965 Syscon Road, Burlington, ON, Canada, L7L 5S3, 905-333-0300, www.hadrian-inc.com.

.2 Substitutions: The Owner will consider products of comparable manufacturers during the tender phase only, as a substitution, pending the Contractor's submission of adequate documentation of the substitution in accordance with procedures in Division 1 of the Project Manual.

2.2 PHENOLIC-CORE TOILET PARTITIONS AND URINAL SCREENS

.1 Phenolic-Core Toilet Compartments:

.1 Standard: 58-inch- (1473-mm-) high doors and panels.
.1 Basis of Design Product: **Hadrian Standard**.
.2 Style: Headrail braced and Floor mounted.

.2 Phenolic-Core Urinal Screens: To match panels in construction and finish.
.1 Basis of Design Product: **Hadrian Urinal Screen**.
.2 Wall hung.

.3 Phenolic Door, Panel, and Pilaster Construction, General: Decorative surface papers impregnated with melamine resins, pressed over kraft paper core sheets impregnated with phenolic resin and bonded together under high pressure and temperature.

.4 Doors and Pilasters: No-sightline interlocking doors and pilasters. 3/4-inch- (19-mm-) thick with no sightline rebate and 45-degree chamfered edges.

.5 Partition Panels: 1/2-inch- (13-mm) thick, straight cut with 45-degree chamfered edges.

.6 Headrails: 1 inch (25 mm) by 1.75 inch (44 mm), #4 brushed finish, extruded aluminum with anti-grip design. Minimum 0.060-inch (1.5 mm) wall thickness. Securely attach to wall and pilasters with manufacturer's fittings to make a rigid installation.

.7 Floor Shoes: 4-inch- (76 mm-) high stainless steel.

.8 Sleeve Shoes: 3-inch (50 mm-) high stainless steel.

2.3 HARDWARE AND ACCESSORIES

.1 Hinges: Surface mounted, 11-gauge stainless steel with adjustable cams for self-closing operation. Attach to doors and pilasters with manufacturer's standard stainless steel fasteners.

.2 Indicator Latches: Manufacturer's standard brushed nickel zamac indicator latch assembly with antimicrobial coating showing red in the window when in locked position and green when unlocked.

.3 Door Pulls: Manufacturer's standard brushed nickel zamac pulls with antimicrobial coating at outswinging doors that comply with accessibility requirements.

.4 Wall Connections: [Three stainless steel stirrup brackets] [Continuous stainless steel channels] at panel to wall, panel to pilaster, and pilaster to wall connections, Grade 304 stainless steel, #4 brushed finish.

.5 Fasteners: Manufacturers standard stainless steel fasteners, vibration resistant, twin lead, with pan heads.

2.4 PERFORMANCE REQUIREMENTS

.1 Surface-Burning Characteristics: Comply with ASTM E84; tested by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

.1 Flame-Spread Index: [25] [75] or less.
.2 Smoke-Developed Index: 450 or less.

.2 Accessibility Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible. Comply with AODA and Ontario Building Code Section 3.8 Requirements.

2.5 MATERIALS

.1 Zinc Aluminum Magnesium and Copper Alloy (Zamac): ASTM B86.

.2 Stainless Steel Sheet: ASTM A240 or A666, 300 series.

.3 Stainless Steel Castings: ASTM A 743/A 743M.

.4 Aluminum: ASTM B221.

2.6 FABRICATION

.1 General: Fabricate toilet compartments to sizes indicated on Drawings. Coordinate requirements and provide for attachment of toilet accessories. Provide cutouts for through-partition toilet accessories where required.

.2 Doors: Pre-drill holes for latches and hinges. Factory install rubber bumpers secured with press fit and adhesive.

.3 Pilasters: Pre-drill holes for hinges.

.4 Anchors: Manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters and walls to suit floor and wall conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

.5 Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments designated as accessible.

2.7 FINISH

.1 Face Sheet Colors: Dark Grey.

PART 3 – PRODUCTS

3.11 EXAMINATION

.1 Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

.2 Confirm location and adequacy of blocking and support required for installation.

.3 Do not proceed with installation until conditions meet manufacturer's requirements.

3.12 INSTALLATION

.1 General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices penetrating structural floor to depth indicated in manufacturer's written instruction.

.2 Headrail-Braced Compartments: Secure pilasters to floor and level, plumb, and tighten. Secure continuous head rail to each pilaster. Adjust so tops of doors are parallel with overhead brace when doors are in closed position.

.3 Floor-Mounted Compartments: Secure pilasters to floor and level, plumb, and tighten. Adjust so tops of doors are level with tops of pilasters when doors are in closed position.

.4 Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

.5 Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:

- .1 Verify blocking and supports in walls and ceilings has been installed properly at points of attachment.
- .2 Verify location does not interfere with door swings or use of fixtures.
- .3 Use fasteners and anchors suitable for substrate and project conditions
- .4 Install units rigid, straight, plumb, and level.
- .5 Conceal evidence of drilling, cutting, and fitting to room finish.
- .6 Test for proper operation.

3.13 ADJUSTING, CLEANING AND PROTECTION

.1 Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 15 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

.2 Adjust hardware for proper operation after installation. Set hinge cam on in-swinging doors to hold doors open when unlatched. Set hinge cam on out-swinging doors to hold unlatched doors in closed position.

.3 Touch-up, repair or replace damaged products.

.4 Clean exposed surfaces of compartments, hardware, and fittings. Clean partition and screen surfaces with materials and cleansers in accordance with manufacturer's recommendations.

.5 Remove packaging and construction debris and legally dispose of off-site.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Washroom Accessories and Equipment:
- .1 Coat Hook
- .2 Shelf
- .3 Straight Grab Bar
- .4 L-Shaped Grab Bar
- .5 Fold-down Grab Bar
- .6 Fixed Frame Mirror
- .7 Paper Towel Dispenser
- .8 Toilet Tissue Dispenser
- .9 Sanitary Napkin Disposal Bin
- .10 Sanitary Napkin Dispenser
- .11 Soap Dispenser
- .12 Back Rest
- .13 Emergency Sign

1.2 RELATED SECTIONS

.1 Section 09 30 13 - Tiling, coordination with layout and installation.

1.3 SUBMITTALS AND SHOP DRAWINGS

.1 Product Data: Submit manufacturer's data sheets for each product specified, including the following:
- .1 Installation instructions and recommendations.
- .2 Storage and handling requirements and recommendations.
- .3 Cleaning and maintenance instructions.
- .4 Replacement parts information.

.2 Schedule: Submit a washroom accessory schedule, indicating the type and quantity to be installed in each washroom area. Use room numbers as indicated on the Drawings.

.3 Country of Origin: Manufacturer must supply, with first submittal, Country of Origin information for each type of washroom accessory for this project.

.5 Emergency Signs:
- .1 Submit drawn-to-scale details for individually fabricated lettering indicating word and letter spacing.
- .2 Submit drawn-to-scale details for individually fabricated lettering indicating word and letter interchangeable components, mounting methods, schedule of signs.
- .3 Submit representative sample of each type of sign, sign image and mounting method.
- .4 Submit colour samples of sign lettering and banding, and each type of acrylic panel specified for review by the Consultant.

1.4 QUALITY ASSURANCE

.1 Manufacturer: Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products.

.2 Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.

.3 Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.

.4 Hazardous Materials: Comply with EU Directive “Restrictions of Hazardous Substances (RoHS) requirements.”

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

1.6 WARRANTY

.1 Manufacturer’s Warranty for Washroom Accessories:
- .1 Two (2) year warranty for materials and workmanship.
- .2 Emergency Sign: Provide a warranty for the work of this section for a period of two (2) years. Warranty shall cover against defects and deficiencies in materials, workmanship, and installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Specified manufacturer's catalogue references establish minimum acceptable standards for Work of this Section. Products shall be as manufactured by Frost Products Ltd., unless noted otherwise.

.2 Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Frost Products Ltd.

.3 Substitutions: The Architect will consider products of comparable manufacturers as a substitution, pending the Contractor's submission of adequate documentation of the substitution in accordance with procedures in Division 01 of the Project Manual.

2.2 ACCESSORIES

.1 **Coat Hook:**
- .1 Locate one (1) in each barrier-free washroom.
- .2 Vandal Resistant Safety Coat Hook of stainless steel with maximum 50mm projection, with snap down safety hook.
- .3 Spring loaded and supports up to 11kg (25lbs) before collapsing.
- .4 16 gauge stainless steel with smooth burr-free edges.
- .5 Capacity: Designed to hold 11kg or 25lbs before the hook will collapse.
- .6 Materials:
  - .1 Body: 16 gauge stainless steel, type 304 brushed finish.
  - .2 Hook: 16 gauge stainless steel, type 304 brushed finish.
- .7 Acceptable Product: Frost, Model No. 1150-SS.

.2 **Shelf (barrier-free):**
- .1 Locate one (1) in each barrier-free washroom.
- .2 Stainless steel, 22 gauge, no. 4 brushed finish shelf welded to stainless steel wall plate.
- .3 Supplied with mounting screws. All mounting screw holes below shelf.
- .3 Acceptable Product: Frost F-950-4, Stainless Steel, 4” depth by 18” wide.

.3 **Grab Bars (in Barrier-free washroom stalls and at urinals):**
- .1 Grab bars to be stainless steel bars, 32mm diameter with heavy duty concealed mounting. Provide peened satin finish, non-slip grip. 80mm diameter wall flange with covers, concealed screw attachment, flanges welded to tubular bar.
- .2 Compliance: Universal/accessibility design, including ADA-ABA and ICC/ANSI. for structural strength.
  - .1 Capacity: Designed to support 900 lbs (408 kg) in compliant installations.
- .3 Grab bar with 90 degree return to flange. Clearance between grab bar and finished wall is 1-1/2 inches (38mm).
- .4 Grab Bar Materials: 18-8, Type 304, 18 gauge (1.2mm) stainless steel tubing with satin finish, ends of grab bar pass through flanges and are heliarc welded to flanges to form one structural unit, outside diameter 1-1/4 inches (32mm).
- .5 Mounting Flanges: Concealed, 18-8, Type 304, 1/8 inch (3mm) thick, stainless steel plate.
  - .1 End Flanges: 2 inches x 3-1/8 inches (50mm x 80mm) with two holes for attachment to wall.
  - .2 Intermediate Flanges: 2-5/8 inches x 3-1/8 inches (65mm x 80mm) wide x 3-1/8 inch (80mm) diameter.
- .6 Snap Flange Covers: 18-8, Type 304, 22 gauge (0.8mm) drawn stainless steel with satin finish, 3-1/4 inch (85mm) diameter x 5/8 inches (16mm) deep; snap over mounting flange to conceal mounting screws.
- .7 Mounting Accessories: Provide the following optional mounting accessories as required for complete installation.
  - .1 Mounting Kits: Provide optional Bobrick Part No. 252-30 Mounting Kit; 3 Type 304 stainless steel, Phillips round-head, sheet-metal screws for each flange.
  - .2 Grab Bar Fasteners: Provide optional Bobrick Part No. 251-4 WingIt Grab Bar Fastener; round-head, Phillips 18/8 stainless steel screws and grab bar fastener for each flange.

.3 Anchor Devices: Provide optional Bobrick Part No. 2586 Optional Mounting Kit; for 1/2 inch (13mm) panels for each flange.

.8 Grab Bars:

.1 Straight Grab Bar at toilet and at urinals where noted: 610mm long.

.1 Acceptable Product: Frost F-1001NP-24.

.2 L-Shaped Grab Bar: 750mm horizontal and 750mm vertical.

.1 Acceptable Products: Frost F-1003NP-30 x 30, left side. Confirm orientation on architectural drawings.

.3 Fold-down Grab Bar with Toilet Tissue Dispenser Holder:

.1 Acceptable Product: Frost F-1055-FTS; fold-down grab bar with safety rail and bracket, all in stainless steel finish. Provide removable toilet paper dispenser in white power coat finish

.4 **Fixed Frame Mirror:**

.1 Materials: Type 430 stainless steel; bright polished finish with vertical grain finish on exposed surfaces.

.2 Stainless steel channel frame; one piece, 50mm by 50mm, 90 mitred corners, concealed fasteners and locking screws.

.3 Corners: Welded, ground, and polished smooth.

.5 Mirror:

.1 6mm thick float glass.

.2 Select float glass mirror guaranteed for 15 years against silver spoilage.

.3 Edges: Protected by plastic filler strips.

.4 Back: Protected by full-size, shock-absorbing, water-resistant, nonabrasive, 1/8 inch (3mm) thick polystyrene padding.

.6 Back and Inner Stiffener Frame: Galvanized steel, one-piece welded construction with slots for mounting screws and integral screw-head lock.

.7 Concealed wall hanger with theft resistant mounting.

.8 Acceptable Product: Frost F-941-1836.

.5 **Single-Roll Toilet Tissue Dispenser:**

.1 Wall mounted dispenser to be supplied by Owner and installed by Contractor.

.6 **Sanitary Napkin Disposal Bin:**

.1 Supplied by Owner and installed by Contractor.

.7 **Soap Dispenser:**

.1 Supplied by Owner and installed by Contractor.

.8 **Paper Towel Dispenser:**

.1 Supplied by Owner and installed by Contractor.

.9 **Wall mounted Toilet Back Rest (BR) at barrier-free washroom stalls:**

.1 Acceptable Product: Frost F-1028, stainless steel finish and concealed mounting.

2.3 OTHER WASHROOM EQUIPMENT

.1 **Emergency Signs:**

- .1 Sign posted above the emergency button of the call system in the universal washroom and in the main corridor:
- .2 Materials:
  - .1 Acrylic Sheet: 6mm thick, polymethylmethacrylate (PMMA) cast sheet suitable for intended use in sign fabrication, transparent clear. Acrylic shall be UV resistant and meet or exceed Code requirements for flammability and flame spread. Provide slightly beveled and polished edges.
  - .2 Applied Vinyl: 0.05mm pressure-sensitive film designed for permanent graphics. Vinyl letters applied to back of acrylic sheet. White vinyl sheet to be applied to full back of acrylic.
  - .3 Mounting Hardware: Double-sided tape: 3M VHB 5952 acrylic foam tape.
- .3 Sign Text in Washroom: Sign to read: “IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON OR HORIZONTAL PANIC STRIP AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE”.
- .4 Sign Text in main Corridor: Sign to read: “THE FLASHING LIGHT INDICATES THAT THERE IS AN EMERGENCY WITHIN THE NEW UNIVERSAL WASHROOM. CONTACT 911 IMMEDIATELY.”.
- .5 Sign Letters: Letters to be minimum 25mm high with a 5mm stroke. Colour to be selected by the Consultant.
- .6 Sign Size: Minimum size of 380mm wide by 300mm high.

PART 3 – EXECUTION

3.1 INSTALLATION

.1 Install products in strict compliance with manufacturer’s written instructions and recommendations, including the following:

- .1 Verify blocking has been installed properly.
- .2 Verify location does not interfere with door swings or use of fixtures.
- .3 Comply with manufacturer’s recommendations for backing and proper support.
- .4 Use fasteners and anchors suitable for substrate and project conditions.
- .5 Install units rigid, straight, plumb, and level, in accordance with manufacturer’s installation instructions and approved shop drawings.
- .6 Conceal evidence of drilling, cutting, and fitting to room finish.
- .7 Test for proper operation.

3.2 CLEANING AND PROTECTION

.1 Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.

.2 Touch-up, repair or replace damaged products until Substantial Completion.

END OF SECTION

24-7550-RFT - Tait Street Public School Classroom Ceilings and Washroom Renovation

Opening Date: April 4, 2024 6:00 PM

Closing Date: April 24, 2024 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	Tait Street Public School Classroom Ceilings and Washroom Renovation as per scope of work	Lump Sum	1		
				Subtotal:	

Summary Table

Bid Form	Amount
Bid Price Form	
HST (13%)	$ 0.00
Total Contract Amount:	

Bid Questions

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.

The Board will require General Contractors on the approved Roster List to have their IHSA - Certificate of Recognition (COR®) by January 2026. Although not mandatory for this bid opportunity, the Board requests bidders to respond to the question below YES or NO. By responding NO, you acknowledge the deadline requirement above. Does your company have a current IHSA - Certificate of Recognition (COR®)? - YES or NO

Specifications

Bidder's Contact Information

A Site Supervisor and Project Manager, assigned to manage and supervise the Work, must be named in this form. Personnel will be subject to approval by the Board and cannot be changed without prior written approval from the Board.

A dedicated Site Supervisor is required full-time for this project. If your company is awarded more than one project/contract, a different Site Supervisor is required for each project. In the event of this situation, you have the option to name and include a resume for an alternative Site Supervisor at this time.

If providing an alternative Site Supervisor with your submission, it is understood, that the alternative Site Supervisor will only be reviewed if the first Site Supervisor has already been accepted and working on another WRDSB project.

Note: resumes are required to be uploaded in the document section. Optional for alternative Site Supervisor

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Title	Name *	E-mail *	Cell Phone Number *	
Project Manager				*
Site Supervisor				*
Optional - Alternative Site Supervisor in the event the Site Supervisor listed above is assigned to another WRDSB Project.				

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.

Upload a resume for each person named in the Specification section.

- Project Manager - Resume * (mandatory)
- Site Supervisor - Resume * (mandatory)
- Optional - Alternative Site Supervisor - Resume (only if Site Supervisor #1 is assigned to another project prior to this award) (optional)

BONDING UPLOAD SECTION

Refer to the Bonding Requirements Section of the Terms and Conditions.

Bonding is 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, please upload a pdf document stating: Not Applicable.

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 pdf file, please upload it in both fields and indicate one is a “duplicate”

The date on the Bonds must be the Closing Date

Tender # and Project Title must be included on the Bonds

- 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.		