



**Waterloo Region
District School Board**

REQUEST FOR TENDER

25-7729-RFT

Hillside Public School Office and Staff Room Renovation

ISSUE DATE: March 31, 2025

ELECTRONIC SUBMISSIONS will be received by the Bidding System no later than 2:00 p.m. local time, on April 22nd , 2025.

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AD 638 Mail Slots – C8
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AD 655A Staff Lounge Island – Type B29
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AD 725 Top of Wall Construction at Fire Separation Assembly

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DIVISION 00 – BIDDING AND CONTRACT DOCUMENTS

00 21 13 Instructions to Bidders

1. Designated Representative

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. Bidders must not communicate in any manner with anyone other than the Designated Representative.

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

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

2. Consultant

The Board has hired the following architect/consultant to assist in the preparation of this Tender: Hossack & Associates Architecture.

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 Consultant will be responsible for the contract administration of the project after the purchase order has been issued or the contract has been signed by the 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, 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 Representative listed above. Any attempt by a Bidder to bypass or influence the procurement process may result in disqualification of the Bidder and the rejection of the Bidder's submission.

The 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.

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 122 school locations and serving approximately 64,000 students in the Region of Waterloo.

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

WRDSB competitive opportunities are posted on the Electronic Bidding System, [bids&tenders/wrdsb](#).

The WRDSB only accept electronic Bid Submissions submitted through the Electronic Bidding System, [bids&tenders/wrdsb](#)

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

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	March 31, 2025
Non-Mandatory Pre-Bid Site Examination	Date: Wednesday, April 2, 2025 Time: 3:30pm 11 Chopin Drive, Kitchener, Main Entrance
Deadline for Questions	April 14, 2025
Closing Date and Time	April 22, 2025 2:00 pm local time
Anticipated Contract Start / Work begins	July 2, 2025
Substantial Completion Date	August 15, 2025
Ready for Takeover	August 22, 2025
Deemed Complete Date	August 29, 2025

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 site 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&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. Exclusive of the HST, or other similar taxes.
- iv. Unit pricing shall be exclusive of Harmonized Sales Tax (HST), but shall include all applicable costs including but not limited to overhead, material, labour, travel, fuel, fuel surcharge, equipment, disbursements, expenses, customs, charges, freight, shipping and handling costs, and all other charges of every kind attributable to the services, equipment or goods provided.
- v. The person submitting the Bid on behalf of the Bidder must have authority to bind the Bidder.
- vi. Quantities may be estimated and subject to change, and therefore the Board, at its discretion, may purchase more or less of the commodity based on the unit price bid.
- vii. All information required on the forms shall be completed in full including references and Sub-contractors that it proposes to use for Work described. Changes made to the list of nominated Sub-contractors after the closing of the Bid, must have prior written approval of the Board's Single Point of Contact.
- viii. 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.
- ix. Unit prices and/or optional pricing, if any will set the foundation for any approved increases or decreases in Work. The unit prices must remain fixed and firm for the term of the Contract, unless otherwise specified in this Bid Solicitation document.
- x. Provisional or Optional 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 Optional items are not purchased, or quantities are less than estimated, no adjustment or compensation will be awarded to the Bidder by the Board. Optional pricing is not used for comparison of Bids for award purpose.

12. 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.

13. 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.

14. Irrevocable Period

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

15. 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).

16. 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.

17. 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.
- vii. The Board may request a meeting with Bidders.

18. Post-Award Meeting

A post-award meeting may be held consisting of the successful 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.

19. Intent to Award

Bidders are advised not to make any business decisions, assignments, or any sub-contract for the execution of the Work, before receiving a Purchase Order from the 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 instructed, within twenty-four (24) hours, excluding hours occurring during a Saturday, Sunday, or a legal holiday, 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 the 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

20. Post Award

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.

21. Award Posting Notification

For procurements valued at \$121,200 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 Contractors

- 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 project size categories based on the award.
- 1.2 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.

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

Working includes the renovation of the existing main office, staff washrooms and staff room, as well as an existing family study classroom into a standard classroom, work room and nutrition room.

END OF SECTION

00 31 34 – Subsurface Investigation Report - Not Applicable

1.0 General

1.1. Related Sections

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

1.2. SUBSURFACE INVESTIGATION REPORT

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

END OF SECTION

Appendix 00 31 34A – Soil Report – Not Applicable

Instructions:

- Sample:**

[illegible]

Project Name: _____

School / Location: _____

Date: _____

[illegible]

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 (Supplier)**

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

3. **Basis of Award (Price factor)**

Bidders shall be deemed to have included all costs related to the Work in the Total Price as provided in their Bid, except for items clearly identified as provisional in the 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 only required if the project is equal to or greater than \$200,000.00.

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

i. **Bid Amount**

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

ii. **Bid Deposit Bond & Agreement to Bond**

Bid submissions must be accompanied by a bid deposit in the form of a digital Bid Bond in an electronically verifiable and enforceable (e-Bond) format in the amount of 10% of the total base bid (inclusive of HST) made payable to the Waterloo Region District School Board (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 Supplier shall provide for a Performance Bond for 50% of the total Contract Price, and a Labour and Material Payment Bond for 50% of the total Contract Price.

Bidders shall upload their digital Bid Deposit Bond and Agreement to Bond separately to the Bidding System, in the bid submission files labeled "Bid Deposit Bond" & "Agreement to Bond". If both Bonds are within one (1) document, upload it in both files. All instructions and details for accessing authentication shall be included with the digital Bonds uploaded in the Bidding System. Do not include and/or upload Performance Bond and Labour and Materials Bond in this section.

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

The bid deposit of the Bidder whose submission is accepted shall be forfeited by the Bidder should the Bidder fail to execute a Contract or provide the necessary documents as required within this 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 Supplier shall provide a digital Bid Performance and Labour and Materials Bond in an electronically verifiable and enforceable (e-Bond) format in the amount(s) of not less than 50% Performance Bond and a 50% Labour and Materials Bond of the total Contract Price made payable to the Waterloo Region District School Board (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 Sub-contractors, Suppliers, and any other persons supplying labour or materials to the Project. For more information, contact your surety company or visit the Surety Association of Canada website.

If the Supplier fails to provide a performance bond and/or labour and materials bond when requested, the 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 Supplier 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 Supplier is responsible for throughout the two (2) year period of maintenance and warranty.

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

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

5. Business Code of Conduct for Board Employees

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

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

6. Code of Conduct for Suppliers

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

- i. **Courtesy and Respect:** all Suppliers and their employees must conduct themselves in a manner that is lawful, courteous, respectful, businesslike, and free of bias to the Board, its officer, employees, students, guests, or visitors.
- ii. **Language and Behavior:** Suppliers and their employees cannot engage in behavior that is rude, threatening, or offensive. Use of profane or insulting language is prohibited. Harassment of any type, including sexual harassment is strictly prohibited. Abusive, derogatory, obscene or improper language, gestures, remarks, whistling, cat calls or other disrespectful behavior cannot be tolerated.

- Rough housing, fighting, fisticuffs, physical threats, destruction of property, vandalism, littering, or physical abuse of anyone on WRDSB property are not permitted under any circumstance.
- iii. **No Weapons, Alcohol, or Drugs:** The use, possession, distribution, or sale of any weapon, alcohol, illegal drug, or controlled dangerous substance by any Supplier or Supplier's employee is prohibited. Offenders will be removed from WRDSB property and/or reported to the local Police Department.
 - iv. **Smoking:** Suppliers and their employees are not permitted to smoke on WRDSB property, in or near any buildings.
 - v. **Fraternization:** Suppliers and their employees may not fraternize or socialize with WRDSB students or employees.
 - vi. **Appearance:** Suppliers and their employees 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. **Vehicles and Driving on Board Property:** Vehicles must clearly indicate the Supplier's company name, identifier number and telephone number. It must be readable from 8 meters (25 feet) away. Vehicles including movable Equipment/Machinery must not enter, leave or drive on Board premises during nutritional breaks, before and after school hours, or anytime there are students or staff outside of the building.
 - viii. **Reporting:** The Supplier is required to report any matter involving a violation of these rules of conduct, any matter involving health or safety, including any altercations, to WRDSB Facilities staff.

The Supplier is responsible for its employees, agents, consultants and guests. If prohibited conduct does occur, the Supplier will take all necessary steps to stop and prevent any future occurrence. Any breach of these conditions will result in the removal of the person responsible from the school premises and prohibited actions could result in the termination of any contract or agreement with WRDSB.

7. Compliance with Laws, Acts and Regulations

Suppliers shall abide by all applicable 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

- Accessibility for Ontarians with Disabilities Act (AODA)

- Architect Act
- [Bill S-211 Fighting Against Forced Labour and Child Labour in Supply Chains Act](#)
- Broader Public Sector Accountability Act, 2010
- Building Ontario Businesses Initiative (BOBI) Act, 2022
- Canada Revenue Agency (CRA) regulations
- Confidentiality Acts (MFIPPA, PIPEDA etc.)
- Construction Act
- Education Act
- Occupational Health and Safety Act
- Trade Agreements (CETA/CFTA etc.)
- Workplace Safety and Insurance Act (WSIB)
- [WRDBS Procurement Services Policies website](#)
- [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 Supplier(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 Supplier 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, MFIPPA, and PIPEDA

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.

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

(a) it and all of the Supplier's Sub-contractors shall ensure the PIPEDA compliance of all PIPEDA Protected Information it collects directly from individuals or indirectly from the Board, uses or discloses in the course of performing their obligations under this Agreement; and,

(b) without limitation, it shall ensure the PIPEDA compliance of all PIPEDA Protected Information it transfers or discloses to the Board.

9. Confirmation to Proceed

No work shall commence until the Board has issued a purchase order and/or contract, if applicable to the Supplier. Goods/Service or Work as described shall not commence until all the required documents have been submitted to Procurement Services and the Form of Agreement and/or the CCDC 2 - 2020 if applicable, are executed by the Supplier and the Board. For payment purposes, a Purchase Order shall be generated and issued to the Supplier. 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 Sub-contractors, sub-consultants and suppliers also have no conflict with respect to other work and/or other clients.

The Supplier, Sub-contractors and Sub-suppliers and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the Owner) with the provision of the Work pursuant to the Contract. The Supplier acknowledges and agrees that a conflict of interest, as described in this section includes, but is not limited to, the use of Confidential Information where the Owner has not specifically authorized such use.

The Supplier shall disclose to the Owner, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any Sub-contractor or Supplier that is directly or indirectly affiliated with or related to the Supplier.

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

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

those claims are the subject of litigation or binding arbitration between the Sub-contractor or Supplier and the Supplier has been found liable for those claims.

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

11. Construction Act Guidelines

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

12. Criminal Background Checks and Collection of Personal Information

The 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 Supplier 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 Supplier 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 Supplier

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

provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement.

The Supplier shall indemnify and save harmless the 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 Supplier has failed to rectify any damage, injury or infringement or has failed to adequately compensate any person for any damage, injury or infringement for which the Supplier is responsible under the Contract, the Board, following notice in writing to the Supplier of his intention so to do, may withhold payment of any monies due to the Supplier under this or any other Contract until the Supplier has rectified such damage, injury or infringement or has paid adequate compensation for such damage, injury or infringement.

14. Damage Reporting

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

It is understood that all damage caused by workers engaged in the work under these specifications will be repaired by the Supplier and at the Supplier's sole expense. Damaged turf areas will be levelled and seeded, all horticultural planting damaged beyond repair will be replaced and any damage to structures, utilities, signs, light fixtures, landscape furniture, irrigation systems etc. will be repaired or replaced. Repair work will be carried out by skilled workers acceptable to the Board representative. All repairs and replacements will be approved by a Board representative prior to final payment.

15. Debriefing Requests

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

16. Default

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

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

17. Delay Claims

The Supplier shall be responsible for all deliverables including lead times. The bidder shall include in their bid price any costs associated with an extended schedule beyond the stated substantial completion date due to delayed deliveries of items. 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. Delivery and Transportation Charges

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

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

All asbestos work must be conducted by Suppliers 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, Suppliers must be certified as Asbestos Abatement Workers AAW (Trade code 253W) and Asbestos Abatement Supervisors AAS (Trade code 253S) by The Ministry of Training, Colleges and Universities as prescribed by Section 20 of O. Reg. 278/05.

Unless otherwise specifically covered by Cash Allowance or Contingency Allowance for known asbestos materials, include in this contract for the removal under abatement, in compliance with O. Reg. 278/05, of all known asbestos containing materials, as identified in the audit, within 0.6 meter (2'-0") of all new services, materials, and equipment, and/or as required to complete the work. No claims for extra cost will be accepted for areas known to contain asbestos containing materials.

II. Lead

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

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

Should the Supplier encounter paint and coatings, not sampled, that would be disturbed during the course of the Work, they should stop the work in that immediate area and report the same to the 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

Supplier shall inform all workers of the presence of paint finishes that are lead containing. Disturbance of lead-containing materials, paints or surface coatings shall be conducted in accordance with the procedures outlined in the Environmental Abatement Council of Canada (EACC) "Lead Guideline" (October 2014) and/or the Ministry of Labour (MOL) "Lead on Construction Projects" guideline (April 2011). The extent of procedures required depends on the type of work to be conducted. Waste to be handled and disposed of in accordance with O.Reg. 347.

III. Mercury

Mercury is typically used in building service applications such as thermometers, barometers, thermostats, gauges, electrical switches, and lighting products including fluorescent light bulbs and a variety of High Intensity Discharge (HID) lamps as mercury vapour, metal halide and high pressure sodium lamps. Lamps and other devices that require demolition are to be handled with care and kept intact to avoid potential exposure. Any mercury-containing lamps or other equipment that are demolished are to be recycled. Waste to be handled and disposed of in accordance with O.Reg. 347.

IV. Silica

Silica is present in rock, stone, soil, and sand. Masonry products such as concrete block, brick, and mortar, as well as concrete and associated products contain silica. Due to its ubiquitous nature, silica was historically used in a wide variety of building materials and is still used today in new construction.

All work involving the demolition silica-containing materials shall follow the procedures outlined in the MOL "Silica on Construction Projects" guideline. Type 1 operations may be necessary based on the type of work conducted and the Supplier shall implement dust suppression methods and protect workers.

V. Other Designated Substance

In addition to asbestos and/or lead, silica, and mercury are present in all WRDSB facilities. New construction, renovation or alterations require compliance by the Supplier with the applicable legislation. Other designated substances (i.e., acrylonitrile, arsenic, benzene, coke oven emissions, isocyanates, ethyl oxide, and vinyl chloride) are not encountered in WRDSB facilities as significant constituents or in a form that would represent an exposure concern. 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.

20. Dispute Resolution

All disputes arising out of or in connection with this Contract, or in respect of any legal relationship associated with or derived from this Contract, other than with respect to the 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 Supplier 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.

21. Electrical Safety Requirements

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

22. Emergency and Maintenance

The care of the Works until completed, delivered to and accepted by the Board rests solely with the Supplier 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 Supplier's negligence, Act of God, or any cause whatsoever.

Should the Supplier 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 Supplier.

23. 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.

24. 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.

25. Force Majeure

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

the Contract and has received a notice of default shall not excuse a party from its obligation to cure the default(s). For greater certainty, the defaulting party, to the extent possible, must continue to address and cure the default notwithstanding an event of Force Majeure.”

Any cause, unknown at the effective date of the Contract and beyond either party’s control, other than financial difficulties, bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the Contract and the event of Force Majeure did not arise from a party’s default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. Force Majeure includes Labour Disputes; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licenses, permits, agreements, or approvals (excluding approvals of any Sub-contractors 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.

26. Hold Back or Set Off

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

27. 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 Work 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.

27.1 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.

28. 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.

29. 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 Sub-contractors, 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.

30. Inspection of Supplier's Work.

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

31. Insurance Requirements

If selected, it is the responsibility of the Supplier and its Insurance Broker to review all potential operations and exposures to determine if the coverage and limits noted below are sufficient to address all insurance related exposures presented by the specification of the Project, Work, or Supply. The Supplier shall insure its undertaking, business, and equipment under the following coverage to protect and indemnify and save harmless the Board.

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

- i. **Commercial General Liability Insurance** shall be in the name of the Supplier, and shall name the **Waterloo Region District School Board** and any other person or party identified in the contract documents, as an **additional insured**, with limits of

not less than \$5,000,000.00 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. To achieve the desired limit, umbrella, or excess liability insurance may be used. The policy shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage.

- ii. **Automobile Liability Insurance** in respect of licensed vehicles with limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles owned or leased by the Supplier, and endorsed to provide the Owner with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the Supplier shall provide the Owner with confirmation of automobile insurance coverage for all automobiles registered in the name of the Contractor
- iii. **If applicable, 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 \$5,000,000 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 Supplier shall forward a Certificate of Insurance evidencing this insurance with the executed Agreement. The Certificate shall state that coverage will not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days (ten (10) days if cancellation is due to non-payment of premium) prior written notice by certified mail to the 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 Supplier and to leave the resolution of the claim with the Supplier. 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 Supplier, either directly by a third party or through the Board shall be promptly investigated by the Supplier. The Supplier shall contact the third party claimant within 48 hours of receipt of notice of a claim. The Supplier shall initiate an investigation of the claim immediately upon notice, and advise the third party claimant in writing, with a copy to the Board, of its position regarding the claim within 21 calendar days of the notice. The Supplier shall include in its response the reasons for its position.
- c. Should this position not resolve the claim and be accepted by the third party claimant, the Supplier shall immediately report the claim to its Insurer for further review. (Insurer for this purpose is defined as either the Claims

Department of the Supplier's Insurance Company or the Claims Administrator at the Supplier's Insurance Broker.) The Supplier's Insurer upon receipt of this claim shall advise the third party claimant by letter, with a copy to the Board, that it is now investigating the claim. When a final position on the claim has been determined, the Supplier's Insurer shall advise the third party claimant by letter, with a copy to the 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 Supplier and/or its Insurer and to seek indemnification from the Supplier or to exercise any other rights under the Contract.
- e. The Board may, without breaching this contract, retain from the funds owing to the Supplier an amount that, as between the Board and the Supplier, is equal to the balance in the Board's favour of all outstanding debts, claims or damages, whether or not related to this contract.

32. Invoicing and Payment Terms

- a) **Submit all invoices** to finance-ap@wrdsb.ca for payment at the completion of the Work or after receipt of goods, unless otherwise stated. Not Applicable for Credit Card orders.
- b) **Fiscal Year End:** All work scheduled within a single school year (Sept 1-Aug 31) must be completed and invoiced received by the Board no later than August 31 of that same school year, unless budgets dictate that work must extend into the following school year and/or mutually agreed upon both parties.
- c) **New Account**, in advance of invoicing, upon request, Suppliers will provide:
 - i. necessary company information to set up a WRDSB account and
 - ii. banking information to receive payment by Electronic Funds Transfer (EFT).
- d) **Requests to change company information** must be submitted in writing accompanied with a legal document/letter signed by a lawyer on the law firm's letterhead.
- e) **Invoices must contain** the following information, where applicable, in order to be deemed complete:
 - i. Purchase Order Number
 - ii. Invoice Date
 - iii. Unique Invoice Number
 - iv. Supplier name and address
 - v. Quantity, Unit Price, Unit of Measure and Extended Price
 - vi. Description for each line item
 - vii. Date of Service Call, if applicable
 - viii. HST
 - ix. Payment Terms

- x. Work Order Number, if applicable
- xi. WRDSB Project Lead, if available, and
- f) **Payment terms** shall be net twenty-eight (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. Suppliers are required to invoice promptly, without delay.

32.1 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 Supplier shall submit its invoices in the form of a Proper Invoice. For the purposes of this section, a "Proper Invoice" shall include the following:

- i. the Supplier's name, address, telephone number and mailing address.
- ii. the date of the Proper Invoice and the period during which the services or materials for which payment is being 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 Supplier's HST number.
- x. invoices and time sheets from all subtrades whose work is included in the Proper Invoice, if required in the Contract.
- xi. backup documentation to support any cash allowances and extra work claimed in the Proper Invoice.
- xii. a schedule of values indicating:
 - a. for lump sum contracts, the percentage of work completed per division with each division further subdivided to show the percentage of work completed for each subtrade,
 - b. for unit price contracts, the tender quantity, unit of measure, previous

- quantity, current quantity, to-date quantity,
- c. an updated list of change orders, showing the percentage of work completed under each change order, and
- d. an updated cash allowance list, showing the percentage of work completed in respect of each cash allowance, if required by the Contract.
- xiii. a Statutory Declaration where required by the Contract attesting to the truth of the statements made therein.

33. Licenses and Permits

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

34. Locates, if applicable

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

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

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

35. Log Reports

If required, the Supplier must submit a completed Log Report with invoices. The Board may request more frequent log submissions if deems necessary.

36. Materials - Specifications

Only new materials in perfect condition will be accepted. Demonstrators, seconds or defective materials are unacceptable. Any materials found not to be in a new condition or as specified will be returned to the Supplier at the Supplier's expense.

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

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

38. 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.

39. No Branding

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

40. 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.

41. 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.

42. 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.

43. Non-Assignment

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

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

44. 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 Supplier will be subject to further privacy and security reviews as required. This agreement will be renewed on an annual basis.

45. 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 Sub-contractors.

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 Supplier 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.

46. 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).

47. Performance

- i. Where the Supplier 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 Supplier 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 Supplier, 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 Supplier 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 Supplier shall be discharged before all the services contemplated hereunder have been completed, or the services are for any reason terminated, stopped or discontinued because of the inability of the Supplier to serve under this agreement they shall be paid only for that portion of the Work which shall have been satisfactorily completed at the time of termination.
- vi. Where deemed appropriate, a performance evaluation shall be completed by the Board. The evaluation report shall be reviewed with Procurement Services, and a copy of the completed evaluation forwarded to the Supplier for their records. Dependent on the evaluation scoring, the Board may request a corrective action plan and/or project size/value may be affected on future bid opportunities for your company.

48. Permits and Licenses

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

49. 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.

50. Protection of Board Assets

The Supplier (the Supplier / Sub-contractor) 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 Supplier, at their expense, to the satisfaction of the Board. The Supplier shall not cause any inconvenience to Board operations, staff, public or users of the Board facilities, within reason. Communication between the successful Supplier 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.

51. 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](#)

52. Records, Inspection, Audits

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

53. 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, significant or persistent deficiencies in performance of any substantive requirement or obligation under a prior agreement or agreements or claims by or against or otherwise involving either of the 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 Optional 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. Verify with any Bidder or with a third party any information set out in a Bid.

- x. reject any, or any part of, any or all Bids, or cancel the bidding process at any stage and/or issue a new Bid call for the same or similar deliverables.
- xi. disqualify any Bidder:
 - a. whose Bid contains misrepresentations or any other, inaccurate, or misleading information, or any qualifications within its Bid,
 - b. who has engaged in conduct prohibited by the Bid Solicitation Document,
 - c. with inadequate credentials or due to unsatisfactory past performance,
- xii. reject Bid(s) from Bidder who has engaged in lobbying or has contravened any of the terms of the Bid Solicitation Document.
- xiii. reject a Bid based on:
 - a. information provided by references or credit check or other due diligence efforts,
 - b. the information provided by a Bidder pursuant to the Board exercising its clarification rights under the procurement process, or
 - c. other relevant information that arises during the procurement process.
- xiv. choose to reject a Bid if only a single Bid is received and cancel the bidding process or enter into direct negotiations with the sole Bidder.
- xv. accept a Bid other than the lowest or highest scoring and/or to not accept any Bid for any reason whatsoever.
- xvi. award the contract as split-order, lump sum or individual-item basis, or such combination as shall best serve the interests of the Board.
- xvii. negotiate in circumstances permitted for in the Bid document or by relevant policies, or directives, and include additional terms and conditions during the process of negotiations.
- xviii. no longer consider a Bidder if a satisfactory outcome is not reached as part of negotiation, as determined by the Board in their sole discretion and move to the next highest ranked Bid in such event.
- xix. select a Bidder other than the Bidder whose Bid reflects the lowest cost to the Board and/or award the Contract to any Bidder.
- xx. award any business/Work described in this Bid Solicitation to more than one (1) Bidder.
- xxi. not award the Contract if the costs of completing the Work exceed budget funding; or do not respond to all requirements or do not represent fair market value or where necessary internal approvals are not obtained, and
- xxii. If the Board receives a bid from a Supplier with Rates that are abnormally lower than the Rates in other Bids, the Board may verify with the Bidder that the Bidder satisfies the conditions for participation and is capable of fulfilling the Agreement.

These reserved rights are in addition to any other expressed rights or any other rights which may be implied in the circumstances. The 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.

54. Responsibilities of the Supplier

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 Supplier, which shall bind the Supplier on their part to furnish and deliver the goods, equipment and services at the prices given and in accordance with the conditions of the Bid solicitation document.

The Supplier shall:

- i. perform the Contract in accordance with the specifications, terms and conditions under which it is awarded.
- ii. act in a professional manner 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 Supplier.
- 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).

55. 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 Sub-contractors, 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.

56. 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 Supplier relying on this or any other information or records.

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

57. 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 Supplier in written form

58. 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.

59. 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 Supplier.

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

60. 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.

61. 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.

62. Termination

If the Supplier 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 Supplier notice in writing of such failure. If the Supplier has not remedied its failure within ten (10) working days of the said notice, the 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 Supplier.
- ii. The Board may withhold any payment due to the Supplier hereunder until the Supplier has remedied its failure.
- iii. The Board may engage the services of another Bidder to remedy the Supplier's failure, and obtain reimbursement therefore from the Supplier. The said reimbursement may be obtained either through deduction from any amounts owing to the Supplier hereunder, or through any other legal means available to the 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.

63. 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 Supplier. The Board shall pay all reasonable costs incurred by the Supplier/Contract up to the date of termination considering the Work performed and/or services were provided in accordance with the Contract and to the complete satisfaction of the Board. Payment shall be in accordance with prices as per Contract. However, in no event shall the Supplier be paid an amount, which exceeds the Total Bid Price. The Supplier will not be reimbursed for any profits which may have been anticipated but which have not been earned up to the date of termination.

64. 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 Supplier receives thirty (30) days written notice of such termination from the Board.

65. 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 Supplier, 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 Supplier, in the event of a major mechanical equipment breakdown, to have available substitute equipment of similar capability. It shall be supplied and put into service to fulfill the 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 Supplier to ensure work continues and deadlines are met, despite any unforeseen interruption as a result of equipment failure.

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

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

66. 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.

67. Traffic Control and Site use

Supplier'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 Supplier shall, at their own expense, remove any equipment or material, which, in the Board's opinion, constitutes a traffic hazard.

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

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

Should the Supplier be unable to 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 Supplier.

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

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

68. Usage Reports

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

69. 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.

70. Volume and Exclusivity

Quantities and/or Board sites may be added, deleted or adjusted at the discretion of the

Board due to but not limited to unintentional omissions, inventory adjustments, new schools/school closures and/or budget restraints.

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

71. 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.

72. Warranty and Maintenance

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

73. Work Continuity

The Supplier 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 Supplier, its Sub-contractors, sub-suppliers, agents, employees, officers, directors, and all other persons and other entities for whose acts the Supplier may be liable or for whom it is responsible in law and their respective officers, directors, agents and employees.

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

74. Work Requirements

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

75. Workplace Safety Insurance Board (WSIB) Certificate

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

Prior to a formal award and commencing the services covered by this 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") listing appropriate NAICS Code and Code Description stating that the Supplier/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 listing appropriate NAICS Code and Code Description shall be uploaded through the Bidding System within 72 hours of the expiration or replacement of the current certificate, without demand by the 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	<u>Amend</u> Article A-1.3 by <u>deleting</u> all of the words after “<i>Contract Documents</i>” and <u>replace</u> them with the following” “attain .1 <i>Substantial Performance of the Work</i> by the 15 day of August in the year 2025. .2 (if applicable) <i>Occupancy</i> by the 15 day of August in the year 2025, and .3 <i>Ready-for-Takeover</i> by the 22 day of August in the year 2025.”
SC1.1		

ARTICLE A-3 – CONTRACT DOCUMENTS

SC2.1	A-3.1	<u>Add</u> the following documents to the list of <i>Contract Documents</i> 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 • <i>Drawings</i> • <i>Specifications</i> • 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	<u>Delete</u> Article A-4.4 and <u>replace</u> it with the following: “4.4 The <i>Contract Price</i> shall remain fixed for the duration of the <i>Contract Time</i>, subject only to adjustments as provided for in the <i>Contract Documents</i>. For certainty, and without limiting the general application of the preceding sentence, the <i>Contractor</i> assumes all risks in connection with cost increases for overhead, <i>Products</i>, <i>Labour</i>, and <i>Construction Equipment</i> prescribed by the <i>Contract Documents</i> for the performance of the <i>Work</i>, and the <i>Contractor</i> assumes all responsibility for liabilities and additional costs that may arise as a result of the <i>Contractor’s</i> inclusion of any <i>Product</i>, <i>Construction Equipment</i>, <i>Supplier</i>, or <i>Subcontractor</i> in its calculation of the <i>Contract Price</i>.”

ARTICLE A-5 – PAYMENT

SC4.1	A-5.1	<u>Delete</u> Article A- 5.1 in its entirety including all subparagraphs and <u>replace</u> it with the following: “5.1 Subject to the provisions of the <i>Contract Documents</i> and the <i>Construction Act</i>, the <i>Owner</i>

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

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

SC3.1	A-9	<u>Add</u> new ARTICLE A-9 CONFLICT OF INTEREST as follows: “ARTICLE A-9 CONFLICT OF INTEREST 9.1 The <i>Contractor</i>, <i>Subcontractors</i> and <i>Suppliers</i> and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the <i>Owner</i>) with the provision of the <i>Work</i> pursuant to the <i>Contract</i>. The <i>Contractor</i> acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of <i>Confidential Information</i> where the <i>Owner</i> has not specifically authorized such use. 9.2 The <i>Contractor</i> shall disclose to the <i>Owner</i>, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any <i>Subcontractor</i> or <i>Supplier</i> that is directly or indirectly affiliated with or related to the <i>Contractor</i>. 9.3 The <i>Contractor</i> covenants and agrees that it will not hire or retain the services of any employee or previous employee of the <i>Owner</i> where to do so constitutes a breach by such employee or previous employee of the <i>Owner's</i> conflict of interest policy, as it may be amended from time to time, until after completion of the <i>Work</i> under the <i>Contract</i>. 9.4 It is of the essence of the <i>Contract</i> that the <i>Owner</i> shall not have direct or indirect liability to any <i>Subcontractor</i> or <i>Supplier</i>, and that the <i>Owner</i> relies on the maintenance of an arm's-length relationship between the <i>Contractor</i> and its <i>Subcontractors and Suppliers</i>. Consistent with this fundamental term of the <i>Contract</i>, the <i>Contractor</i> will not enter into

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

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

SC6.1	Article A-10	<u>Add</u> 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 <i>Contractor</i> was selected by the <i>Owner</i> for this <i>Contract</i> is the <i>Contractor's</i> representation and covenant that it will attain <i>Substantial Performance, Occupancy</i> (if applicable), and <i>Ready-for-Takeover</i> within the <i>Contract Time</i> stated in Article A-1 of this <i>Contract</i>. 10.2 The <i>Contractor</i> acknowledges and agrees that it is responsible to marshal its resources and those of its <i>Subcontractors and Suppliers</i> in a manner which will permit timely attainment of <i>Substantial Performance, Occupancy</i> (if applicable), and <i>Ready-for-Takeover</i>. The <i>Contractor</i> agrees that time is of the essence of this <i>Contract</i>." 10.3 The <i>Contractor</i> shall pay to the <i>Owner</i> 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	<u>Amend</u> the definition of “Consultant” by <u>adding</u> the following to the end of the definition: “For the purposes of the <i>Contract</i>, the terms “<i>Consultant</i>”, “<i>Architect</i>” and “<i>Engineer</i>” shall be considered synonymous.”
SC5.2	Payment Legislation/Construction Act	<u>Delete</u> the Definition of <i>Payment Legislation</i> and replace it with “Construction Act” as follows: “Construction Act <i>Construction Act</i> means the <i>Construction Act</i>, R.S.O. 1990, c. C.30, as amended, including all regulations passed under it that are enforceable as of the date of execution of this <i>Contract</i>. For certainty, the first procurement process for the <i>Project</i> (i.e., the “improvement” as that term is defined in the <i>Construction Act</i>) commenced on or after October 1, 2019.”
SC5.3	Ready-for-Takeover	<u>Amend</u> the Definition of <i>Ready-for-Takeover</i> by deleting all the words after “as verified” and replacing them with “and approved by the <i>Owner</i>.”
New Definitions		
	Adjudication	<u>Add</u> the following definition: “Adjudication <i>Adjudication</i> means construction dispute interim adjudication as defined under the <i>Construction Act</i>.”
	Close-Out Documentation	<u>Add</u> the following new definition: “Close-Out Documentation <i>Close-Out Documentation</i> has the meaning given to it under GC 5.4.2.”
	Confidential Information	<u>Add</u> the following definition: “Confidential Information <i>Confidential Information</i> means all the information or material of the <i>Owner</i> that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the <i>Contractor</i> at any time, but <i>Confidential Information</i> shall not include information that: .1 is or becomes generally available to the public without fault or breach on the part of the <i>Contractor</i>, including without limitation breach of any duty of confidentiality owed by the <i>Contractor</i> to the <i>Owner</i> or to any third party, but only after that information becomes generally available to the public; .2 the <i>Contractor</i> can demonstrate to have been rightfully obtained by the <i>Contractor</i> from a third party who had the right to transfer or disclose it to the <i>Contractor</i> free of any obligation of confidence; .3 the <i>Contractor</i> can demonstrate to have been rightfully known to or in the possession of the <i>Contractor</i> at the time of disclosure, free of any obligation of

		confidence; or .4 is independently developed by the <i>Contractor</i> without use of any <i>Confidential Information</i> ."
	Construction Schedule	<u>Add</u> the following definition: "Construction Schedule <i>Construction Schedule</i> means the schedule for the performance of the <i>Work</i> provided by the <i>Contractor</i> , and approved by the <i>Owner</i> , pursuant to GC 3.4.1, including any amendments to the <i>Construction Schedule</i> made pursuant to the <i>Contract Documents</i> ."
	Construction Schedule Update	<u>Add</u> the following definition: "Construction Schedule Update <i>Construction Schedule Update</i> means an update to the <i>Construction Schedule</i> by the <i>Contractor</i> using Microsoft Project (or other approved scheduling software) that accurately depicts the progress of the <i>Work</i> relative to the critical path established in the <i>Construction Schedule</i> approved in GC 3.5.1 (or any approved successor <i>Construction Schedule</i>), aligns with the currently approved date for <i>Substantial Performance of the Work</i> , shows up-to-date projected major activity sequences and durations, and shows any changes or delays in anticipated completion dates of major activities in the <i>Work</i> relative to the last <i>Construction Schedule Update</i> , and includes the following minimum deliverables: (a) a record version of the updated <i>Construction Schedule</i> in .pdf format; (b) an editable copy of the updated original digital file of the <i>Construction Schedule</i> (e.g., .mpp format files for Microsoft Project)."
	Deficiency Holdback	<u>Add</u> 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	<u>Add</u> the following definition: "Direct Costs <i>Direct Costs</i> are the reasonable costs of performing the contract or subcontract including costs related to the additional supply of services or materials (including equipment rentals), insurance and surety bond premiums, and costs resulting from seasonal conditions, that would not have been incurred, but do not include indirect damages suffered, such as loss of profit, productivity or opportunity, or any head office overhead costs."
	EFT	<u>Add</u> the following definition: "EFT <i>EFT</i> has the definition given to it under GC 5.3.2."
	Excess Soil	<u>Add</u> the following definition:

		“Excess Soil <i>Excess Soil</i> means “excess soil” as that term is defined under section 3 of the <i>Excess Soil Regulation</i>.”
	Excess Soil Regulation	<u>Add</u> the following Definition: “Excess Soil Regulation <i>Excess Soil Regulation</i> means O. Reg. 406/19: On-Site and Excess Soil Management to the <i>Environmental Protection Act</i>, R.S.O. 1990, c. E.19.”
	Final Pre-Invoice Submission Meeting	<u>Add</u> the following ne definition: “Final Pre-Invoice Submission Meeting <i>Final Pre-Invoice Submission Meeting</i> has the meaning given to it in GC 5.5.1.”
	Force Majeure	<u>Add</u> the following definition: “Force Majeure <i>Force Majeure</i> means any cause, unknown at the effective date of the <i>Contract</i> 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 <i>Contract</i> and the event of <i>Force Majeure</i> did not arise from a party’s default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. <i>Force Majeure</i> includes <i>Labour Disputes</i>; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licences, permits, agreements, or approvals (excluding approvals of any <i>Subcontractors</i> or <i>Suppliers</i> 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 <i>Place of the Work</i>; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (e.g. SARS, COVID-19).”
	Install	<u>Add</u> the following definition: “Install <i>Install</i> means install and connect. <i>Install</i> has this meaning whether or not the first letter is capitalized.”
	Labour Dispute	<u>Add</u> the following definition: “Labour Dispute <i>Labour Dispute</i> means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, job action, slow down, lock-outs, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the <i>Work</i>.”
	Notice of Non-Payment	<u>Add</u> the following definition: “Notice of Non-Payment <i>Notice of Non-Payment</i> means a notice of non-payment of holdback (Form 6) or a

		notice of non-payment (Form 1.1) under the <i>Act</i> , as applicable to the circumstances."
	OHSA	<u>Add</u> the following definition: "OHSA <i>OHSA</i> means the <i>Occupational Health and Safety Act</i>, R.S.O. 1990, c. O.1, as amended, including all regulations thereto."
	Overhead	<u>Add</u> the following definition: "Overhead <i>Overhead</i> means all site and head office operations and facilities, all site and head office administration and supervision; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the <i>Place of the Work</i>; all requirements of Division 1, including but not limited to submittals, warranty, quality control, calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs."
	Payment Period	<u>Add</u> the following definition: "Payment Period <i>Payment Period</i> has the definition given to it under GC 5.2.1."
	Pre-Invoice Submission Meeting	<u>Add</u> the following definition: "Pre-Invoice Submission Meeting <i>Pre-Invoice Submission Meeting</i> has the definition given to it under GC 5.2.1."
	Proper Invoice	<u>Add</u> the following definition: "Proper Invoice <i>Proper Invoice</i> means a "proper invoice" as that term is defined in Section 6.1 of the <i>Act</i>, including the minimum requirements set out in Appendix "1" of the Supplementary Conditions."
	Proper Invoice Submission Date	<u>Add</u> the following definition: "Proper Invoice Submission Date <i>Proper Invoice Submission Date</i> has the definition given to it under GC 5.2.2.1."
	Request for Information (RFI)	<u>Add</u> the following definition: "Request for Information (RFI) <i>Request for Information</i> or <i>RFI</i> means written documentation sent by the <i>Contractor</i> to the <i>Owner</i> or to the <i>Owner's</i> representative or the <i>Consultant</i> requesting written clarification(s) and/or interpretation(s) of the <i>Drawings</i> and/or <i>Specifications</i>, <i>Contract</i> requirements and/or other pertinent information required to complete the <i>Work</i> of the <i>Contract</i> without applying for a change or changes to the <i>Work</i>."

	Restricted Period	<u>Add</u> the following definition: "Restricted Period <i>Restricted Period</i> 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 <i>Contract</i>."

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

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

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

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

		.6 technical <i>Specifications</i>; .7 material and finishing schedules; and .8 the <i>Drawings</i>.
	1.1.5.5	<u>Delete</u> GC 1.1.5.5 and <u>replace</u> with the following: “.5 Noted materials and annotations on the <i>Drawings</i> shall govern over the graphic representation of the <i>Drawings</i>.”
	1.1.5.6 to 1.1.5.8	<u>Add</u> 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 <i>Drawings</i>. .7 Architectural drawings shall have precedence over structural, plumbing, mechanical, electrical and landscape drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts and architectural elements of construction, it being understood that the integrity and installation of the systems designed by the <i>Consultant</i> or its sub-<i>Consultants</i> are to remain with each of the applicable drawing disciplines. .8 Should reference standards contained in the <i>Specifications</i> conflict with the <i>Specifications</i>, the <i>Specifications</i> shall govern. Should reference standards and <i>Specifications</i> conflict with each other or if certain requirements of the <i>Specifications</i> conflict with other requirements of the <i>Specifications</i>, the more stringent requirements shall govern.”
	1.1.9	<u>Add</u> the following to the end of GC 1.1.9: “The <i>Specifications</i> are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the <i>Contract Documents</i> will be construed to place responsibility on the <i>Owner</i> or the <i>Consultant</i> to settle disputes among the <i>Subcontractors</i> and <i>Suppliers</i> with respect to such divisions. The <i>Drawings</i> are, in part, diagrammatic and are intended to convey the scope of the <i>Work</i> and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment, outlets and other elements. The <i>Contractor</i> shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the <i>Drawings</i>, including <i>Shop Drawings</i> and shall become familiar with conditions and spaces affecting those matters before proceeding with the <i>Work</i>. Where site conditions require reasonable minor changes where the change requires only the additional labour two hours or less, the <i>Contractor</i> shall make such changes at no additional cost to the <i>Owner</i>. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the <i>Contractor</i> shall include such relocation in the <i>Work</i>. The <i>Contractor</i> shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the <i>Contract Documents</i>, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.”
	1.1.13	<u>Add</u> new paragraphs 1.1.13 as follows: 1.1.13 The <i>Contractor</i> shall keep one copy of the current <i>Contract Documents</i>, <i>Supplemental Instructions</i>, contemplated <i>Change Orders</i>, <i>Change Orders</i>, <i>Change Directives</i>, cash allowance disbursement authorizations, reviewed <i>Shop Drawings</i>, submittals, reports and records of meeting at the <i>Place of the Work</i>, in good order and available to the <i>Owner</i> and <i>Consultant</i>.”

GC 1.3 RIGHTS AND REMEDIES

SC6.1	1.3.2	In paragraph 1.3.2 <u>delete</u> the word "No" from the beginning of the paragraph and <u>replace</u> it with the words: "Except with respect to the requirements set out in paragraphs 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	<u>Add</u> new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows: "GC 1.5 EXAMINATION OF DOCUMENTS AND SITE 1.5.1 The <i>Contractor</i> declares and represents that in tendering for the <i>Work</i>, and in entering into a Contract with the <i>Owner</i> for the performance of the <i>Work</i>, it has investigated for itself the character of the <i>Work</i> to be done, based on information generally available from a visit to the <i>Place of the Work</i> and to the standard set out under GC 3.14.1 and further represents and warrants and acknowledges that it considered and took into account in the <i>Contract Price</i> all reasonably known impacts and restrictions arising from the COVID-19 pandemic, including without limitation corresponding legislative changes that may impact performance of the <i>Project</i>, various weather conditions that may affect the <i>Work</i>, the availability of supplies and labour or other conditions or risks that the <i>Contractor</i> knew about or reasonably ought to have known about prior to the date of the <i>Contract</i>. The <i>Contractor</i> has assumed and does hereby assume all risk of known conditions now existing or arising in the course of the <i>Work</i> which might or could make the <i>Work</i>, or any items thereof more expensive in character, more onerous to fulfill than was contemplated or known when the tender was made or the <i>Contract</i> signed. 1.5.2 The <i>Contractor</i> also declares that prior to commencement of the <i>Work</i>, where in tendering for the <i>Work</i> and in entering into this <i>Contract</i>, the <i>Contractor</i> relied upon information furnished by the <i>Owner</i> or any of its agents or servants respecting the nature or confirmation of the ground at the site of the <i>Work</i>, the <i>Contractor</i> shall review to the standard specified in GC 3.14.1, the accuracy of the information furnished by the <i>Owner</i>. If a condition is materially different than what is stated in the information furnished by the <i>Owner</i>, the <i>Contractor</i> shall, no later than five (5) <i>Working Days</i> after the first observation of such condition(s), deliver to the <i>Owner</i> and to the <i>Consultant</i> a <i>Notice in Writing</i> specifying the materially different condition and the <i>Contractor</i> shall not proceed with the affected part of the <i>Work</i> until receiving written direction from the <i>Owner</i> or the <i>Consultant</i>. Where the <i>Contractor</i> fails to provide prompt <i>Notice in Writing</i> in accordance with this GC 1.5.2, the <i>Contractor</i> expressly waives and releases the <i>Owner</i> from all claims with respect to the said information with respect to the <i>Work</i>.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.2 ROLE OF THE CONSULTANT

SC11.1	2.2.5	<u>Delete</u> paragraph 2.2.4 and <u>replace</u> it with the following: "2.2.4 Upon receipt of an application for payment that satisfies the requirement of a <i>Proper Invoice</i>, based on the <i>Consultant's</i> observations and evaluation of the <i>Contractor's</i> application for payment, the <i>Consultant</i> will determine the amounts owing to the <i>Contractor</i> under the <i>Contract</i> and will issue certificates for payment as provided in Article A-5 - PAYMENT, GC 5.3 - PAYMENT, GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK, and GC 5.5 - FINAL PAYMENT. If the <i>Consultant</i> determines that the amount payable to the <i>Contractor</i> differs from the amount stated in a <i>Proper</i>

		<i>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."</i>
	2.2.6	In the first sentence of paragraph 2.2.6, <u>delete</u> the words "Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER".
	2.2.12	At paragraph 2.2.12, <u>insert</u> the following at end of that paragraph: "If, in the opinion of the <i>Contractor</i> , the <i>Supplemental Instruction</i> involves an adjustment in the <i>Contract Price</i> or in the <i>Contract Time</i> , it shall, within ten (10) <i>Working Days</i> of receipt of a <i>Supplemental Instruction</i> , provide the <i>Consultant</i> with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the <i>Supplemental Instruction</i> by the <i>Contractor</i> , without any adjustment in the <i>Contract Price</i> or <i>Contract Time</i> ."

GC 2.3 REVIEW AND INSPECTION OF THE WORK

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

GC 2.4 DEFECTIVE WORK

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

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

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

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

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

SC13.1	3.2.2.1	<u>Delete</u> subparagraph 3.2.2.1 and <u>replace</u> it with "[Intentionally left blank]".
	3.2.3.2	<u>Delete</u> subparagraph 3.2.3.2 and <u>replace</u> it with the following: ".2 co-ordinate and schedule the activities and work of other contractors and the <i>Owner's</i> own forces, including where other contractors or the <i>Owner's</i> own forces are used after the <i>Owner</i> and the <i>Contractor</i> cannot reach agreement on the value of a change, with the <i>Work</i> of the <i>Contractor</i> and connect as specified or shown in the <i>Contract Documents</i> ."
	3.2.3.4	<u>Delete</u> the period at the end of subparagraph 3.2.3.4 and <u>replace</u> it with a semicolon.
	3.2.3.5	<u>Add</u> new subparagraph 3.2.3.5 as follows: ".5 Subject to GC 9.4 CONSTRUCTION SAFETY, for the <i>Owner's</i> own forces and for other contractors, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the <i>Place of the Work</i> , including all of the responsibilities of the "constructor", pursuant to the <i>OHS</i> ."

GC 3.3 TEMPORARY WORK

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

GC 3.4 CONSTRUCTION SCHEDULE

SC17.1	3.4.1	<u>Delete</u> GC 3.4.1 in its entirety and <u>replace</u> it with the following: “3.4.1 The <i>Contractor</i> shall: 1 within five (5) calendar days of receiving written confirmation of the award of the <i>Contract</i>, prepare and submit to the <i>Owner</i> and the <i>Consultant</i> for their review and approval, a construction schedule in the format indicated below that indicates the timing of the activities of the <i>Work</i> and provides sufficient detail of the critical events and their inter-relationship to demonstrate the <i>Work</i> will be performed in conformity with the <i>Contract Time</i> and in accordance with the <i>Contract Documents</i>. Such schedule is to include a delivery schedule for <i>Products</i> whose delivery is critical to the schedule for the <i>Work</i> or are required by the <i>Contract</i> to be included in a <i>Products</i> delivery schedule. The <i>Contractor</i> shall employ construction scheduling software, being the latest version of “Microsoft Project”, that permits the progress of the <i>Work</i> to be monitored in relation to the critical path established in the schedule. The <i>Contractor</i> shall provide such schedule and any successor or revised schedules in both original digital file format (e.g., .mpp format for Microsoft Project), portable data file (PDF) format, and hard copy. Once accepted by the <i>Owner</i> and the <i>Consultant</i>, the construction schedule submitted by the <i>Contractor</i> shall become the baseline “Construction Schedule”; .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 <i>Construction Schedule</i> or revised construction schedule accepted by the <i>Owner</i> pursuant to GC 3.4 CONSTRUCTION SCHEDULE, which includes without limitation, the <i>Contractor’s</i> use of all possible and, if necessary, extraordinary measures, to bring the progress of the <i>Work</i> into compliance with the <i>Construction Schedule</i>, such as (i) increasing the presence of its own forces at the <i>Place of the Work</i>; (ii) directing any <i>Subcontractors</i> or <i>Suppliers</i> to increase their labour forces and equipment; (iii) working overtime and extra shifts; and (iv) providing any additional supervision and coordination of the <i>Project</i>, all at the <i>Contractor’s</i> own cost and expense save and except where GC 6.5.1, 6.5.2, or 6.5.3 apply; and, .3 monitor the progress of the <i>Work</i> on a weekly basis relative to the baseline <i>Construction Schedule</i>, or any revised <i>Construction Schedule</i> accepted by the <i>Owner</i> pursuant to GC 3.4 CONSTRUCTION SCHEDULE, deliver a <i>Construction Schedule Update</i> to the <i>Consultant</i> and <i>Owner</i> with each application for payment, at a minimum, or as may be reasonably required by the <i>Consultant</i> and advise the <i>Consultant</i> and the <i>Owner</i> weekly in writing of any variation from the baseline or slippage in the schedule; and, .4 if after applying the expertise and resources required under paragraph 3.4.1.2, the <i>Contractor</i> forms the opinion that the slippage in schedule reported in paragraph 3.4.1.3

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

GC 3.5 SUPERVISION

SC17.1	3.5.1	<u>Delete</u> GC 3.5.1 and <u>replace</u> it with the following: “3.5.1 The <i>Contractor</i> shall employ a competent full-time superintendent, acceptable to the <i>Owner</i> and <i>Consultant</i>, who shall be in full time attendance at the <i>Place of the Work</i> while the <i>Work</i> is being performed. The superintendent shall not be changed by the <i>Contractor</i> without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the <i>Owner</i> and the <i>Consultant</i>. The <i>Contractor</i> shall replace the superintendent within 7 <i>Working Days</i> of the <i>Owner’s</i> written notification, if the superintendent’s performance is not acceptable to the <i>Owner</i>. The <i>Contractor</i> shall provide the <i>Owner</i> and the <i>Consultant</i> with the names, addresses and telephone numbers of the superintendent referred to in this GC 3.5.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours. .”
	3.5.2	<u>Delete</u> GC 3.5.2 and <u>replace</u> it with the following: “3.5.2 The superintendent, and any project manager appointed by the <i>Contractor</i>, shall represent the <i>Contractor</i> at the <i>Place of the Work</i> and shall have full authority to act on written

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

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

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

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

GC 3.7 LABOUR AND PRODUCTS

SC19.1	3.7.1	<u>Amend</u> paragraph 3.7.1 by <u>adding</u> the words, "..., agents, <i>Subcontractors</i> and <i>Suppliers</i> ..." after the word "employees" in the first line.
SC19.2	3.7.2	<u>Delete</u> paragraph 3.7.2 and <u>substitute</u> with the following: "3.7.2 <i>Products</i> provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, provincial and municipal building codes, fire safety standards, and all governmental authorities and regulatory agencies having jurisdiction at the <i>Place of the Work</i>, unless otherwise specified. <i>Products</i> which are not specified shall be of a quality consistent with those specified and their use acceptable to the <i>Consultant</i>. <i>Products</i> brought on to the <i>Place of the Work</i> by the <i>Contractor</i> shall be deemed to be the property of the <i>Owner</i>, but the <i>Owner</i> shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said <i>Products</i> shall be at the sole risk of the <i>Contractor</i>. Workmanship shall be, in every respect, first class and the <i>Work</i> shall be performed in accordance with the best modern industry practice."
	3.7.4 to 3.7.8	<u>Add</u> 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 <i>Notice in Writing</i> from the <i>Owner</i>, the <i>Contractor</i> shall immediately remove from the <i>Place of the Work</i>, tradesmen and labourers or anyone whose conduct jeopardizes the safety of the <i>Owner's</i> operations or who are considered by the <i>Owner</i> or

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

GC 3.8 SHOP DRAWINGS

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

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

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

SC22.1	GC 3.9	<u>Add</u> new GC 3.9 – USE OF THE WORK as follows: "GC 3.9 USE OF THE WORK 3.9.1 The <i>Contractor</i> shall confine <i>Construction Equipment</i> , <i>Temporary Work</i> , storage of <i>Products</i> , waste products and debris, and operations of employees and <i>Subcontractors</i> to limits indicated by laws, ordinances, permits, by the direction of the <i>Owner</i> or the <i>Consultant</i> , or the <i>Contract Documents</i> and shall not unreasonably encumber the <i>Place of the Work</i> . 3.9.2 The <i>Contractor</i> shall not load or permit to be loaded any part of the <i>Work</i> with a weight

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

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

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

***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 <i>Contractor</i> shall maintain the <i>Work</i> in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the <i>Owner</i>, other contractors or their employees. The <i>Contractor</i> shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the <i>Work</i>. 3.11.2 Before applying for <i>Substantial Performance of the Work</i>, the <i>Contractor</i> shall remove waste products and debris, other than that resulting from the work of the <i>Owner</i>, other contractors or their employees, and shall leave the <i>Place of the Work</i> clean and suitable for use or occupancy by the <i>Owner</i>. The <i>Contractor</i> shall remove products, tools,

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

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

SC25.1	GC 3.12	<u>Add</u> new GC 3.12 – EXCESS SOIL MANAGEMENT as follows: “GC 3.12 EXCESS SOIL MANAGEMENT 3.12.1 The <i>Contractor</i> shall be solely responsible for the proper management of all <i>Excess Soil</i> at the <i>Place of the Work</i> and for performance of the <i>Work</i> in compliance with the rules, regulations and practices required by the <i>Excess Soil Regulation</i> until such time as <i>Ready-for-Takeover</i> is achieved. Without restricting the generality of the previous sentence, the <i>Contractor’s</i> responsibility under this GC 3.12 includes the designation, transportation, tracking, temporary and/or final placement, record keeping, and reporting of all <i>Excess Soil</i> in connection with the <i>Work</i> all in compliance with the <i>Excess Soil Regulation</i>. 3.12.3 The <i>Contractor</i> shall indemnify and save harmless the <i>Owner</i>, 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 <i>Contractor</i>, or those for whom it is responsible at law, under the <i>Excess Soil Regulation</i>, 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 <i>Owner</i> is not covered by insurance.”

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

SC25.1	3.13	<u>Add</u> 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 <i>Contract</i>, the <i>Contractor</i> shall exercise the standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The <i>Contractor</i> acknowledges and agrees that throughout the <i>Contract</i>, the performance of the <i>Contractor’s</i> obligations, duties and responsibilities shall be interpreted in accordance with this standard. The <i>Contractor</i> shall exercise the same standard of care, skill and diligence in respect of any <i>Products</i>, personnel or procedures which it may recommend to the <i>Owner</i> or employ on the <i>Project</i>. 3.13.2 The <i>Contractor</i> further represents, covenants and warrants to the <i>Owner</i> that: .1 the personnel it assigns to the <i>Project</i> are appropriately experienced; .2 it has a sufficient staff of qualified and competent personnel to replace any of its appointed representatives, subject to the <i>Owner’s</i> approval, in the event of death, incapacity, removal or resignation; and .3 there are no pending, threatened or anticipated claims, liabilities or contingent liabilities that would have a material effect on the financial ability of the <i>Contractor</i> to perform its work under the <i>Contract</i>.”

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

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

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

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

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

GC 5.2 APPLICATIONS FOR PAYMENT

SC29.1	5.2.1	<u>Delete</u> GC 5.2.1 and <u>replace</u> it with the following: "5.2.1 Upon execution of the <i>Contract</i>, and in any event prior to the <i>Contractor</i> submitting its first application for payment, the <i>Owner</i> shall issue a purchase order to the <i>Contractor</i> for the performance of the <i>Contract</i>. The number indicated on such purchase order must be clearly identifiable on all applications for payment. Applications for payment shall be dated the last day of each month or an alternative day of each month agreed to in writing by the parties, with each month representing one payment period under the <i>Contract</i> (each a "Payment Period"). Within 3 calendar days of the end of each <i>Payment Period</i>, the <i>Contractor</i> will submit a draft application for payment to the <i>Owner</i> and the <i>Consultant</i>. Upon receipt of the draft application for payment, and within 7 calendar days, a representative of each of the <i>Contractor</i>, <i>Owner</i>, and the <i>Consultant</i> shall attend a meeting to discuss and review the work completed during the <i>Payment Period</i>, including quantities, if applicable (the "Pre-Invoice Submission Meeting"). In the event that the scheduled date for the <i>Pre-Invoice Submission Meeting</i> is not a <i>Working Day</i>, the <i>Pre-Invoice Submission Meeting</i> shall occur on the next <i>Working Day</i>. The <i>Contractor</i> shall bring with it to the <i>Pre-Invoice Submission Meeting</i> the following: .1 a copy of the draft application for payment; .2 any documents the <i>Contractor</i> is required to bring to the <i>Pre-Invoice Submission Meeting</i> as stipulated in the <i>Contract Documents</i> or as reasonably requested by the

		<i>Owner; and</i> .3 any other documents reasonably requested, in advance, by the <i>Owner</i> or the <i>Consultant</i>."
SC29.2	5.2.2	<u>Delete</u> GC 5.2.2 in its entirety and <u>replace</u> 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 <i>Pre-Invoice Submission Meeting</i>, the <i>Contractor</i> shall deliver its application for payment to the <i>Owner</i> and to the <i>Consultant</i> for <i>Work</i> performed during the <i>Payment Period</i> ("Proper Invoice Submission Date") subject to the following: .1 If the fifth calendar day following the <i>Pre-Invoice Submission Meeting</i>, to which an invoice relates falls on a day that is not a <i>Working Day</i>, the <i>Proper Invoice Submission Date</i> shall be deemed to fall on the next <i>Working Day</i>. .2 The application for payment must be delivered to the <i>Owner</i> and to the <i>Consultant</i> in the same manner as a <i>Notice in Writing</i> during the hours of 9:00 am to 4:00pm (EST) on the <i>Proper Invoice Submission Date</i>. Delivery to the <i>Owner</i> shall be to the following email address: facilities_cap@wrdsb.ca .3 If an application for payment is received after 4:00 p.m. (EST) on the applicable <i>Proper Invoice Submission Date</i>, the application for payment will not be considered or reviewed by the <i>Owner</i> and <i>Consultant</i> until the next <i>Proper Invoice Submission Date</i>. Notwithstanding the foregoing, the <i>Owner</i> in its sole and absolute discretion may elect to accept an application for payment submitted after 4:00 p.m. on the applicable <i>Proper Invoice Submission Date</i>; however, such acceptance shall not be construed as a waiver of any of its rights or waive or release the <i>Contractor's</i> obligations to strictly comply with the requirements prescribed in this subparagraph 5.2.2.3. .4 No applications for payment shall be accepted by the <i>Owner</i> prior to the <i>Proper Invoice Submission Date</i>. .5 All applications for payment shall include all of the requirements for a <i>Proper Invoice</i> prescribed by the <i>Construction Act</i> and this <i>Contract</i> and be dated the last day of the applicable <i>Payment Period</i>;"
SC29.3	5.2.3	<u>Delete</u> GC 5.2.3 and <u>replace</u> it with the following: "5.2.3 The amount claimed shall be for the value, proportionate to the amount of the <i>Contract</i>, of <i>Work</i> performed and <i>Products</i> delivered and incorporated into the <i>Work</i> as of the last date of the applicable <i>Payment Period</i>. Materials may also be deemed to be supplied to an improvement, for payment purposes, when, in the <i>Owner's</i> opinion, they are placed and properly secured on the land on which the improvement is made, or placed upon land designated by the <i>Owner</i> or agent of the <i>Owner</i>, but placing the materials on the

		land so designated does not, of itself, make that land subject to a lien. No amount claimed shall include products delivered and incorporated into the work, unless the products are free and clear of all security interests, liens and other claims of third parties. No amount claimed shall include <i>Products</i> delivered to the <i>Place of the Work</i> unless the <i>Products</i> are free and clear of all security interests, liens, and other claims of third parties."
SC29.4	5.2.4	After the word " <i>Consultant</i> " in GC 5.2.4 <u>add</u> the words "and the <i>Owner</i> "
SC29.5	5.2.5	After the word " <i>Consultant</i> " in GC 5.2.5 <u>add</u> the words "or the <i>Owner</i> ".
SC29.6	5.2.9	<u>Add</u> new 5.2.9 as follows: "5.2.9 The <i>Contractor</i> shall prepare and maintain current as-built drawings which shall consist of the <i>Drawings</i> and <i>Specifications</i> revised by the <i>Contractor</i> during the <i>Work</i> , showing changes to the <i>Drawings</i> and <i>Specifications</i> , which current as-built drawings shall be maintained by the <i>Contractor</i> and made available to the <i>Consultant</i> for review with each application for progress payment. The <i>Consultant</i> shall recommend to the <i>Owner</i> that the <i>Owner</i> retain a reasonable amount for the value of the as-built drawings not presented for review."

GC 5.3 PAYMENT

SC30.1	5.3.1	<u>Delete</u> GC 5.3.1 in its entirety, including all subparagraphs thereunder, and <u>replace</u> it with the following: "5.3.1 After receipt by the <i>Owner</i> and the <i>Consultant</i> of an application for payment submitted by the <i>Contractor</i> in accordance with GC 5.2 - APPLICATIONS FOR PAYMENT: .1 the <i>Consultant</i> will either: (a) issue to the <i>Owner</i> with a copy to the <i>Contractor</i>, a progress payment certificate in the amount applied for by the <i>Contractor</i> in the <i>Proper Invoice</i>, or (b) issue to the <i>Owner</i>, with a copy to the <i>Contractor</i>, a certificate for payment for an amount determined by the <i>Consultant</i> to be properly due to the <i>Contractor</i> after applying any credits, withheld amounts, or other set-offs which the <i>Consultant</i> has determined that the <i>Owner</i> is entitled to notwithstanding any notice of dispute or disagreement that the <i>Contractor</i> may have served, along with the <i>Consultant's</i> reasons why an amount other than what is claimed in the <i>Proper Invoice</i> is properly due to the <i>Contractor</i>, which finding the <i>Owner</i> may accept or amend prior to the <i>Owner</i> issuing a <i>Notice of Non-Payment</i>, if any, in accordance with GC 5.3.2; .2 the <i>Owner</i> shall make payment to the <i>Contractor</i> 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 <i>Owner's Notice of Non-Payment</i> issued pursuant to GC 5.3.3, on the 28th calendar day after receipt of a <i>Proper Invoice</i>, unless such 28th calendar day lands on a day that is other than a <i>Working Day</i>, in which case payment shall be made on the next <i>Working Day</i> after such 28th day."
5.3.2 to 5.3.7	<u>Add</u> new paragraphs 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, and 5.3.7 as follows: 5.3.2 All payments to the <i>Contractor</i> shall be processed using electronic funds transfer ("EFT") and deposited directly to the <i>Contractor's</i> bank account unless agreed to otherwise by the <i>Contractor</i> and the <i>Owner</i> in writing. Prior to the <i>Contractor</i> submitting its first application for payment, the <i>Owner</i> and the <i>Contractor</i> shall exchange such information as is necessary to facilitate <i>EFT</i> payments. 5.3.3 In the event that the application for payment delivered by the <i>Contractor</i> pursuant to GC 5.2 - APPLICATIONS FOR PAYMENT does not include the requirements for a <i>Proper Invoice</i> or where the <i>Owner</i> disputes the amount claimed as payable in the <i>Proper Invoice</i>, then the <i>Owner</i> shall within 14 calendar days of receipt of the application for payment, issue a <i>Notice of Non-Payment</i> (Form 1.1). 5.3.4 Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i>, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a <i>Notice of Non-Payment</i>, despite good faith efforts by both parties and the assistance of the <i>Consultant</i>, the <i>Owner</i> and the <i>Contractor</i> cannot resolve the dispute, either party may commence an <i>Adjudication</i> in accordance with the procedures set out in the <i>Construction Act</i>. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in GC 5.3.1.2. 5.3.5 Provided that the <i>Owner</i> complies with its obligations under the <i>Construction Act</i>, and subject to any interim determination of an adjudicator in accordance with any <i>Adjudication</i>, and where applicable, a final determination made in accordance with the dispute resolution processes prescribed by this <i>Contract</i>, the <i>Owner</i> shall be entitled to claim in a <i>Notice of Non-Payment</i> a right to deduct from or, set off against, any payment of the <i>Contract Price</i>: .1 any amount expended by the <i>Owner</i> in exercising the <i>Owner's</i> rights under this <i>Contract</i> to perform any of the <i>Contractor's</i> obligations that the <i>Contractor</i> has failed to perform; .2 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the <i>Owner</i> as a result of the failure of the <i>Contractor</i> to perform any of its obligations under the <i>Contract</i>; .3 any other amount owing from the <i>Contractor</i> to the <i>Owner</i> under this <i>Contract</i>.	

		5.3.6 The amounts disputed and described under the <i>Notice of Non-Payment</i> shall be held by the <i>Owner</i> until all disputed amounts of the <i>Proper Invoice</i> have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. 5.3.7 The <i>Contractor</i> represents, warrants, and covenants to the <i>Owner</i> that it is familiar with its prompt payment and trust obligations under the <i>Construction Act</i> and will take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the <i>Construction Act</i> including, without limitation, section 8.1 of the <i>Construction Act</i>. Evidence of the <i>Contractor's</i> compliance under this GC 5.3.7, including evidence demonstrating that all <i>EFTs</i> by the <i>Owner</i> to the <i>Contractor</i> are kept in a bank account in the <i>Contractor's</i> name will be made available to the <i>Owner</i> within 5 <i>Working Days</i> following receipt by the <i>Contractor</i> of a <i>Notice in Writing</i> making such request."

GC 5.4

SUBSTANTIAL PERFORMANCE OF THE WORK- AND PAYMENT OF HOLDBACK

SC32.1	GC 5.4	<u>Delete</u> GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK in its entirety and <u>replace</u> it with the following: "GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK 5.4.1 When the <i>Contractor</i> considers that <i>Substantial Performance of the Work</i> has been achieved, the <i>Contractor</i> shall prepare and submit to the <i>Consultant</i> and the <i>Owner</i> a comprehensive deficiency list of items to be completed or corrected, including any incomplete <i>Close-Out Documentation</i>, and apply for a review by the <i>Consultant</i> and the <i>Owner</i> to establish <i>Substantial Performance of the Work</i>. Failure to include an item on the list does not alter the responsibility of the <i>Contractor</i> to complete the <i>Contract</i>. 5.4.2 Prior to, or as part of its written application for <i>Substantial Performance of the Work</i> the <i>Contractor</i> shall submit to the <i>Consultant</i> submit to the <i>Consultant</i> all closeout documentation required by the <i>Contract Documents</i>, 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 <i>Specifications</i>; .9 <i>Shop Drawings</i>;

		.10 coordination drawings; .11 testing and balancing results and reports; .12 <i>Commissioning</i> and quality assurance documentation; .13 distribution system diagrams; .14 spare parts; .15 samples; .16 existing reports and correspondence from authorities having jurisdiction in the <i>Place of the Work</i>; .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 <i>Contract</i>. 5.4.3 The <i>Consultant</i> will review the <i>Work</i> to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the <i>Contractor's</i> complete deficiency list and application: .1 prepare a final deficiency list incorporating all items to be completed or corrected, including any incomplete or unsubmitted <i>Close-Out Documentation</i>. 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 <i>Consultant's</i> draft verification and shall be reviewed with the <i>Owner</i> prior to the <i>Consultant</i> 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 <i>Consultant</i> shall advise the <i>Contractor</i> in writing that the <i>Work</i> or the designated portion of the <i>Work</i> is not substantially performed and give reasons why, or (b) the <i>Consultant</i> shall state the date of <i>Substantial Performance of the Work</i> in a certificate and issue a copy of that certificate to each the <i>Owner</i> and the <i>Contractor</i>. 5.4.4 Following the issuance of the certificate of <i>Substantial Performance of the Work</i> referenced in subparagraph 5.4.3.2(b): .1 The <i>Contractor</i> shall publish, in a construction trade newspaper in the area of the location of the <i>Work</i>, a copy of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.2.2(b) within seven (7) calendar days of receiving a copy of the certificate signed by the <i>Consultant</i>, and the <i>Contractor</i> shall provide suitable evidence of the publication to the <i>Consultant</i> and the <i>Owner</i>. If the <i>Contractor</i> fails to publish such notice, the <i>Owner</i> shall be at liberty to publish said certificate and back-charge the <i>Contractor</i> its reasonable costs for doing so; .2 The <i>Contractor</i> shall complete the <i>Work</i> within forty (40) calendar days of the date certified as the date of <i>Substantial Performance of the Work</i>; .3 Notwithstanding any other provisions of the <i>Contract</i>, no payments will be processed between <i>Substantial Performance of the Work</i> and <i>Ready-for-Takeover</i>; .4 The <i>Owner</i> reserves the right to contract out any or all unfinished <i>Work</i> if it has

		not been completed within forty (40) days of <i>Substantial Performance of the Work</i> 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 <i>Owner</i> of completing the <i>Work</i> including <i>Owner</i> and <i>Consultant</i> wages and materials shall be deducted from the <i>Contract Price</i>.
	5.4.5	After publication of the certificate of the <i>Substantial Performance of the Work</i>, and provided that the <i>Contractor</i> has completed performance of the <i>Work</i> within the 40 calendar days following certification of <i>Substantial Performance of the Work</i>, the <i>Contractor</i> may submit an application for payment of the outstanding <i>Construction Act</i> 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 <i>Contractor</i> has not received any written notices of lien or any claims for liens from any <i>Subcontractor</i> or <i>Supplier</i>.
	5.4.6	The <i>Construction Act</i> holdback amount shall become due and payable the day immediately following the expiration of the holdback period prescribed by the <i>Construction Act</i> (in most cases being the 61st calendar day following the publication of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.4.1), subject to the occurrence of any of the following: .1 the preservation of a lien in respect of the <i>Project</i> that has not been satisfied, discharged or otherwise provided for in accordance with the <i>Construction Act</i>; .2 receipt by the <i>Owner</i> of a written notice of lien that has not been satisfied, discharged or otherwise provided for in accordance with the <i>Construction Act</i>; or .3 prior to the expiry of 40 calendar days following the publication of the certificate of <i>Substantial Performance of the Work</i>, the <i>Owner</i> publishes a <i>Notice of Non-Payment</i> of holdback in accordance with the <i>Construction Act</i> (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 <i>Work</i>.
	5.4.7	Notwithstanding the <i>Owner's</i> obligation to make payment of the holdback amount in accordance with GC 5.4.6, the processing of such payment remains subject to the <i>Owner's</i> internal <i>EFT</i> timing limitations. The <i>Owner</i> covenants, and the <i>Contractor</i> agrees, that payment of the holdback shall be made by <i>EFT</i> at the first opportunity during the <i>Owner's</i> normal processing of <i>EFTs</i> upon the holdback becoming due in accordance with GC 5.4.6..

GC 5.5 FINAL PAYMENT

SC35.1	GC 5.5	<u>Delete</u> GC 5.5 in its entirety, including all subparagraphs thereunder and <u>replace</u> it with the following: "5.5.1 When <i>Ready-for-Takeover</i> has been achieved in accordance with GC 12.1 – READY-FOR-TAKEOVER and the <i>Contractor</i> considers the <i>Work</i> is complete, and after the <i>Contractor</i>, the <i>Owner</i>, and the <i>Consultant</i> have attended a <i>Pre-Invoice Submission Meeting</i> analogous to the requirement in GC 5.2.1 (the "<i>Final Pre-Invoice Submission Meeting</i>"), the <i>Contractor</i> may submit an application for final payment to the <i>Owner</i> and to the <i>Consultant</i>, 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 <i>Consultant</i> or written confirmation from the <i>Owner</i> that the deficiencies or incomplete <i>Work</i> waived by the <i>Owner</i> pursuant to GC 12.1.2 have been fully rectified as of the date of the <i>Contractor's</i> application for final payment, and/or (b) written confirmation, signed by the <i>Owner</i> and the <i>Contractor</i>, that the <i>Contract Price</i> has been reduced by a specified amount in exchange for the <i>Owner</i> releasing the <i>Contractor</i> of its obligation to rectify the certain outstanding deficiencies and/or incomplete <i>Work</i> waived by the <i>Owner</i> pursuant to GC 12.1.2, as detailed in such written confirmation. 5.5.2 No later than 5 calendar days prior to the <i>Final Pre-Invoice Submission Meeting</i>, the <i>Contractor</i> will, if not already provided, submit to the <i>Consultant</i> all <i>Close-Out Documentation</i>. 5.5.3 Delivery of all <i>Close-Out Documentation</i> is a requirement for the <i>Proper Invoice</i> for final payment. 5.5.4 After receipt by the <i>Owner</i> and the <i>Consultant</i> of an application for payment submitted by the <i>Contractor</i> that is a <i>Proper Invoice</i> and by no later than 10 calendar days after the receipt of the <i>Proper Invoice</i>: .1 the <i>Consultant</i> will either: (a) issue to the <i>Owner</i> with a copy to the <i>Contractor</i>, a progress payment certificate in the amount applied for by the <i>Contractor</i> in the <i>Proper Invoice</i>, or (b) deliver a finding to the <i>Owner</i> with reasons why an amount other than what is claimed in the <i>Proper Invoice</i> is properly due to the <i>Contractor</i>, which finding the <i>Owner</i> may accept or amend prior to issuing a <i>Notice of Non-Payment</i> (Form 1.1), if any, in accordance with GC 5.5.2; .2 the <i>Owner</i> shall make payment to the <i>Contractor</i> 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 <i>Owner's Notice of Non-Payment</i> issued pursuant to GC 5.5.5, on the 28th calendar day after receipt of a <i>Proper Invoice</i>, unless such 28th calendar day lands on a day that is other than a <i>Working Day</i>, in which case payment shall be made on the next <i>Working Day</i> after such 28th day.
	5.5.5	In the event that the application for final payment delivered by the <i>Contractor</i> does not include the requirements of GC 5.5.1 (including the requirements for a <i>Proper Invoice</i>) and GC 5.5.2 or where the <i>Owner</i> disputes the amount claimed as payable in the <i>Proper Invoice</i>, then the <i>Owner</i> shall within 14 calendar days of receipt of the application for payment, issue a <i>Notice of Non-Payment</i>. Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i>, as specified under this GC 5.5.5, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a <i>Notice of Non-Payment</i>, despite good faith efforts by both parties with the assistance of the <i>Consultant</i>, the <i>Owner</i> and the <i>Contractor</i> cannot resolve the dispute, either party may commence an <i>Adjudication</i> in accordance with the procedures set out in the <i>Construction Act</i>. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in GC 5.5.4.2.
	5.5.6	Subject to the provisions of the <i>Construction Act</i> and any other rights conferred on the <i>Owner</i> at law or under this <i>Contract</i> to withhold payment or back charge or set-off against payment, the <i>Owner</i> shall pay the amount payable under a <i>Proper Invoice</i> for final payment in accordance with the <i>Construction Act</i>.
	5.5.7	When the <i>Consultant</i> issues a certificate of completion in accordance with GC 5.5.4.1, the <i>Consultant</i> shall also issue a certificate for release of any holdback for finishing work amount. In accordance with the <i>Construction Act</i>, the <i>Owner</i> may retain any amounts which are required by law to satisfy any liens against the <i>Work</i>, in respect of any third party claims made to the <i>Owner</i> in respect of the <i>Contract</i> or the <i>Work</i>, and in respect of any claims the <i>Owner</i> may have against the <i>Contractor</i>. Subject to the foregoing, the <i>Owner</i> shall release the holdback in accordance with the <i>Construction Act</i>."

GC 5.6 DEFERRED WORK

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

***NEW* GC 5.8**

DEFICIENCY HOLDBACK

SC34.1	5.8.1	<u>Add</u> new GC 5.8 – DEFICIENCY HOLDBACK as follows: “GC 5.8 DEFICIENCY HOLDBACK 5.8.1 Notwithstanding any provisions contained in the <i>Contract Documents</i> concerning certification and release of monies to the <i>Contractor</i>, the <i>Owner</i> reserves the right to retain a <i>Deficiency Holdback</i>, In addition to the Construction Act holdback. The <i>Deficiency Holdback</i> in the value of 2% shall be applied against the total Contract value and shall be applied to each progress payment. The <i>Deficiency Holdback</i> 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 <i>Close-Out Documentation</i> not submitted in advance of or as part of the <i>Contractor’s</i> application for <i>Substantial Performance of the Work</i>, an amount shall be retained by the <i>Owner</i> 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 <i>Close-Out Documentation</i>, as determined by the <i>Consultant</i>, until such time as the applicable <i>Close-Out Documentation</i> is submitted and approved. 5.8.3 The deficiency holdback shall be due and payable to the <i>Contractor</i> on the 61st day following completion of all of the deficiencies listed by the <i>Consultant</i> and confirmed to be corrected, there being no claims for lien registered against the title to the <i>Place of the Work</i> issued in accordance with the <i>Construction Act</i>, and less any amounts disputed under an <i>Owner’s Notice of Non-Payment</i> (Form 1.1).”

PART 6 CHANGES IN THE WORK

GC 6.1

OWNER’S RIGHT TO MAKE CHANGES

SC37.1	6.1.2	<u>Add</u> 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 <i>Contractor</i> for a change in the <i>Contract Price</i> and/or <i>Contract Time</i> shall be barred unless there has been strict compliance with PART 6 - CHANGES IN THE WORK. No verbal dealings between the parties and no implied acceptance of alterations or additions to the <i>Work</i> and no claims that the <i>Owner</i> has been unjustly enriched by any alteration or addition to the <i>Work</i>, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for additional payment under this <i>Contract</i>, an increase to the <i>Contract Price</i>, or a claim for any extension of the <i>Contract Time</i>.”

	6.1.3 to 6.1.8	<u>Add</u> 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 <i>Contractor</i> agrees that changes resulting from construction coordination, including but not limited to, scheduling, site surface conditions, site coordination, and <i>Subcontractor and Supplier</i> coordination are included in the <i>Contract Price</i> and the <i>Contractor</i> shall be precluded from making any claim for a change in the <i>Contract Price</i> as a result of such changes. 6.1.4 Labour costs shall be actual, prevailing rates at the <i>Place of the Work</i> paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The <i>Contractor</i> shall provide these rates, when requested by the <i>Consultant</i>, for review and/or agreement. 6.1.5 Quotations for changes to the <i>Work</i> shall only include <i>Direct Costs</i> and be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from <i>Subcontractors</i> and <i>Suppliers</i>, submitted in a format acceptable to the <i>Consultant</i> and shall include any <i>Direct Costs</i> associated with extensions in <i>Contract Time</i>. 6.1.6 When both additions and deletions covering related <i>Work</i> or substitutions are involved in a change to the <i>Work</i>, payment, including <i>Overhead</i> and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the <i>Work</i>. 6.1.7 Changes to the contract shall be quoted to permit the work to be executed within the <i>Contract Time</i> unless approved by the <i>Consultant</i> and the <i>Owner</i>. 6.1.8 No extension to the <i>Contract Time</i> shall be granted for changes in the <i>Work</i> unless the <i>Contractor</i> can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the <i>Work</i>. Extensions of <i>Contract Time</i> and all associated costs, if approved, shall be included in the relevant <i>Change Order</i>. 6.1.9 When a change in the <i>Work</i> is proposed or required, the <i>Contractor</i> shall within 10 calendar days submit to the <i>Consultant</i> for review a claim for a change in <i>Contract Price</i> and/or <i>Contract Time</i>. Should 10 calendar days be insufficient to prepare the submission, the <i>Contractor</i> shall within 5 calendar days, advise the <i>Consultant</i> in writing of the 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 <i>Contract Time</i> and the <i>Contract Price</i> shall include an adjustment, if any, for delay or for the impact that the change in the <i>Work</i> has on the <i>Work</i> of the <i>Contractor</i>, and once such adjustment is made, the <i>Contractor</i> shall be precluded from making any further claims for

		delay or impact with respect to the change in the <i>Work</i> .”
	6.2.3 to 6.2.5	<u>Add</u> new paragraphs 6.2.3, 6.2.4, and 6.2.5 as follows: “6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the <i>Consultant</i>: .1 by estimate and acceptance of a lump sum; .2 by negotiated unit prices which include the <i>Contractor’s</i> overhead and profit, or; .3 by the actual <i>Direct Cost</i> to the <i>Owner</i>, such costs to be the actual cost after all credits included in the change have been deducted, plus the following ranges of mark-up on such costs: .1 Contractor on work of their own forces, 5% overhead, 5% profit. .2 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 <i>Direct Costs</i> 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 <i>Subcontractor</i> quotations submitted listing items 1 to 4 above and item 6 below. .6 mark-up. 6.2.5 The <i>Owner</i> and the <i>Consultant</i> will not be responsible for delays to the <i>Work</i> resulting from late, incomplete or inadequately broken-down valuations submitted by the <i>Contractor</i>.”

GC 6.3 CHANGE DIRECTIVE

SC39.1	6.3.6.1	<u>Amend</u> 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	<u>Delete</u> paragraph 6.3.6.2 and <u>replace</u> it with the following: “.2 If a change in the <i>Work</i> results in a net decrease in the <i>Contract Price</i>, the amount of the credit shall be the net cost, without deduction for <i>Overhead</i> or profit.”

	6.3.7.1(4)	<u>Delete</u> GC 6.3.7.1(4).
	6.3.7.7	Amend GC 6.3.7.7 by <u>deleting</u> the words “described in paragraph 6.3.7.1” and <u>replacing</u> them with “approved by the <i>Owner</i> in writing and in advance of any such expenses being incurred;”
	6.3.7.9	Amend GC 6.3.7.9 by <u>adding</u> the following to the end of the paragraph: “...when specifically requested by the <i>Owner</i> or as directed by the <i>Consultant</i> ;”.
	6.3.7.10	Amend GC 6.3.7.10 by <u>adding</u> the following to the end of the paragraph: “, provided that such amounts are not caused by negligent acts, omissions, or default of the <i>Contractor</i> or <i>Subcontractor</i> ;”.
	6.3.7.13	<u>Delete</u> GC 6.3.7.13.
	6.3.7.15	<u>Delete</u> GC 6.3.7.15.
	6.3.7.17	<u>Delete</u> GC 6.3.7.17 in its entirety including all subparagraphs.
	6.3.11	<u>Delete</u> GC 6.3.11 and <u>replace</u> it with the following: “6.3.11 The value of the <i>Work</i> performed as a result of a <i>Change Directive</i> shall not be eligible to be included in progress payments until the amount, including the method for determining the amount, of such <i>Change Directive</i> has been determined.”

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

SC40.1	6.4.1	<u>Delete</u> paragraph 6.4.1 in its entirety and <u>replace</u> 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 <i>Contractor</i> will be considered by the <i>Owner</i> or the <i>Consultant</i> in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the <i>Contract</i>.
	6.4.2	<u>Amend</u> paragraph 6.4.2 by <u>adding</u> a new first sentence as follows: “Having regard to paragraph 6.4.1, if the <i>Contractor</i> believes that the conditions of the <i>Place of the Work</i> differ materially from those reasonably anticipated, differ materially from those indicated in the <i>Contract Documents</i> and were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the <i>Owner</i> and the <i>Consultant</i> with <i>Notice in Writing</i> no later than five (5) <i>Working Days</i> after the first observation of such conditions.”

		-and- <u>amend</u> the existing second sentence of paragraph 6.4.2 in the second line, following the word "materially" by <u>adding</u> the words "or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1,".
	6.4.3	<u>Delete</u> paragraph 6.4.3 in its entirety and <u>substitute</u> the following: "6.4.3 If the <i>Consultant</i> makes a finding pursuant to paragraph 6.4.2 that no change in the <i>Contract Price</i> or the <i>Contract Time</i> is justified, the <i>Consultant</i> shall report in writing the reasons for this finding to the <i>Owner</i> and the <i>Contractor</i>."
	6.4.5	<u>Add</u> new paragraph 6.4.5 as follows: "6.4.5 No claims for additional compensation or for an extension of <i>Contract Time</i> shall be allowed if the <i>Contractor</i> fails to give <i>Notice in Writing</i> to the <i>Owner</i> or <i>Consultant</i>, as required by paragraph 6.4.2."

GC 6.5 DELAYS

SC41.1	6.5.1	In paragraph 6.5.1 <u>delete</u> the words after the word "for" in the fourth line and <u>replace</u> them with the words "...reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity)."
	6.5.2	<u>Delete</u> GC 6.5.2 in its entirety and <u>replace</u> it with the following: "6.5.2 If the <i>Contractor</i> is delayed in the performance of the <i>Work</i> 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 <i>Owner</i>, <i>Other Contractor(s)</i>, or the <i>Consultant</i>, and relating to the <i>Work</i> or the <i>Place of the Work</i>, then the <i>Contract Time</i> shall be extended for such reasonable time as the <i>Consultant</i> may determine. The <i>Contractor</i> shall be reimbursed by the <i>Owner</i> for reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity)."
	6.5.3	<u>Delete</u> paragraph 6.5.3 in its entirety and <u>replace</u> with the following: "6.5.3 If either party is delayed in the performance of their obligations under this <i>Contract</i> by <i>Force Majeure</i>, then the <i>Contract Time</i> shall be extended for such reasonable time as the <i>Owner</i> and the <i>Contractor</i> shall agree. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the parties agree to a shorter extension. Neither party shall be entitled to payment for costs incurred by such delays. Upon reaching agreement on the extension of the <i>Contract Time</i> attributable to the <i>Force Majeure</i> event, the <i>Owner</i> and the <i>Contractor</i> shall execute a <i>Change Order</i> indicating the

		length of the extension to the <i>Contract Time</i> and confirming that there are no costs payable by the either party for the extension of <i>Contract Time</i> . However, if at the time an event of <i>Force Majeure</i> arises a party is in default of its obligations under the <i>Contract</i> and has received a notice of default pursuant to PART 7 – DEFAULT NOTICE, this paragraph 6.5.3 shall not excuse a party from its obligation to cure the default(s). For greater certainty, the defaulting party, to the extent possible, must continue to address and cure the default notwithstanding an event of <i>Force Majeure</i> .”
	6.5.4	<u>Delete</u> paragraph 6.5.4 in its entirety and <u>replace</u> it with the following: “6.5.4 No extension or compensation shall be made for delay or impact on the <i>Work</i> unless notice in writing of a claim is given to the <i>Consultant</i> not later than ten (10) <i>Working Days</i> after the commencement of the delays or impact on the <i>Work</i> , provided however, that, in the case of a continuing cause of delay or impact on the <i>Work</i> , only one notice of claim shall be necessary.”
	6.5.6 to 6.5.8	<u>Add</u> new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows: “6.5.6 If the <i>Contractor</i> is delayed in the performance of the <i>Work</i> by an act or omission of the <i>Contractor</i> or anyone directly or indirectly employed or engaged by the <i>Contractor</i> , or by any cause within the <i>Contractor’s</i> control, then (i) firstly, at its expense, and to the extent possible, the <i>Contractor</i> shall accelerate the work and/or provide overtime work to recover time lost by a delay arising under this paragraph 6.5.6, and (ii) secondly, where it is not possible for the <i>Contractor</i> to recover the time lost by implementing acceleration measures and/or overtime work, the <i>Contract Time</i> may be extended for such reasonable time as the <i>Owner</i> may decide in consultation with the <i>Consultant</i> and the <i>Contractor</i> . The <i>Owner</i> shall be reimbursed by the <i>Contractor</i> for all reasonable costs incurred by the <i>Owner</i> as the result of such delay, including, but not limited to, <i>Owner’s</i> staff costs, the cost of all additional services required by the <i>Owner</i> from the <i>Consultant</i> or any sub-consultants, project managers, or others employed or engaged by the <i>Owner</i> , and in particular, the costs of the <i>Consultant’s</i> services during the period between the date of <i>Substantial Performance of the Work</i> stated in Article A-1 herein, as the same may be extended through the provision of these General Conditions, and any later or actual date of <i>Substantial Performance of the Work</i> achieved by the <i>Contractor</i> . 6.5.7 Without limiting the obligations of the <i>Contractor</i> described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the <i>Owner</i> or <i>Consultant</i> may, by <i>Notice in Writing</i> , direct the <i>Contractor</i> to stop the <i>Work</i> where the <i>Owner</i> or <i>Consultant</i> determines that there is an imminent risk to the safety of persons or property at the <i>Place of the Work</i> . In the event that the <i>Contractor</i> receives such notice, it shall immediately stop the <i>Work</i> and secure the site. The <i>Contractor</i> shall not be entitled to an extension of the <i>Contract Time</i> or to an increase in the <i>Contract Price</i> unless the resulting delay, if any, would entitle the <i>Contractor</i> to an extension of the <i>Contract Time</i> or the reimbursement of the <i>Contractor’s</i> costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3. 6.5.8 No claim for delay shall be made by the <i>Contractor</i> and the <i>Contract Time</i> shall not be extended due to climatic conditions or arising from the <i>Contractor’s</i> efforts to maintain

		the <i>Construction Schedule</i> ."

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, <u>delete</u> the words "and if the <i>Consultant</i> has given a written statement to the <i>Owner</i> and <i>Contractor</i> which provides the detail of such neglect to perform the <i>Work</i> properly or such failure to comply with the requirements of the <i>Contract</i> to a substantial degree".
SC43.2	7.1.3.4	<u>Add</u> 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 <i>Consultant</i> and the <i>Owner</i> wherein the default can be corrected within the balance of the <i>Contract Time</i> and shall not cause delay to any other aspect of the <i>Work</i> or the work of other contractors, and in no event shall it be deemed to give a right to extend the <i>Contract Time</i> ."
	7.1.4.1	<u>Delete</u> subparagraph 7.1.4.1 and <u>replace</u> it with the following: ".1 correct such default and deduct the cost, including <i>Owner's</i> expenses, thereof from any payment then or thereafter due the <i>Contractor</i> ."
	7.1.4.2	<u>Delete</u> subparagraph 7.1.4.2 and <u>replace</u> it with the following: ".2 by providing <i>Notice in Writing</i> to the <i>Contractor</i> , terminate the <i>Contractor's</i> right to continue with the <i>Work</i> in whole or in part or terminate the <i>Contract</i> , and publish a notice of termination (Form 8) in accordance with the <i>Act</i> ."
	7.1.5.3	In subparagraph 7.1.5.3 <u>delete</u> the words: "however, if such cost of finishing the <i>Work</i> is less than the unpaid balance of the <i>Contract Price</i> , the <i>Owner</i> shall pay the <i>Contractor</i> the difference"
	7.1.6 to 7.1.10	<u>Delete</u> GC 7.1.6 and <u>replace</u> 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 <i>Contract</i> set out herein, the <i>Owner</i> may terminate this <i>Contract</i> at any time for any other reason and without cause upon giving the <i>Contractor</i> fifteen (15) <i>Working Days Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed including reasonable profit, for loss sustained upon <i>Products</i> and <i>Construction Equipment</i> , and such other damages as the <i>Contractor</i> may have sustained as a result of the termination of the <i>Contract</i> , but in no event shall the <i>Contractor</i> be entitled to be compensated for any loss of profit on unperformed portions of the <i>Work</i> , or indirect, special, or consequential damages incurred. 7.1.7 The <i>Owner</i> may suspend <i>Work</i> under this <i>Contract</i> at any time for any reason and without cause upon giving the <i>Contractor Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon <i>Products</i> and <i>Construction Equipment</i> , and such

		other damages as the <i>Contractor</i> may have sustained as a result of the suspension of the <i>Work</i>, but in no event shall the <i>Contractor</i> be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for more than thirty (30) calendar days, the <i>Contract</i> shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply. 7.1.8 In the case of either a termination of the <i>Contract</i> or a suspension of the <i>Work</i> under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall use its best commercial efforts to mitigate the financial consequences to the <i>Owner</i> arising out of the termination or suspension, as the case may be. 7.1.9 Upon the resumption of the <i>Work</i> following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> will endeavour to minimize the delay and financial consequences arising out of the suspension. 7.1.10 The <i>Contractor's</i> obligations under the <i>Contract</i> as to quality, correction, and warranty of the <i>Work</i> performed by the <i>Contractor</i> up to the time of termination or suspension shall continue after such termination of the <i>Contract</i> or suspension of the <i>Work</i>."

GC 7.2

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

SC44.1	7.2.2	<u>Delete</u> paragraph 7.2.2 and <u>replace</u> it with the following: "7.2.2 If the <i>Work</i> is suspended or otherwise delayed for a period of 40 consecutive <i>Working Days</i> or more under a stop work order issued by a court or other public authority on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes directly by the <i>Owner</i>, the <i>Owner's</i> other contractor(s), or the <i>Consultant</i>, and relating to the <i>Work</i> or the <i>Place of the Work</i>, the <i>Contractor</i> may, without prejudice to any other right or remedy the <i>Contractor</i> may have, terminate the <i>Contract</i> by giving the <i>Owner</i> Notice in <i>Writing</i> to that effect."
SC44.2	7.2.3.1	<u>Delete</u> subparagraph 7.2.3.1 in its entirety.
	7.2.3.2	<u>Delete</u> subparagraph 7.2.3.2 in its entirety.
	7.2.3.4	In subparagraph 7.2.3.4, <u>delete</u> the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".
	7.2.5	<u>Delete</u> paragraph 7.2.5 and <u>replace</u> it with the following: "7.2.5 If the default cannot be corrected within the 5 <i>Working Days</i> specified in paragraph 7.2.4, the <i>Owner</i> shall be deemed to have cured the default if it: .1 commences correction of the default within the specified time;

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

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

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

GC 8.2 ADJUDICATION

SC45.2	8.2.2 to	<u>Add</u> new GC 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, and 8.2.7 as follows:

	8.2.7	“8.2.2 Save and except where the <i>Contractor</i> has given an undertaking, in accordance with the <i>Act</i>, to refer a dispute to <i>Adjudication</i>, prior to delivering a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the parties agree to first address all disputes with at least one in-person meeting with the <i>Owner’s</i> representative, the <i>Consultant’s</i> representative, and the <i>Contractor’s</i> 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 <i>Adjudication</i> proceedings as required by, and in accordance with, the <i>Construction Act</i>. 8.2.4 The following procedures shall apply to any <i>Adjudication</i> the parties engage in under the <i>Construction Act</i>: .1 any hearings shall be held at a venue within the jurisdiction of the <i>Place of the Work</i> or such other venue as the parties may agree and which is acceptable to the adjudicator; .2 the <i>Adjudication</i> shall be conducted in English; .3 each party may be represented by counsel throughout an <i>Adjudication</i>; .4 there shall not be any oral communications with respect to issues in dispute that are the subject of an <i>Adjudication</i> 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 <i>Adjudication</i> are confidential and the parties shall not use such documents or information for any purpose other than the <i>Adjudication</i> 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 <i>Contractor</i> fails to comply with any of the notice requirements set out in the <i>Contract</i>, 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 <i>Contractor</i> shall have no entitlement whatsoever (including to an increase in the <i>Contract Price</i>, or an extension of <i>Contract Time</i>) in the context of an <i>Adjudication</i> under the <i>Construction Act</i> and waives the right to make any such claims or disputes in an <i>Adjudication</i>. This GC 8.2.6 shall operate conclusively as an estoppel and bar in the event such claims or disputes are brought in an <i>Adjudication</i> and the <i>Owner</i> 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 <i>Owner</i> to withhold, deduct or retain from monies otherwise owed to the <i>Contractor</i> under the <i>Contract</i> may be referred to, and included as part of, <i>Adjudications</i> under the <i>Construction Act</i>; .2 that disputes related to the termination or abandonment of the <i>Contract</i>, as well as any disputes that arise or are advanced following the termination or abandonment of the <i>Contract</i>, shall not be referred to <i>Adjudication</i> under the <i>Construction Act</i>; .3 that notice(s) of <i>Adjudication</i>, with respect to any dispute or claim relating to the <i>Project</i>, shall not be given, and no <i>Adjudication</i> shall be commenced following <i>Contract</i> completion, <i>Contract</i> abandonment, or termination of the <i>Contract</i>; .4 that any <i>Adjudication</i> between the <i>Contractor</i> and a <i>Subcontractor</i> or a supplier that relates to an <i>Adjudication</i> between the <i>Owner</i> and the <i>Contractor</i> shall be joined together to be adjudicated by a single adjudicator, provided that the adjudicator agrees to do so, and the <i>Contractor</i> 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 <i>Contractor</i> is obliged to commence an <i>Adjudication</i> pursuant to an undertaking under the <i>Construction Act</i>, neither the <i>Owner</i> nor the <i>Contractor</i> shall commence an <i>Adjudication</i> during the <i>Restricted Period</i>. 8.2.8 The parties acknowledge and agree that no <i>Adjudication</i>, arbitration, action, suit or other proceeding may be brought by the <i>Contractor</i> against the <i>Owner</i> in respect of a claim for an increase to the <i>Contract Price</i> as set out in GC 6.6, before the <i>Consultant</i> 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 <i>Proper Invoice</i> shall not include any amounts pertaining to the <i>Contractor's</i> claim for an increase in <i>Contract Price</i> unless and until the <i>Consultant</i> has issued a written notice to the <i>Contractor</i> 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 <i>Contractor</i> from commencing an <i>Adjudication</i> where, pursuant to the <i>Construction Act</i>, the <i>Contractor</i> is required to give an undertaking to a <i>Subcontractor</i> to commence an <i>Adjudication</i> following delivery of a <i>Notice of Non-Payment</i>."

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

SC46.1	8.3.1	<u>Amend</u> paragraph 8.3.1 by changing part of the second line from "shall appoint a <i>Project Mediator</i> " to "may appoint a <i>Project Mediator</i> , except that such an appointment shall only be made if both the <i>Owner</i> and the <i>Contractor</i> agree."
	8.3.4	<u>Amend</u> paragraph 8.3.4 by changing part of the second line from "the parties shall request the <i>Project Mediator</i> " to "and subject to paragraph 8.3.1 the parties may request the <i>Project Mediator</i> ".
	8.3.6 to 8.3.9	<u>Delete</u> paragraphs 8.3.6, 8.3.7 and 8.3.8 in their entirety and <u>replace</u> 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 <i>Contractor</i> and the <i>Owner</i> agree. If the <i>Contractor</i> and the <i>Owner</i> agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the <i>Place of the Work</i>. 8.3.7 Prior to delivering a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the parties agree to first address all disputes by attending at least one meeting with the <i>Owner's</i> representative, the <i>Consultant's</i> representative, and the <i>Contractor's</i> representative, prior

		to commencing an <i>Adjudication</i>. The parties agree that such steps will be taken to resolve any disputes in a timely and cost effective manner. If a resolution to the dispute(s) is not made at such a meeting, any party who plans to commence an <i>Adjudication</i> shall provide the other party with 5 <i>Working Days' Notice in Writing</i> of its intention to issue a notice of <i>Adjudication</i>. 8.3.8 Other than where the <i>Contractor</i> is obliged to commence an <i>Adjudication</i> pursuant to an undertaking under the <i>Construction Act</i>, neither the <i>Owner</i> nor the <i>Contractor</i> shall commence an <i>Adjudication</i> during the <i>Restricted Period</i>. 8.3.9 Where either party has delivered a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the procedures and rules set out under the <i>Construction Act</i> and the regulations thereto shall govern the <i>Adjudication</i>."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

SC47.1	9.1.1.1	<u>Delete</u> subparagraph 9.1.1.1 in its entirety and <u>substitute</u> the following: "1 errors in the <i>Contract Documents</i> which the <i>Contractor</i> could not have discovered applying the standard of care described in paragraph 3.14.1;"
	9.1.2	<u>Delete</u> paragraph 9.1.2 in its entirety and <u>substitute</u> as follows: "9.1.2 Before commencing any <i>Work</i>, the <i>Contractor</i> shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the <i>Contract Documents</i>, or that are inferable from an inspection of the <i>Place of the Work</i> exercising the degree of care and skill described in paragraph 3.14.1."
	9.1.5	<u>Add</u> 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 <i>Contractor</i> shall neither undertake to repair or replace any damage whatsoever to the work of other contractors, or to adjoining property, nor acknowledge that the same was caused or occasioned by the <i>Contractor</i>, without first consulting the <i>Owner</i> and receiving written instructions as to the course of action to be followed from either the <i>Owner</i> or the <i>Consultant</i>. Where, however, there is danger to life, the environment, or public safety, the <i>Contractor</i> 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 <u>inserting</u> the following to the end of the paragraph: "For the purposes of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, <i>Excess Soil</i> 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	<u>Amend</u> GC 9.2.6 by <u>adding</u> the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the <i>Owner</i> or others,".
	9.2.8	<u>Amend</u> GC 9.2.8 by <u>adding</u> the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the <i>Owner</i> or others,".
	9.2.10	<u>Add</u> new paragraph 9.2.10 as follows: "9.2.10 The <i>Contractor</i> , <i>Subcontractors</i> and <i>Suppliers</i> shall not bring on to the <i>Place of the Work</i> any toxic or hazardous substances and materials except as required in order to perform the <i>Work</i> . If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed to the end of any current work week only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of only in accordance with all laws and regulations that are applicable at the <i>Place of the Work</i> ."

GC 9.4 CONSTRUCTION SAFETY

SC49.1	9.4.1	<u>Delete</u> GC 9.4.1 in its entirety and <u>replace</u> it with the following: "9.4.1 The <i>Contractor</i> shall be solely responsible for construction safety at the <i>Place of the Work</i> and for compliance with the rules, regulations, and practices required by the <i>OHSA</i> , including, but not limited to those of the "constructor", and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the <i>Work</i> . The <i>Contractor's</i> health and safety program documentation shall be made available for review by the <i>Owner</i> or <i>Consultant</i> immediately upon request. Without limiting the foregoing, the <i>Contractor</i> shall be solely responsible for construction safety in respect of the <i>Consultant</i> , <i>Subcontractors</i> and <i>Suppliers</i> , the <i>Owner's</i> own forces, <i>Other Contractors</i> , and all persons attending the <i>Place</i>

		<i>of the Work during the course of the Project."</i>
	9.4.2	Amend GC 9.4.2 by <u>adding</u> the following words after "and the <i>Contractor</i> ": ", <i>Subcontractors and Suppliers</i> ".
	9.4.3	Amend GC 9.4.3 by <u>adding</u> the following words after "and the <i>Contractor</i> ": ", <i>Subcontractors and Suppliers</i> ".
	9.4.4	<u>Delete</u> GC 9.4.4 and replace it with the following: "9.4.4 The <i>Owner</i> undertakes to include in its contracts with other contractors and in its instructions to its own forces the requirement that the other contractor or its own forces, as the case may be, comply with the policies and procedures of and the directions and instructions from the <i>Contractor</i> with respect to occupational health and safety and related matters."
	9.4.5	<u>Delete</u> GC 9.4.5 in its entirety and <u>replace</u> it with the following: "9.4.5 Prior to the commencement of the <i>Work</i> , the <i>Contractor</i> shall submit to the <i>Owner</i> : .1 a current WSIB clearance certificate; .2 copies of the <i>Contractor's</i> insurance policies having application to the <i>Project</i> or certificates of insurance, at the option of the <i>Owner</i> ; .3 documentation setting out the <i>Contractor's</i> in-house safety programs; .4 a copy of the Notice of Project filed with the Ministry of Labour naming itself as "constructor" under the <i>OHSA</i> ; 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 <i>Place of the Work</i> ;"
	9.4.6 to 9.4.12	<u>Add</u> 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 <i>Contractor</i> shall indemnify and save harmless the <i>Owner</i> , its agents, trustees, officers, directors, employees, consultants, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the <i>Contractor</i> under <i>OHSA</i> and any other occupational health and safety legislation in force at the <i>Place of the Work</i> including the payment of legal fees and disbursements on a solicitor and client basis. Such indemnity shall apply to the extent to which the <i>Owner</i> is not covered by insurance. 9.4.7 If the <i>Owner</i> is of the reasonable opinion that the <i>Contractor</i> has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the <i>Owner</i> may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the <i>Work</i> , and the <i>Owner</i> may use its employees, the <i>Contractor</i> , any <i>Subcontractor</i> or any other contractors to perform such remedial measures.

		9.4.8 The <i>Contractor</i> shall file any notices or any similar document required pursuant to the <i>Contract</i> or the safety regulations in force at the <i>Place of the Work</i>. This duty of the <i>Contractor</i> will be considered to be included in the <i>Work</i> and no separate payment therefore will be made to the <i>Contractor</i>. 9.4.9 Unless otherwise provided in the <i>Contract Documents</i>, the <i>Contractor</i> shall develop, maintain and supervise for the duration of the <i>Work</i> a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, at a minimum, respond fully to the applicable safety regulations and general construction practices for the safety of persons or property, including, without limitation, any general safety rules and regulations of the <i>Owner</i> and any workers' compensation or occupational health and safety statutes or regulations in force at the <i>Place of the Work</i>. 9.4.10 The <i>Contractor</i> shall provide a copy of the safety program described in GC 9.4.9 hereof to the <i>Consultant</i> for delivery to the <i>Owner</i> prior to the commencement of the <i>Work</i>, and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the <i>Project</i> complies with such program. 9.4.11 The <i>Contractor</i> shall arrange regular safety meetings, and shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the authorities having jurisdiction at the <i>Place of the Work</i>, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any injured person to a hospital or a doctor's care. 9.4.12 The <i>Contractor</i> shall promptly report in writing to the <i>Owner</i> and the <i>Consultant</i> all accidents of any sort arising out of or in connection with the performance of the <i>Work</i>, whether on or adjacent to the job site, giving full details and statement of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the <i>Contractor</i> to the <i>Owner</i> and the <i>Consultant</i> by telephone or messenger in addition to any reporting required under the applicable safety regulations."."

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

SC50.1	10.1.2	<u>Amend</u> paragraph 10.1.2 by <u>adding</u> the following sentence to the end of the paragraph: "For greater certainty, the <i>Contractor</i> shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the <i>Owner</i> shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The <i>Contractor</i> shall provide a detailed breakdown of <u>Additional</u> taxes if requested by the <i>Owner</i> in a form satisfactory to the <i>Owner</i>."
	10.1.3	<u>Add</u> new paragraph 10.1.3 as follows: "10.1.3 Where the <i>Owner</i> is entitled to an exemption or a recovery of sales taxes, customs

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

GC 10.4 WORKERS' COMPENSATION

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

GC 11.1 INSURANCE

SC53.1	11.1	<u>Delete</u> entirety of GC 11.1 and <u>replace</u> with the following: "GC 11.1 INSURANCE 11.1.1 Without restricting the generality of GC 12 – INDEMNIFICATION, the <i>Contractor</i> shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 – INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the <i>Work</i> until the expiration of the warranty periods set out in the <i>Contract Documents</i>. Prior to commencement of the <i>Work</i> and upon the placement, renewal, <u>amendment</u>, or extension of all or any part of the insurance, the <i>Contractor</i> shall promptly provide the <i>Owner</i> with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any <u>amending</u> endorsements. .1 General Liability Insurance General liability insurance shall be in the name of the <i>Contractor</i>, with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional</u> 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, <i>Subcontractors</i> and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent <u>replacement</u>, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of <i>Ready-for-Takeover</i>, as set out in the certificate of <i>Ready-for-Takeover</i>, on an ongoing basis for a period of 6 years following <i>Ready-for-Takeover</i>. Where the <i>Contractor</i> maintains a single, blanket policy, the <u>Addition</u> of the <i>Owner</i> and the <i>Consultant</i> is limited to liability arising out of the <i>Project</i> and all operations necessary or incidental thereto. The policy shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation and of change or <u>amendment</u> restricting coverage. .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 <i>owned</i> or leased by the <i>Contractor</i>, and endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation, change or <u>amendment</u> restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the <i>Contractor</i> shall provide the <i>Owner</i> with confirmation of automobile insurance coverage for all automobiles registered in the name of the <i>Contractor</i>. .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 <i>Contractor</i> with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional</u> 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 <i>Work</i>, whether owned by the <i>Contractor</i> or the owner or owned by others, so long as the property forms part of the <i>Work</i>. 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 <u>replacement</u> provided that the IBC Form 4042 shall include the latest <u>Addition</u> 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 <i>Contractor</i>, with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional</u> insureds, for not less than the <u>replacement</u> value of the boilers, pressure vessels and other insurable objects forming part of the <i>Work</i>. 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 <i>Work</i>. (4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the <i>Owner</i> and the <i>Contractor</i> as their respective interests may appear. The <i>Contractor</i> shall act on behalf of the <i>Owner</i> for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the <i>Contractor</i> shall proceed to restore the <i>Work</i>. Loss or damage shall not affect the rights and obligations of either party under the <i>Contract</i> except that the <i>Contractor</i> shall be entitled to such reasonable extension of the <i>Contract Time</i>, relative to the extent of the loss or damage, as determined by the <i>Owner</i>, in its sole discretion. (5) The <i>Contractor</i> shall be entitled to receive from the <i>Owner</i>, in <u>Addition</u> to the amount due under the <i>Contract</i>, the amount at which the <i>Owner's</i> interest in restoration of the <i>Work</i> has been appraised, such amount to be paid as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In <u>Addition</u>, the <i>Contractor</i> shall be entitled to receive from the payments made by the insurer the amount of the <i>Contractor's</i> interest in the restoration of the <i>Work</i>. (6) In the case of loss or damage to the <i>Work</i> arising from the work of other contractors, or the <i>Owner's</i> own forces, the <i>Owner</i>, in accordance with the <i>Owner's</i> obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the <i>Contractor</i> the cost of restoring the <i>Work</i> as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT.

		.5 Contractors' Equipment Insurance "All risks" contractors' equipment insurance covering construction machinery and equipment used by the <i>Contractor</i> for the performance of the <i>Work</i>, excluding boiler insurance, shall be in a form acceptable to the <i>Owner</i> and shall not allow subrogation claims by the insurer against the <i>Owner</i>. The policies shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of cancellation, change or <u>amendment</u> restricting coverage. Subject to satisfactory proof of financial capability by the <i>Contractor</i> for self-insurance of his equipment, the <i>Owner</i> agrees to waive the equipment insurance requirement. 11.1.2 The <i>Contractor</i> shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the <i>Contractor's</i> responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY. 11.1.3 Where the full insurable value of the <i>Work</i> is substantially less than the <i>Contract Price</i>, the <i>Owner</i> may reduce the amount of insurance required to waive the course of construction insurance requirement. 11.1.4 If the <i>Contractor</i> fails to provide or maintain insurance as required by the <i>Contract Documents</i>, then the <i>Owner</i> shall have the right to provide and maintain such insurance and provide evidence of same to the <i>Contractor</i>. The <i>Contractor</i> shall pay the costs thereof to the <i>Owner</i> on demand, or the <i>Owner</i> may deduct the amount that is due or may become due to the <i>Contractor</i>. 11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the <i>Place of the Work</i>."

***NEW* GC 11.2 CONTRACT SECURITY**

SC52.1	GC 11.2	<u>Add</u> new GC 11.2 – CONTRACT SECURITY as follows: "GC 11.2 CONTRACT SECURITY 11.2.1 The <i>Contractor</i> shall, prior to the execution of the <i>Contract</i>, 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 <i>Owner</i> and is permitted under the <i>Construction Act</i>, .2 be issued by an insurer licensed under the <i>Insurance Act</i> (Ontario) and authorized to transact a business of suretyship in the Province of Ontario; .3 shall be in the form prescribed by the <i>Construction Act</i>; .4 have a coverage limit of at least 50 per cent of the <i>Contract Price</i>, or such other percentage of the <i>Contract Price</i> as stated in the <i>Contract Documents</i>; .5 extends protection to <i>Subcontractors</i>, <i>Suppliers</i>, and any other persons supplying labour or materials to the <i>Project</i>; and

		.6 shall be maintained in good standing until the fulfillment of the <i>Contract</i>, including all warranty and maintenance periods set out in the <i>Contract Documents</i>.. 11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the <i>Contractor's</i> obligations in the <i>Contract Document</i> and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The <i>Contractor</i> represents and warrants to the <i>Owner</i> that it has provided its surety with a copy of the <i>Contract Documents</i> prior to the issuance of such bonds. 11.2.4 Without limiting the foregoing in any way, the bonds shall indemnify and hold harmless the <i>Owner</i> for and against costs and expenses (including legal and <i>Consultant</i> services and court costs) arising out of or as a consequence of any default of the <i>Contractor</i> under this <i>Contract</i>. 11.2.4 The <i>Contractor</i> shall be responsible for notifying the surety company of any changes made to the <i>Contract</i> during the course of construction. 11.2.5 The premiums for bonds required by the <i>Contract Documents</i> shall be included in the <i>Contract Price</i>. 11.2.6 Should the <i>Owner</i> require additional bonds by the <i>Contractor</i> or any of his <i>Subcontractors</i>, after the receipt of bids for the <i>Work</i>, the <i>Contract Price</i> shall be increased by all direct costs attributable to providing such bonds. The <i>Contractor</i> shall promptly provide the <i>Owner</i>, through the <i>Consultant</i>, with any such bonds that may be required."

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

SC55.1	12.1.1	<u>Delete</u> GC 12.1.1 in its entirety and <u>replace</u> it with the following: "12.1.1 <i>Ready-for-Takeover</i> shall be achieved when all of the following has occurred, as verified and approved by the <i>Owner</i>: .1 <i>Substantial Performance of the Work</i> has been achieved, as certified by the <i>Consultant</i>; .2 a permit for occupancy of the <i>Place of the Work</i> has been obtained from the authorities having jurisdiction; .3 the <i>Work</i> to be performed under the <i>Contract</i> has satisfied the requirements for deemed completion in accordance with Section 2(3) of the <i>Construction Act</i>, .4 final cleaning and waste removal, as required by the <i>Contract Documents</i>; .5 the <i>Contractor</i> has delivered to the <i>Consultant</i> and the <i>Owner</i> all inspection certificates from authorities having jurisdiction with respect to any component of the <i>Work</i> which has been completed; .6 subject only to GC 12.1.2, the entire <i>Work</i> has been completed to the requirements of the <i>Contract Documents</i>, including completion of all items on the punch list prepared at the time of <i>Substantial Performance of the Work</i> and

		the <i>Work</i> is being used for its intended purpose, and is so certified by the <i>Consultant</i>; .7 subject only to GC 12.1.2, the <i>Contractor</i> has submitted to the <i>Owner</i> and the <i>Consultant</i> in a collated and organized matter, all <i>Close-Out Documentation</i> and any other materials or documentation required by the <i>Contract Documents</i>; .8 subject only to GC 12.1.2, all <i>Products</i>, systems and components of the <i>Project</i> have been commissioned and certified for operation and accepted by the <i>Owner</i> and <i>Consultant</i>, and 9 subject only to GC 12.1.2, the <i>Contractor</i> has submitted to the <i>Owner</i> and the <i>Consultant</i> full and complete as-built drawings and <i>Specifications</i> revised by the <i>Contractor</i> to reflect the as-built state of the <i>Work</i>, clearly showing changes to the <i>Drawings</i> and <i>Specifications</i> from the original <i>Contract Documents</i>, all of which have been approved by the <i>Owner</i> acting reasonably.”
SC55.2	12.1.2	<u>Delete</u> GC 12.1.2 in its entirety and <u>replace</u> it with the following: “12.1.2 The <i>Owner</i> may, in its sole, absolute, and unfettered discretion, waive compliance with a requirement, or a part thereof, for achieving <i>Ready-for-Takeover</i> set out in GC 12.1.1.6 to 12.1.1.9 (inclusive). Where the <i>Owner</i> exercises the discretion afforded under this GC 12.1.2, the <i>Contractor</i> shall be required to comply with GC 5.5.1.2 as part of its application for final payment and the <i>Owner</i> and the <i>Contractor</i>, in consultation with the <i>Consultant</i>, shall establish a reasonable date for completing the <i>Work</i>.”
SC55.3	12.1.3	<u>Delete</u> GC 12.1.3 in its entirety and <u>replace</u> it with the following: “12.1.3 When the <i>Contractor</i> considers the <i>Work Ready-for-Takeover</i>, it shall submit a written application to the <i>Owner</i> and the <i>Consultant</i> for review.”
SC55.4	12.1.4	In GC 12.1.4, <u>delete</u> the words “list and” from the second line.
SC55.5	12.1.5	<u>Delete</u> GC 12.1.5 in its entirety and <u>replace</u> it with the following: “12.1.5 Following the confirmation of the date of <i>Ready-for-Takeover</i> by the <i>Consultant</i> and as confirmed by the <i>Owner</i>, the <i>Contractor</i> may submit a final application for payment in accordance with GC 5.5 – FINAL PAYMENT.”
SC55.6	12.1.6	<u>Delete</u> GC 12.1.6 in its entirety.

GC 12.2 EARLY OCCUPANCY

SC56.1	GC 12.2	<u>Delete</u> GC 12.2 – EARLY OCCUPANCY BY THE OWNER in its entirety, including all subparagraphs thereunder and <u>replace</u> it with the following: “12.2.1 The <i>Owner</i> reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the <i>Project</i> even though the <i>Work</i> may not have reached Substantial Performance of the <i>Work</i>. Where the <i>Work</i> extends beyond the <i>Contract Time</i>, progress and completion of the <i>Work</i> 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	<u>Delete</u> from the first line of paragraph 12.3.1 the words "one year" and <u>replace</u> it with the words "two years"
	12.3.2	<u>Delete</u> from the first line of paragraph 12.3.2 the word "The" and <u>replace</u> it with the words "Subject to GC 1.1.3, the..."
	12.3.7 to 12.3.12	<u>Add</u> new paragraphs 12.3.7 to 12.3.12 as follows: "12.3.7 Where required by the <i>Contract Documents</i>, the <i>Contractor</i> shall provide a maintenance bond as security for the performance of the <i>Contractor's</i> obligations as set out in GC 12.3 WARRANTY. 12.3.8 The <i>Contractor</i> shall provide fully and properly completed and signed copies of all warranties and guarantees required by the <i>Contract Documents</i>, containing: .1 the proper name of the <i>Owner</i>; .2 the proper name and address of the <i>Project</i>; .3 the date the warranty commences, which shall be at the "<i>Ready-for-Takeover</i>" unless otherwise agreed upon by the <i>Consultant</i> in writing. .4 a clear definition of what is being warranted and/or guaranteed as required by the <i>Contract Documents</i>; and .5 the signature and seal (if required by the governing law of the <i>Contract</i>) of the company issuing the warranty, countersigned by the <i>Contractor</i>. 12.3.9 Should any <i>Work</i> 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 <i>Contractor</i> shall ensure that its <i>Subcontractors</i> are bound to the requirements of GC 12.3 – WARRANTY for the <i>Subcontractor's</i> portion of the <i>Work</i>. 12.3.11 The <i>Contractor</i> shall ensure that all warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> are obtained and available for the direct benefit of the <i>Owner</i>. In the alternative, the <i>Contractor</i> shall assign to the <i>Owner</i> all

		warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> and such assignment shall be with the consent of the assigning party, where required by law, or by the terms of that party's contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the <i>Owner</i> under the <i>Contract Documents</i>. 12.3.12 The <i>Contractor</i> shall commence or correct any deficiency within 2 <i>Working Days</i> after receiving a <i>Notice in Writing</i> from the <i>Owner</i> or the <i>Consultant</i>, and shall complete the <i>Work</i> as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the <i>Owner</i> and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the <i>Contractor</i> fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the <i>Contractor</i>, the <i>Owner</i> is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the <i>Contractor's</i> expense."

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

SC58.1	GC 13.1	<u>Delete</u> GC 13.1 – INDEMNIFICATION in its entirety and <u>replace</u> it with the following: "13.1.1 The <i>Contractor</i> shall indemnify and hold harmless the <i>Owner</i>, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the <i>Consultant</i> from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits, or proceedings (hereinafter called "claims"), whether in respect of claims suffered by the <i>Owner</i> or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or omissions of the <i>Contractor</i>, its employees, agents, <i>Subcontractors</i>, <i>Suppliers</i> or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the <i>Work</i>, the <i>Owner's</i> property or equipment, the <i>Contractor's</i> property or equipment or equipment or property adjacent to the <i>Place of the Work</i> or death or injury to the <i>Contractor's</i> personnel). 13.1.2 The <i>Owner</i> shall indemnify and hold the <i>Contractor</i>, its agents and employees harmless from and against claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the <i>Contractor's</i> performance of the <i>Contract</i> which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the <i>Place of the Work</i>. 13.1.3 The provisions of GC 13.1 - INDEMNIFICATION shall survive the termination of the <i>Contract</i>, howsoever caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the <i>Work</i> shall constitute a waiver or release of any of the provisions of GC 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” <u>add</u> the words “claims for delay pursuant to GC 6.5 DELAYS” -and- <u>add</u> the words “(collectively “ Claims ”)” after “ <i>Ready-for-Takeover</i> ” 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	<u>Delete</u> 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 <u>delete</u> the words “in paragraphs 13.2.1.2 and 13.2.1.3” and <u>replace</u> 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	<u>Delete</u> paragraph 13.2.3 in its entirety.
	13.2.4	<u>Delete</u> paragraph 13.2.4 in its entirety.
	13.2.5	<u>Delete</u> 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 <i>Contractor</i> ” -and- change the word “claim” to “Claim” in all instances in the paragraph.
	13.2.9	In paragraph 13.2.9 <u>delete</u> the words “under paragraphs 13.2.1 or 13.2.3” and <u>replace</u> them with “under paragraph 13.2.1”

		-and- change both instances of the words “the party” to “the <i>Contractor</i>”. Change the word “claim” to “Claim” in all instances in the paragraph.

***NEW* PART 14 OTHER PROVISIONS**

SC58.1	14.1	<u>Add</u> 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 <i>Place of the Work</i> at the time of execution of the <i>Contract</i> shall remain the property of the <i>Owner</i>. All <i>Work</i> and <i>Products</i> delivered to the <i>Place of the Work</i> by the <i>Contractor</i> shall be the property of the <i>Owner</i>. The <i>Contractor</i> shall remove all surplus or rejected materials as its property when notified in writing to do so by the <i>Consultant</i>.”
	14.2	<u>Add</u> new GC 14.2 – CONSTRUCTION LIENS as follows: “GC 14.2 LIENS 14.2.1 Notwithstanding any other provision in the <i>Contract</i>, the <i>Consultant</i> shall not be obligated to issue a certificate, and the <i>Owner</i> shall not be obligated to make payment, subject to the <i>Owner’s</i> requirement to issue a <i>Notice of Non-Payment</i> (Form 1.1) to the <i>Contractor</i>, if at the time such certificate or payment was otherwise due: .1 a claim for lien has been registered against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i> that has not been vacated or discharged by the <i>Contractor</i> in accordance with the requirements of this <i>Contract</i>, or .2 if the <i>Owner</i> or a mortgagee of the <i>Project</i> lands has received a written notice of a lien that has not been resolved by the <i>Contractor</i> through the posting of security or otherwise. 14.2.2 In the event a construction lien arising from the performance of the <i>Work</i> is registered or preserved against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i>, or a written notice of a lien is given or a construction lien action is commenced against the <i>Owner</i> by a <i>Subcontractor</i> or a <i>Supplier</i>, then the <i>Contractor</i> shall, at its own expense: .1 within 10 calendar days of registration of the construction lien, vacate or discharge the lien from title to the premises (i.e. the <i>Place of the Work</i>). If the lien is merely vacated, the <i>Contractor</i> shall, if requested, undertake the <i>Owner’s</i> defence of any subsequent action commenced in respect of the lien, at the <i>Contractor’s</i> sole expense;

		.2 within 10 calendar days of receiving notice of a written notice of a lien, post security with the Ontario Superior Court of Justice so that the written notice of a lien no longer binds the parties upon whom it was served; and .3 satisfy all judgments and pay all costs arising from such construction liens and actions and fully indemnify the <i>Owner</i> against all costs and expenses arising from same, including legal costs on a full indemnity basis. 14.2.3 In the event that the <i>Contractor</i> fails or refuses to comply with its obligations pursuant to paragraph 14.2.2, the <i>Owner</i> shall, at its option, be entitled to take all steps necessary to address any such construction liens including, without limitation and in addition to the <i>Owner's</i> rights under paragraph 13.2.4, the posting of security with the Ontario Superior Court of Justice to vacate the claim for lien from title to the <i>Project</i> lands, and in so doing will be entitled to a full indemnity from the <i>Contractor</i> for all legal fees, security, disbursements and other costs incurred and will be entitled to deduct same from amounts otherwise owing to the <i>Contractor</i>. 14.2.4 In the event that any <i>Subcontractor</i> or <i>Supplier</i> registers any claim for lien with respect to all or part of the <i>Place of Work</i>, the <i>Owner</i> shall have the right to withhold, in addition to the statutory holdback, the full amount of said claim for lien plus either: (a) \$250,000 if the claim for lien is in excess of \$1,000,000 or (b) 25% of the value of the claim for lien and to bring a motion to vacate the registration of said claim for lien and any associated certificate of action in respect of that lien, in accordance with Section 44 of the <i>Act</i>, by paying into court as security the amount withheld. 14.2.5 Nothing in this GC 14.2 serves to preclude the <i>Contractor</i> from preserving and perfecting its lien in the event of non-payment by the <i>Owner</i>."

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	Independent Testing & Inspection (concrete, millwork, etc) (As directed by the Consultant)	\$5,0000.00
2	Window coverings (Additional window coverings not addressed elsewhere in the specification)	\$10,000.00
3	Data cabling installation and network equipment (Including terminations)	\$15,000.00
4	Public Address (PA) systems. (Including all cabling and hardware)	\$10,000.00
5	Finish Door Hardware – Supply Only (not including Power Door Operators, which are included in the base contract price). Installation of all Finish Door Hardware is by General Contractors, included in the base contract price.	\$20,0000.00

9	Total of All Allowances:	\$60,000.00

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 Work 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

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

Contractor 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

- 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 Precautions Taken	Section B Authorization Granted	
☐ Available sprinklers, hose streams, and extinguishers available and in service	Board Supervisor/Manager/Proj. Coordinator: _____ 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)	Print Name _____ Signature _____
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 C Contractor and Location Affected		
Dates: (max 7 days)	Name of Contractor performing 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 <u>each day</u> , the precautions listed in Section A have been taken <u>each day</u> , and permission is authorized for this work. I further acknowledge that if activity is during <u>school operational hours</u> , that appropriate <u>notification</u> has been given to <u>school</u> administration.		
Hot Works Contractor: _____ Signature		
School Administrator notified: _____ Print Name		
In Case of Emergency call: 911 - Then call: 519-570-0003 Ext. 4123		

Refer to WRDSB Administration Procedure 1200 Hot Works/Fire Watch (Copies Available on Request)

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 from the area or similar.
 - .3 Where the MTE report shows ACM requiring repair, remove and re-insulate where required.
 - .4 Before beginning any Type 1, Type 2 or Type 3 Operations, the work area must be secured, doors closed, warning signs added to all entrances, caution tape used in open areas and signs used to restrict access to the work area so as to keep persons not involved in the work from entering in the work area.
 - .5 Provide "Construction" warning signs on solid barriers between the Work and public areas. Install a sufficient number of "asbestos abatement" warning signs behind the barriers, posted to warn of the hazard, and that access to the work area is restricted to persons wearing protective clothing and equipment.
 - .6 The contractor is responsible to disable the mechanical ventilation serving the work area and positively prevent operation using Lock-out / Tag-out devices for each air handling unit / fan. Exercise caution during heating season to ensure areas of the building are maintained above freezing and ensure equipment is turned back on after abatement / air clearance completed.
 - .7 Contractor's employees shall put on / take off PPE within work area marked by construction signs. No employee shall leave the work area wearing PPE.
 - .8 All dust and waste is to be cleaned up and removed at frequent / regular intervals as the work proceeds and immediately upon completion. No waste bags or similar are to be left behind.

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 contractor 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 contractor is to expedite the air clearance sampling with the lab of their choice and carry these costs.
- .3 Forward Air Clearance results to:
 - .1 Principal / Vice-principal,
 - .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



This report is provided for tender purposes and must be viewed in colour and in its entirety. An original copy is available at the school office along with annual inspection and abatement letters, if applicable.

AR Kaufman Public School

2022 Asbestos Audit Update Report

Project Location:

11 Chopin Drive, Kitchener, ON

Prepared for:

Waterloo Region District School Board
51 Ardelt Avenue, Kitchener, ON

Prepared by:

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

May 31, 2022

MTE File No.: C34532-937

For Tender Purposes





MTE Consultants

520 Bingham Centre Drive, Kitchener, Ontario N2B 3X9

May 31, 2022

MTE File No.: C34532-937

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

RE: 2021 Asbestos Audit Update – A.R. Kaufman Public School
11 Chopin Drive, Kitchener, Ontario

1.0 Introduction

MTE Consultants Inc. (MTE) was authorized by the Waterloo Region District School Board (WRDSB) to conduct the 2022 Asbestos Audit Update for the subject building.

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

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

2.0 Scope of Work

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

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

3.0 Methodology and Assessment Criteria

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

- The following rooms:
 - WRDSB Room 167 – Not accessible with on keys on site and no staff was present at the time of the inspection.
- 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; and
- Settled dust or airborne agents unless otherwise stated.

3.1 Condition of ACM

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

Monitor Annually

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

Abatement Action Required

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

4.0 Findings

An inspection of the building was conducted by MTE on May 17, 2022. The single-storey school was constructed in 1971 with additions in 1975 and 2012. The inspection did not include areas of post 1990 construction or renovation (where all building finishes have been removed and replaced), as applicable.

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

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

The bulk asbestos sample location and analytical summary is provided in **Appendix C**.

4.1 Analytical Results

During this inspection, no samples were collected.

4.2 Removed ACM

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

Exterior Wall

- Sections of vermiculite insulation in 19 locations throughout exterior locations.

WRDSB Room AS15

- Localized sections of drywall walls throughout room.

4.3 Discovery of Additional ACM

No additional ACM or suspect ACM was identified.

4.4 Damaged ACM

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

5.0 Recommendations

5.1 Remedial

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

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

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

5.2 Long Term Management

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

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

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

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

6.0 Limitations

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

This report was completed for the sole use of MTE and the Client. It was completed in accordance with the approved Scope of Work referred to in Section **Error! Reference source not found.** 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.

Yours truly,

MTE Consultants Inc.



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Attach:

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Appendix A

Asbestos Management Database

For Tender Purposes

		School Name		Legend:				Notes:		
		A.R. Kaufman 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: 1971								
Addition(s): 1975, 2012										
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	Roof Drains	Piping	Transite	NF	ACM	VC	-	-	-
	Original Building	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	Original Building	Windows	Exterior Frames	Grey Sealant	-	Non ACM	SL	S05	12-Mar-19	ND
	Original Building	Windows	Exterior Panes	Brown Sealant	-	Non ACM	SL	S06	12-Mar-19	ND
	Original Building	Doors	Interior Frames	Off-White Sealant	-	Non ACM	SL	S04	12-Mar-19	ND
	Original Building	Doors	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	Original Building	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	Original Building	Doors	Exterior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	Original Building	Mastic	Mastic	Floor Tile Mastic	-	Non ACM	SL	S01	26-Feb-16	ND
	Original Building	Mastic	Mastic	Floor Tile Mastic	-	Non ACM	SL	S09abc	28-Dec-08	ND
	1975 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1975 Addition	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	1975 Addition	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	1975 Addition	Roof Drains	Piping	Transite	NF	ACM	VC	-	-	-
	1975 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1975 Addition	Doors	Interior Frames	White Sealant	-	Non ACM	SL	S02	12-Mar-19	ND
	1975 Addition	Doors	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1975 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1975 Addition	Doors	Exterior Panes	Black Sealant	-	Non ACM	SL	S03	12-Mar-19	ND
	1975 Addition	Mastic	Mastic	Floor Tile Mastic	-	Non ACM	SL	32523-A.R.Kaufman - S04	28-Dec-08	ND
	Wall Cavities	Walls	Vermiculite	Vermiculite loose fill insulation	F	ACM	SL	A.R. Kauf-Verm-S01	4/14/2014	1% Tremolite
Level 1										
101	Classroom	Floor	Vinyl Floor Tile 12"x 12"	White with Grey Streaks	-	Non ACM	SL	S05abc	28-Dec-08	ND
101	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
101	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
101	Classroom	Wall	Brick	-	-	Non ACM	-	-	-	-
101	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND
102	Classroom	Floor	Vinyl Floor Tile 12"x 12"	White with Grey Streaks	-	Non ACM	SL	S05abc	28-Dec-08	ND
102	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
102	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
102	Classroom	Wall	Brick	-	-	Non ACM	-	-	-	-
102	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND
103	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND
103	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND
103	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
103	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
103	Classroom	Wall	Brick	-	-	Non ACM	-	-	-	-

		School Name		Legend:				Notes:				
		A.R. Kaufman 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: 1971										
Addition(s): 1975, 2012												
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		
103	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
104	Classroom	Floor	Vinyl Floor Tile 12"x 12"	White with Grey Streaks	-	Non ACM	HM	S05	28-Dec-08	ND		
104	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-		
104	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
104	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
105	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	SL	S01ABC	26-Feb-16	ND		
105	Classroom	Floor	Mastic	Black	-	Non ACM	SL	S01ABC	26-Feb-16	ND		
105	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-		
105	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
105	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
105	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
106	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND		
106	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND		
106	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-		
106	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
106	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
106	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
107	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND		
107	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND		
107	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-		
107	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
107	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
107	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
108	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND		
108	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND		
108	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-		
108	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
108	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
108	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
109	Office	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND		
109	Office	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND		
109	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-		
109	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-		
110	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-		
110	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
110	Office	Wall	Brick	-	-	Non ACM	-	-	-	-		
110	Office	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
111	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-		
111	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
111	Office	Wall	Wood Panel	Wood	-	Non ACM	-	-	-	-		
111	Office	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		
112	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-		
112	Office	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile		
112	Office	Wall	Brick	-	-	Non ACM	-	-	-	-		
112	Office	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND		

		School Name		Legend:					Notes:		
		A.R. Kaufman 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: 1971									
		Addition(s): 1975, 2012									
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	
113	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
113	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
113	Washroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
114	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
114	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
114	Washroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
115	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
115	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
115	Washroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
116	Copy/Storage Room	Floor	Vinyl Floor Tile 12"x 12"	Olive with White Streaks	NF	ACM	HM	S06	28-Dec-08	1.4% Chrysotile	
116	Copy/Storage Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
116	Copy/Storage Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
116	Copy/Storage Room	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
117	Copy Room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
117	Copy Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
117	Copy Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-	
117A	Copy Room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
117A	Copy Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
117A	Copy Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
118	Utility Room	Floor	Vinyl Floor Tile 12"x 12"	Olive with White Streaks	NF	ACM	HM	S06	28-Dec-08	1.4% Chrysotile	
118	Utility Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
118	Utility Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
118	Utility Room	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-	
118	Utility Room	Piping	Pipe Insulation	Fiberglass insulation	-	Non ACM	-	-	-	-	
118	Utility Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile	
119	Staff Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S07	28-Dec-08	ND	
119	Staff Room	Floor	Carpet	-	-	Non ACM	-	-	-	-	
119	Staff Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
119	Staff Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
119	Staff Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-	
121	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	SL	S07abc	28-Dec-08	ND	
121	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
121	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
121	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
122	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Burnt Sienna	NF	ACM	SL	S08abc	28-Dec-08	1.6% Chrysotile	
122	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Yellow	NF	ACM	SL	S09abc	28-Dec-08	1.4% Chrysotile	
122	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
122	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
122	Classroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
123	Classroom	Floor	Vinyl Sheet Flooring	Grey with Black Fleck	-	Non ACM	-	-	-	-	
123	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
123	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
123	Classroom	Wall	Brick	-	-	Non ACM	-	-	-	-	
123	Classroom	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	-	Non ACM	HM		28-Dec-08	ND	
123A	Kiln Room	Floor	Vinyl Sheet Flooring	Grey with Black Fleck	-	Non ACM	-	-	-	-	

		School Name		Legend:				Notes:		
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		Original: 1971								
		Addition(s): 1975, 2012								
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
123A	Kiln Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
123A	Kiln Room	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	-	Non ACM	HM	-	28-Dec-08	ND
124	Classroom	Floor	Wood	-	-	Non ACM	-	-	-	-
124	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
124	Classroom	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
124A	Classroom	Floor	Wood	-	-	Non ACM	-	-	-	-
124A	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S07	28-Dec-08	ND
124A	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
124A	Classroom	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
126	Gym	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-
126	Gym	Wall	Concrete	-	-	Non ACM	-	-	-	-
126	Gym	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
127	Gym	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-
127	Gym	Wall	Concrete	-	-	Non ACM	-	-	-	-
127	Gym	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
127	Gym	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
127	Gym	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile
128	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
128	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
128	Storage	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
128	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	SL	1680.006.005	26-Oct-90	50-75% Chrysotile
129	Changeroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
129	Changeroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
129	Changeroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
132	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
132	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
132	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
133	Instructor's Room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
133	Instructor's Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
133	Instructor's Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
135	Changeroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
135	Changeroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
135	Changeroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
136	Instructor's Room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
136	Instructor's Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
136	Instructor's Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
138	Girls Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
138	Girls Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
138	Girls Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2003)	-	Non ACM	-	-	-	-
143	Stage	Floor	Wood	-	-	Non ACM	-	-	-	-
143	Stage	Wall	Concrete	-	-	Non ACM	-	-	-	-
143	Stage	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
143	Stage	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
144	-	Floor	Vinyl Floor Tile 12"x 12"	White with Grey Streaks	-	Non ACM	HM	S05	28-Dec-08	ND
144	-	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile

		School Name		Legend:				Notes:			
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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type	
144	-	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
145	-	Floor	Carpet	-	-	Non ACM	-	-	-	-	
145	-	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
145	-	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
146	-	Floor	Vinyl Floor Tile 12"x 12"	White with Grey Streaks	-	Non ACM	HM	S05	28-Dec-08	ND	
146	-	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
146	-	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
147	Custodial Room	Floor	Vinyl Floor Tile 12"x 12"	Olive with White Streaks	NF	ACM	HM	S06	28-Dec-08	1.4% Chrysotile	
147	Custodial Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
147	Custodial Room	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-	
147	Custodial Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile	
147	Custodial Room	Piping	Pipe	Transite	NF	ACM	VC	-	-	-	
148	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
148	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
148	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
149	Custodial Room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
149	Custodial Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
149	Custodial Room	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-	
149	Custodial Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile	
150	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
150	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
150	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
151	Custodial Office	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
151	Custodial Office	Wall	Concrete	-	-	Non ACM	-	-	-	-	
151	Custodial Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
151	Custodial Office	Piping	Pipe	Transite	NF	ACM	VC	-	-	-	
151A	Washroom/Shower	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
151A	Washroom/Shower	Wall	Concrete	-	-	Non ACM	-	-	-	-	
151A	Washroom/Shower	Ceiling	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
152	Classroom	Floor	Vinyl Sheet Flooring	Grey with Black Fleck	-	Non ACM	-	-	-	-	
152	Classroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
152	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
152	Classroom	Wall	Brick	-	-	Non ACM	-	-	-	-	
152	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
155	A/V Room	Floor	Vinyl Floor Tile 12"x 12"	Olive with White Streaks	NF	ACM	SL	S06abc	28-Dec-08	1.4% Chrysotile	
155	A/V Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
155	A/V Room	Wall	Drywall	Drywall Joint Compound	NF	ACM	SL	S12	28-Dec-08	1.6% Chrysotile	
155	A/V Room	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	HM	S01	28-Dec-08	ND	
156	Workroom	Floor	Carpet	-	-	Non ACM	-	-	-	-	
156	Workroom	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
156	Workroom	Ceiling	Ceiling Tile 2' x 4'	Wide Fissure Random Pinhole	-	Non ACM	SL	S01abc	28-Dec-08	ND	
157	Library	Floor	Carpet	-	-	Non ACM	-	-	-	-	
157	Library	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND	
157	Library	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND	
157	Library	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	
157	Library	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
157	Library	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
157	Library	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
165	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-	
165	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-	
165	Storage	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-	
165	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile	
166	Electrical Room	Floor	Concrete	-	-	Non ACM	-	-	-	-	
166	Electrical Room	Wall	Concrete	-	-	Non ACM	-	-	-	-	
166	Electrical Room	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-	
167	No Access	-	-	-	-	-	-	-	-	-	
A101	Classroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A101	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A101	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A102	Classroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A102	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A102	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A102	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A103	Washroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A103	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A103	Washroom	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	-	Non ACM	HM		28-Dec-08	ND	
A103	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
A104	Classroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A104	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A104	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A104	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
A106	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-	
A106	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A106	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
A107	Custodial Room	Floor	Vinyl Floor Tile 12"x 12"	Brown with White Streaks	NF	ACM	SL	S04abc	28-Dec-08	0.5% Chrysotile	
A107	Custodial Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	SL	S01	12-Mar-19	ND	
A107	Custodial Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A108	Classroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A108	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A108	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A108	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A108A	Washroom	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-	
A108A	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A108A	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A108A	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A109	Classroom	Floor	Vinyl Sheet Flooring	Faux Wood	-	Non ACM	-	-	-	-	
A109	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A109	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A109	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A109A	Washroom	Floor	Ceramic Tile	-	-	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	
A109A	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A109A	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A109A	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A110	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Pink Oatmeal	-	Non ACM	HM	S03	28-Dec-08	ND	
A110	Work Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	SL	S01	12-Mar-19	ND	
A110	Work Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A110A	Washroom	Floor	Vinyl Floor Tile 12"x 12"	Pink Oatmeal	-	Non ACM	HM	S03	28-Dec-08	ND	
A110A	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A110A	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A111	Storage	Floor	Vinyl Floor Tile 12"x 12"	Brown with White Streaks	NF	ACM	HM	S04	28-Dec-08	0.5% Chrysotile	
A111	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A111	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A113	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-	
A113	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A113	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A115	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown with White Streaks	NF	ACM	HM	S04	28-Dec-08	0.5% Chrysotile	
A115	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A115	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A116	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND	
A116	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND	
A116	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A116	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A116	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A117	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND	
A117	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND	
A117	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A117	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A117	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
A118	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S01	26-Feb-16	ND	
A118	Classroom	Floor	Mastic	Black	-	Non ACM	HM	S01	26-Feb-16	ND	
A118	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-	
A118	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
A118	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-	
801	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
801	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
801	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
801	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
802	Corridor	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-	
802	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	
802	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND	
802	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-	
802	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-	
802	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-	
803	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-	
803	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile	

		School Name		Legend:				Notes:		
		A.R. Kaufman 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: 1971								
		Addition(s): 1975, 2012								
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
803	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S01	12-Mar-19	ND
803	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
803	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.006.005	26-Oct-90	50-75% Chrysotile
803	Corridor	Piping	Pipe	Transite	NF	ACM	VC	-	-	-
804	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
804	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
804	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
804	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
804	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
805	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
805	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
805	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
805	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
805	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-
806	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
806	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
806	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
806	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
806	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-
807	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
807	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
807	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
807	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
807	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-
808	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
808	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
808	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
808	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
808	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
808A	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
808A	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
808A	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
808A	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
808A	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
808B	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
808B	Corridor	Wall	Drywall	Drywall Joint Compound	NF	ACM	HM	S12	28-Dec-08	1.6% Chrysotile
808B	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
808B	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
808B	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
850	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S07	28-Dec-08	ND
850	Corridor	Wall	Drywall	No Drywall Joint Compound	-	Non ACM	-	-	-	-
850	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
850	Corridor	Wall	Brick	-	-	Non ACM	-	-	-	-
850	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2005)	-	Non ACM	-	-	-	-

		School Name		Legend:				Notes:		
		A.R. Kaufman 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: 1971								
		Addition(s): 1975, 2012								
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
Summary of Potential ACM Hidden or Not Assessed										
	Throughout Building	Not Inspected	Not Inspected	Door Core Insulation						

Appendix B

Figures

For Tender Purposes

Appendix C

Tables

For Tender Purposes

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT

A.R. Kaufman Public School						
Material	WRDSB Fixed Reference Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Non-Friable	116	12" x 12" Green Floor Tile	2 Tiles			Monitor Annually
Asbestos Non-Friable	116	12" x 12" Green Floor Tile	2 Tiles			Monitor Annually
Asbestos Non-Friable	155	12" x 12" Green Floor Tile	1 Tile			Monitor Annually
Asbestos Non-Friable	147	12" x 12" Green Floor Tile	5 Tiles Loose and Lifting			Monitor Annually
Notes: 1) A copy of this report should be provided to all prospective contractors prior to tender or quotation, in accordance with Section 30 of the Occupational Health and Safety Act. 2) Recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures. The Contractor may choose to alter the approach and combine or break out sections of work. This is acceptable provided that the appropriate Acts, regulations, guidelines, standards and codes are followed and afford protection for the health and safety of workers, occupants and the public that is at least equal to the protection that would be provided by complying with the minimum requirements. 3) All waste generated is subject to characterization and disposal in accordance with Ontario Regulation 347.						

TABLE 2 - EXTERNAL ABATEMENT MANAGEMENT						
A.R. Kaufman Public School						
Material	WRDSB Fixed Reference Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Non-Friable	44, 101, 103, 104, 106, 107, 108, 121, 122, 145, 146, 152, 156, 162, 801, 803, 850	Typical Damage to Drywall Throughout School	5 m ²			Repair in accordance with O. Reg. 278/05 < 1m ² as a Type 1 Operation OR > 1m ² as a Type 2 Operation.
Asbestos Friable	147	Insulation on Pipe Fittings	1			Removal/Repair in accordance with O. Reg. 278/05 as a Type 2 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 Number	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM	
2008 Asbestos Audit Update							
32523-A.R.Kaufman - S01a	152	1028	2x4 Ceiling Tile - Wide Fissure Pinhole	ND	-	No	
32523-A.R.Kaufman - S01b	152	1028		ND	-	No	
32523-A.R.Kaufman - S01c	152	1028		ND	-	No	
32523-A.R.Kaufman - S02a	A101	1018	12x12 Floor Tile - Beige with Tan Streaks	0.5	Chrysotile	Yes	
32523-A.R.Kaufman - S02a	A101	1018		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S02a	A101	1018		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S03a	A108	1020	12x12 Floor Tile - Pink Dense Fleck	Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S03b	A108	1020		Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S03c	A108	1020		Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S04a	A107	1021	12x12 Floor Tile - Brown with White Streaks	Layer 1 (Tile): 0.5	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S04b	A107	1021		Layer 1 (Tile): NA	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S04c	A107	1021		Layer 1 (Tile): NA	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S05a	A104	1015	12x12 Floor Tile - White	ND	-	No	
32523-A.R.Kaufman - S05b	A104	1015		ND	-	No	
32523-A.R.Kaufman - S05c	A104	1015		ND	-	No	
32523-A.R.Kaufman - S06a	155	1029	12x12 Floor Tile - Olive with White Streaks	1.4	Chrysotile	Yes	
32523-A.R.Kaufman - S06b	155	1029		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S06c	155	1029		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S07a	121	1058	12x12 Floor Tile - Beige Dense Fleck	ND	-	No	
32523-A.R.Kaufman - S07b	121	1058		ND	-	No	
32523-A.R.Kaufman - S07c	121	1058		ND	-	No	
32523-A.R.Kaufman - S08a	122	1056	12x12 Floor Tile - Burnt Sienna	1.6	Chrysotile	Yes	
32523-A.R.Kaufman - S08b	122	1056		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S08c	122	1056		NA	Chrysotile	Yes	
32523-A.R.Kaufman - S09a	122	1056	12x12 Floor Tile - Yellow	Layer 1 (Tile): 1.4	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S09b	122	1056		Layer 1 (Tile): NA	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S09c	122	1056		Layer 1 (Tile): NA	Chrysotile	Yes	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S10a	123	1055	12x12 Floor Tile - Olive / yellow	Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S10b	123	1055		Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S10c	123	1055		Layer 1 (Tile): ND	-	No	
				Layer 2 (Mastic): ND	-	No	
32523-A.R.Kaufman - S11a	123	1055	2x4 Ceiling Tile - Long Fissure Pinhole	ND	-	No	
32523-A.R.Kaufman - S11b	123	1055		ND	-	No	
32523-A.R.Kaufman - S11c	123	1055		ND	-	No	
32523-A.R.Kaufman - S12	155	1029	DWJC	1.6	Chrysotile	Yes	
32523-A.R.Kaufman - S13	803	1059		NA	-		
32523-A.R.Kaufman - S14	144	1037		1.4	Chrysotile	Yes	
32523-A.R.Kaufman - S15	A108	1020		NA	-		
32523-A.R.Kaufman - S16	116	1002		1.3	Chrysotile	Yes	
32523-A.R.Kaufman - S17	112	1004		Trace	Chrysotile	No	
32523-A.R.Kaufman - S18	119	1001		ND	-		
2012 Asbestos Audit Update							
34532-500-S19A	Exterior	Exterior		Exterior Window Caulking	ND	-	No
34532-500-S19B	Exterior	Exterior	Exterior Window Caulking	ND	-	No	
34532-500-S19C	Exterior	Exterior	Exterior Window Caulking	ND	-	No	
2014 Vermiculite Sampling							
A.R.Kauf-Verm-S01	-	-	Bulk Vermiculite	1	Tremolite	Yes	
2016 Asbestos Audit Update							
S01A (Layer 1)	105	1011	12x12 Floor Tile - Brown Dense Fleck	Tile: ND	-	No	
S01A (Layer 2)	105	1011		Mastic: ND	-	No	
S01B (Layer 1)	105	1011		Tile: ND	-	No	
S01B (Layer 2)	105	1011		Mastic: ND	-	No	
S01C (Layer 1)	105	1011		Tile: ND	-	No	
S01C (Layer 2)	105	1011		Mastic: ND	-	No	
2019 Asbestos Audit Update							
S01A	A107	1021		ND	-	No	

Table 3 - Sample Summary Table - AR Kaufman PS

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample Number	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
S01B	A107	1021	Drywall Joint Compound (1975 Addition)	ND	-	No
S01C	A110	1025		ND	-	No
S01D	A110	1025		ND	-	No
S01E	A117	1065		ND	-	No
S02A	803	1059	White Sealant on Interior Door Frame (1975 Addition)	ND	-	No
S02B	803	1059		ND	-	No
S02C	803	1059		ND	-	No
S03A	803	1059	Black Sealant on Exterior Door Pane (1975 Addition)	ND	-	No
S03B	803	1059		ND	-	No
S03C	803	1059		ND	-	No
S04A	119	1001	Off-White Sealant on Interior Door Frame (1971 Original Building)	ND	-	No
S04B	119	1001		ND	-	No
S04C	119	1001		ND	-	No
S05A	105	1011	Grey Sealant on Exterior Window Frame (1971 Original Building)	ND	-	No
S05B	105	1011		ND	-	No
S05C	105	1011		ND	-	No
S06A	105	1011	Brown Sealant on Exterior Window Pane (1971 Original Building)	ND	-	No
S06B	105	1011		ND	-	No
S06C	105	1011		ND	-	No
NA: Not Analyzed due to stop positive method ND: No asbestos fibres detected above the laboratory minimum detection limit						
A bulk material sample containing 0.5% or more asbestos therefore establishes that material as asbestos-containing. In accordance with Table 1 of O. Reg. 278/05, a minimum number of samples for the material to be classified as non asbestos. A homogeneous material is defined by O. Reg. 278/05 "as material that is uniform in colour and texture". Homogeneous samples are identified by an alphabetical suffix to sample names to represent multiple samples of a homogeneous material. When a homogeneous material is analysed it is determined to be asbestos-containing upon the first positive detection of asbestos equal to or greater than 0.5%. Subsequent samples of the same material are therefore not analysed. Some bulk samples are comprised of multiple layers and as such will require multiple analysis. In such cases each layer is isolated at the laboratory and analysed individually to determine asbestos content. As a result the laboratory may report additional samples beyond the submitted number of samples or include multiple analyses as subsets within a sample.						

Table 3 - Sample Summary Table - AR Kaufman PS

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 K1A 0H3; URL: <http://www.ec.gc.ca>.
- .20 **EFC** - Electro Federation of Canada, 5800 Explorer Drive, Suite 200, Mississauga, ON L4W 5K9; URL: <http://www.electrofed.com>.
- .21 **MPI** - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6; URL: <http://www.paintinfo.com>.
- .22 **NABA** - National Air Barrier Association, PO Box 2747, Winnipeg, MB R3C 4E7; URL: <http://www.naba.ca>.
- .23 **NLGA** - National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, BC V3M 6G2; URL: <http://www.nlga.org>.
- .24 **NRC** - National Research Council, Building M-58, 1200 Montreal Road, Ottawa, ON K1A 0R6; URL: <http://www.nrc.gc.ca>.

- .25 **QPL** - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, QC K1A 1G6; URL: <http://www.pwgsc.gc.ca/cgsb>.
- .26 **RAIC** - Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, ON K1N 5M3; URL: <http://www.raic.org>.
- .27 **SCC** - Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, ON K1P 6N7; URL: <http://www.scc.ca>.
- .28 **TTMAC** - Terrazzo, Tile and Marble Association of Canada, 30 Capston Gate, Unit 5 Concord, ON L4K 3E8; URL: <http://www.ttmac.com>.
- .29 **ULC** - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, ON M1R 3A9; URL: <http://www.ulc.ca>.
- .3 USA Organizations:
 - .1 **AA** - Aluminum Association, 900 19th Street N.W., Washington, DC 20006; URL: <http://www.aluminum.org>.
 - .2 **AASHTO** - American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, DC 20001; URL: <http://www.aashto.org>.
 - .3 **AHA** - American Hardboard Association, 1210W Northwest Hwy, Palatine, IL 60067; URL: <http://www.hardboard.org>.
 - .4 **AITC** - American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, CO 80112; URL: <http://www.aitc-glulam.org>.
 - .5 **AMCA** - Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, IL 60004-1893; URL: <http://www.amca.org>.
 - .6 **ANSI** - American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036; URL: <http://www.ansi.org>.
 - .7 **APA** - The Engineered Wood Association, P.O. Box 11700, Tacoma, WA 98411-0700; URL: <http://www.apawood.org>.
 - .8 **API** - American Petroleum Institute, 1220 L St. Northwest, Washington, DC 20005-4070; URL: <http://www.api.org>.
 - .9 **ARI** - Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, VA 22203; URL: <http://www.ari.org>.
 - .10 **ASHRAE** - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329; URL: <http://www.ashrae.org>.
 - .11 **ASME** - American Society of Mechanical Engineers, ASME Headquarters, 3 Park Avenue, New York, NY 10016-5990; URL: <http://www.asme.org>.

- .12 **ASTM International**, 100 Barr Harbor Drive West, Conshohocken, PA 19428-2959; URL: <http://www.astm.org>.
- .13 **AWCI** - Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600 , Falls Church, VA 22046; URL: <http://www.awci.org>.
- .14 **AWPA** - American Wire Producer's Association, 801 N Fairfax Street, Suite 211, Alexandria, VA 22314-1757; URL: <http://www.awpa.org>.
- .15 **AWPA** - American Wood Preservers' Association, P.O. Box 5690, Granbury TX 76049-0690; URL: <http://www.awpa.com>
- .16 **AWS** - American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126; URL: <http://www.amweld.org>.
- .17 **AWWA** - American Water Works Association, 6666 W. Quincy Avenue, Denver, CO 80235; URL: <http://www.awwa.org>.
- .18 **EIMA** - EIFS Industry Manufacturer's Association, 3000 Corporate Center Drive, Suite 270, Morrow, GA 30260; URL: <http://www.eima.com>.
- .19 **ISAP** - International Society for Asphalt Paving, 400 Selby Avenue, Suite 1, St. Paul, MN 55102; URL: <http://www.asphalt.org>.
- .20 **IEEE** - Institute of Electrical and Electronics Engineers, IEE Corporate Office, 3 Park Avenue, 17th Floor, New York, NY 10016-5997; URL: <http://www.ieee.org>
- .21 **MSS** - Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, VA 22180-4602; URL: <http://www.mss-hq.com>.
- .22 **NAAMM** - National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 1000, Chicago, IL 60603; URL: <http://www.naamm.org>.
- .23 **NEMA** - National Electrical Manufacturers Association, 1300 N 17th Street, Suite 1847, Rosslyn, VA 22209; URL: <http://www.nema.org>.
- .24 **NFPA** - National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101 Quincy, MA 02269-9101; URL: <http://www.nfpa.org>.
- .25 **NFSA** - National Fire Sprinkler Association, P.O. Box 1000, Patterson, NY 12563; URL: <http://www.nfsa.org>.
- .26 **NHLA** - National Hardwood Lumber Association, 6830 Raleigh-La Grange Road, Memphis, TN 38184-0518; URL: <http://www.natlhardwood.org>.
- .27 **NSPE** - National Society of Professional Engineers, 1420 King Street, Alexandria, VA 22314-2794; URL: <http://www.nspe.org>.
- .28 **PCI** - Prestressed Concrete Institute, 209 W. Jackson Blvd., Suite 500, Chicago, IL 60606-6938; URL: <http://www.pci.org>.

- .29 **PEI** - Porcelain Enamel Institute, PO Box 920220, Norcross, GA 30010; URL: <http://www.porecelainenamel.com>.
- .30 **SSPC** - The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh, PA 15222-4656; URL: <http://www.sspc.org>.
- .31 **TPI** - Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI 53719; URL: <http://www.tpinst.org>.
- .32 **UL** - Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, 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 Subcontractor. Contractor's "broom cleaning" only is not acceptable.
- .2 Final exterior cleaning shall include:
 - .1 broom clean and wash exterior walkways, steps, and surfaces; rake clean other surfaces of grounds,
 - .2 remove dirt and other disfiguration from exterior surfaces,
 - .3 sweep and wash clean paved areas,
 - .4 replace filters of mechanical equipment for all equipment that was in use during construction,
 - .5 clean all roofs, gutters, downspouts, areaways, drywells, and drainage systems,
 - .6 remove debris and surplus materials from crawl areas and other accessible concealed spaces.
 - .7 remove overspray

END OF SECTION

01 78 10 – Closeout Submittals and Requirements

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 78 10 – WRDSB Warranty Card, Appendix 00 41 13A

1.2. TAKE-OVER PROCEDURES

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

1.3. SUBSTANTIAL PERFORMANCE

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

1.4. COMMENCEMENT OF LIEN PERIODS

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

1.5. TOTAL PERFORMANCE

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

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

1.6. PAYMENT OF SUBSTANTIAL PERFORMANCE HOLDBACK

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

1.7. FINAL PAYMENT

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

1.8. CLOSEOUT SUBMITTALS

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products and submit them to the Consultant for review.
- .2 Copy will be returned to the contractor with the Consultant's comments.

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

1.9. OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Provide two copies of operating and maintenance data, prepared on 215 X 280mm sheets in printed or typewritten form, contained in 3-ring binders with soft vinyl covers for materials and equipment which require special maintenance or operating procedures.
- .2 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder at the front of each volume.
- .3 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .4 Arrange content by the divisions of the specifications under Section numbers and sequence of Table of Contents.
- .5 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .6 Include the following in each manual:
 - .1 Complete list of subcontractors and suppliers, their addresses and telephone numbers. Provide 24 hour emergency telephone numbers for such subcontractors as Plumbing, Electrical, Sprinklers, Fire System, Heating, etc.
 - .2 Specified warranties for contractor, each subcontractor and supplier.
 - .3 WRDSB Project Asset and Warranty Card, Appendix 00 41 13A
 - .4 Copy of finish hardware list, complete with all amendments and revisions and lock manufacturer's descriptive and service literature.
 - .5 Schedule of paints and coatings. Include sufficient explanation to fully identify each surface with the applicable paint or coating used. Enclose a copy of the colour schedule.
 - .6 Maintenance instructions for finished surfaces.
 - .7 Brochures, cuts of equipment and fixtures.

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

1.10. RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on a set of black line opaque drawings, and within the Project Manual.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.
- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
- .4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.

- .6 Other Documents: Maintain warranties, test reports and samples required by individual specifications sections.

1.11. RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

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

1.12. RECORD DRAWINGS

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

1.13. SPARE PARTS

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

1.14. REPLACEMENT (MAINTENANCE) MATERIALS

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

1.15. SPECIAL TOOLS

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

1.16. FINAL SITE SURVEY

- .1 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 DESCRIPTION

- .1 This Section outlines the mandatory minimum Health and Safety protocols for all renovation, addition and new school board construction Projects where all or a portion of the existing school building remains occupied and in use.
- .2 These Health and Safety protocols are mandatory minimum requirements, procedures and standards that the School Board insists are fully complied with by all parties involved with renovation projects.

1.2 RELATED SECTIONS

- .1 These specifications apply to all Divisions of this Project specification. It is the responsibility of the Contractor to apply these provisions wherever practical within specification limits to all products and services used on this Project.
- .2 The requirements of this Section supersede those of all other specification Sections and Drawings. Where conflicts exist in procedures, methods or materials, they shall immediately be brought to the attention of the Consultant and Board Project Manager. Where clarification is not immediately available, the Contractor shall assume the specifications contained in this Section are a minimum standard and the more stringent specification shall apply.
- .3 The Contractor must receive approval from Board Project Manager for any deviations from this specification Section.
- .4 The General Contractor shall recognize that it is *he* who is the Constructor of the Project. The General Contractor shall also recognize that he is solely responsible for site safety at the Place of the Work and compliance with the requirements of this Section does not limit or remove his total responsibility for site safety as Constructor of the Project.

1.3 REFERENCES

- .1 Applicable related regulations, standards and laws related to safety include but are not limited to:
 - .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
 - .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
 - .3 Province of Ontario
 1. Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990 June 2002.

1.4 COMPLIANCE SPECIFICATION

- .1 Notwithstanding the requirements of this Section, the Contractor must comply with all applicable health, safety and environmental regulations and statutes.

1.5 BEYOND COMPLIANCE SPECIFICATION

- .1 These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Board's intention to develop a specification which provides the safest practical procedures and policies for construction project sites that are occupied and in use by staff, students and visitors during the execution of the Construction Contract.
- .2 Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore, these specifications cover both material and methods.
- .3 These provisions apply to both indoor and outdoor applications equally.

Part 2 Products

2.1 NOT USED

Part 3 Execution and Compliance Requirements

3.1 APPLICATION OF COMPLIANCE REQUIREMENTS

- .1 The articles set out herein are to be applied together as a set of related policies and procedures to achieve a comprehensive Health and Safety working protocol.
- .2 The Contractor shall execute all of the procedures and meet all of the requirements set out herein and apply these protocols from the outset of the Construction Phase.
- .3 These procedures or requirements are to be maintained for the duration of the Construction Phase. The Contractor shall not discontinue any of the individual procedures or requirements without the prior approval of the Board Project Manager.

3.2 SITE SUPERVISOR (SITE SUPERINTENDENT)

- .1 A full-time Site Supervisor (Site Superintendent) is required on site, regardless of the number of active workers on site.
- .2 Site Superintendent shall have as a minimum:

- .1 Recent, previous experience with renovation or addition projects involving occupied buildings including (but not limited to) school construction, sites with students, tenants, employees, retail customers, pedestrian and vehicular traffic.
- .2 Successful completion of a multi-session Supervisor's training course conducted by a recognised Construction Association in Ontario.
- .3 Site Superintendent must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded and accessed during all non-work hours including weekends and holidays.
- .4 Site Superintendent must have means of live phone or walkie-talkie communication with the site Flagman during all work hours.
- .5 Site Superintendent shall not be changed throughout project unless confirmed and approved by the Board Project Manager.

3.3 ONTARIO OCCUPATIONAL HEALTH & SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS

- .1 General Contractor to comply with the Ontario Occupational Health & Safety Act and Regulations for Construction Projects, latest edition– including all amendments.
- .2 Beyond compliance in item .1 above, regardless of the number of labourers active on the Project, the General Contractor shall form a contractors' Health & Safety Committee at the outset of construction. This Committee shall then follow the standard requirements for such a Committee as set out in the *Occupational Health & Safety Act and Regulations for Construction Projects*.

3.4 ON-SITE COMMUNICATIONS

- .1 At the outset of the project the General Contractor shall provide to the Board Project Manager all relevant contact information for the Site Superintendent, GC Project Manager and key sub-contractors including names and cell phone numbers.
- .2 The General Contractor shall provide at least one "emergency contact" telephone number at which the Contractor's representative can be reached directly during all work hours and have the ability to have voicemail recorded during all non-work hours including weekends and holidays. As outlined below, this may be designated to the Site Superintendent's cell phone number.
- .3 Regardless of compliance method for the emergency contact telephone number stated above, the Site Superintendent must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.
- .4 Site Superintendent must have means of live phone or walkie-talkie communication with the site Flagman during all work hours.

- .5 The Contractor is to ensure that the Board Project Manager is immediately apprised of any safety issues as each arises and the related request and/or resolution. The Board Project Manager is responsible for any decisions that have an effect on the contract execution.
- .6 Notwithstanding the reporting to the Project Manager noted above the Site Superintendent shall liaise with school principal or designate on all safety related matters as required on a daily basis.
- .7 In the event of a safety issue requiring contractual clarification or action (i.e. Change Notice, etc.), the contractor shall ensure that, where applicable, the action is followed up with appropriate documentation.

3.5 FULL-TIME ON-SITE FLAGMEN

- .1 A full-time, designated Flagman is required at all vehicular construction entrances. Refer to drawings for the scope and locations.
- .2 In the event there is more than one entrance to the hoarded/fenced construction area, there must be a separate Flagman for each entrance.
- .3 Flagman may not be same person as Site Superintendent or other construction worker.
- .4 Flagman shall not be changed throughout the Project unless confirmed and approved by the Board Project Manager.
- .5 Flagman must have means of phone communication with Site Superintendent (phone or walkie-talkie).
- .6 The Flagman shall not be designated for any other duties than to act as a Flagman for safety purposes as described herein.
- .7 The Flagman shall meet and escort any construction traffic from the site **entrance** into and out of the hoarded/fenced construction area (including through open site areas until entrances to hoarding).
- .8 The Flagman shall only open hoarded areas when construction traffic moves through and immediately re-close gates.
- .9 The Flagman shall control construction parking at the school site (including vehicles parking or traveling in unauthorized areas).
- .10 The location of the Flagman shall be set to ensure the safe guarding of staff, student, and pedestrian traffic.
- .11 If not designated on the Contract Documents, the location of the Flagman shall be confirmed with the Board Project Manager and Consultant at the outset of the project and before the placement of hoarding and fencing.

- .12 Where the Contractor deems it necessary, in order for the Flagman to carry out the required full-time duties, the cost of a temporary shelter shall be included in the Tender Price.
- .13 The Flagman shall be properly attired to carry out his duties, including the use of safety equipment (e.g. wear reflective vest, have appropriate traffic hand-held “Stop” sign and have a visible identification tag).

3.6 SITE SAFETY SIGNAGE

- .1 Standardised Safety Signage is required at all construction entrances.
- .2 If not designated on the Contract Documents, the location of the Safety Signage shall be confirmed with the Board Project Manager and Consultant at the outset of the Project and before the placement of hoarding and fencing.
- .3 Safety Signage is to be posted at all street entrances to school site and at each entrance to hoarded/fenced construction area.
- .4 Total surface area of signage is to avoid exceeding municipal standards that would require a separate signage permit.
- .5 Access signage text shall include cell phone contact number for Site Superintendent.
- .6 Signage posted at gates shall state restrictions on hours of entry and egress as described in the Contract Documents and under no circumstances shall construction traffic be allowed within 30 minutes prior to school start, during recess, lunch break, and 30 minutes after dismissal periods.

3.7 ACCESS/EGRESS CONTROLS

- .1 At the outset of the Contract, the General Contractor shall advise all suppliers and subcontractors of the protocols listed herein and of the requirement to contact the Site Superintendent by Cell phone prior to entering the site.
- .2 The drivers of all construction vehicles entering the site, including delivery vehicle drivers, are to contact site Superintendent by cell phone prior to entering site; the Site Superintendent shall, in turn, give notice to the Flagman to be aware of the traffic and authorize the Flagman to allow entry of that vehicle.
- .3 Vehicular Gates are only for entry and exit of for construction purposes such as construction personnel, Authorities performing inspections, Board representative, delivery personnel, and disposal pickup and ONLY under escort by the Flagman. As such vehicular gates must remain closed and locked at all times and only opened for access/egress under escort by the Flagman, then closed and locked again.
- .4 Gates are to be lockable swing gates for vehicles and man gates at all access points to the hoarded/fenced construction area.

3.8 CONTRACTOR PARKING

- .1 Contractor parking shall be restricted to hoarded areas or designated parking areas only where pre-approved by Board Project Manager and Principal.
- .2 Contractor parking is restricted from all off-site street areas that interfere with site specific parent drop-off and parking areas.

3.9 REQUIRED PRE-CONSTRUCTION MEETINGS

- .1 Meeting 1: Contractor shall receive approval from the Architect and the Board Project Manager for parking, vehicular movement, access/egress strategies at a Pre-construction meeting taking place in advance of mobilizing on site.
- .2 Meeting 2: Once hoarding and fencing is erected BEFORE site construction is fully active and vehicles or equipment is mobilized on site, an initial site meeting shall take place at which time the layout of trailers and staging, deliveries, storage of materials, parking areas and vehicular movement to be reviewed and approved by the Board Project Manager.
- .3 See article 3.12- 'Site Meetings' following.

3.10 CONSTRUCTION FENCING AND HOARDING

- .1 Construction hoarding requirements shall be a site based decision to be determined by the Architect and the Board Project Manager at the design stage and shown on Contract Documents.
- .2 No fencing or hoarding shall be less than a continuous 1800 mm high.
- .3 In portions of the site where chain link is approved, it shall be continuous 1800 mm high chain link fencing, wire-tied to staked iron 'tees' at 1800 mm on centre - OR - leased, modular 'quick fencing' if staked down and wire tied together.
- .4 All fenced and hoarded areas to be gated with lockable vehicular and man gates-minimum construction to be steel rail and chain link construction.
- .5 Plastic snow fencing is NOT permitted.
- .6 All hoarding and fencing shall be maintained in a stable condition, for duration of construction period as part of the base contract price and to include Superintendent's inspection at the beginning and end of each work day.
- .7 All Fire Routes to be outside all fenced and hoarded areas and maintained clear at all times.
- .8 'Covered way' protection shall be provided when accesses or pathways are in proximity to construction, in accordance with Ministry of Labour *Occupational Health & Safety Act* Regulations.

3.11 HEALTH, WELLNESS & SAFETY DEPARTMENT REPRESENTATIVE

- .1 A representative of the Board's Health, Wellness & Safety Dept. ('Environment, Health and Safety Officer') may visit site at any anytime throughout the duration of the Contract to review the site, as it relates to the safety of the occupied areas of the site. Such site review shall neither constitute an inspection or approval for the Contractor.
- .2 Concerns or issues identified by the representative from the Board's Health, Wellness & Safety Dept. shall be communicated through the Board Project Manager and the school Principal for corrective action.
- .3 Contractor shall ensure full access to all site areas, at all times, for the Board's Health, Wellness & Safety Department Representative.

3.12 SITE MEETINGS

- .1 Coordinate the requirements of this Section with *Section 01 22 00 – 'Meetings and Progress Reports'*.
- .2 Initial site meeting to take place after erecting fencing and hoarding but prior to the mobilisation of any vehicles, equipment or start of Work.
- .3 Contractor shall ensure that the Board Project Manager, School Principal and a representative of the Board's Health, Wellness & Safety Department and the School Principal attend the initial site meeting.
- .4 The initial meeting shall review and approve a standardised agenda for all site meetings and a thorough review of the Site Safety Protocol.
- .5 The standardised agenda shall include a Checklist and Report of Health and Safety items at the beginning of the agenda. This Checklist shall be included and each item reviewed at all site meetings for the duration of the project.
- .6 The Checklist of Site Safety items shall include but not be limited to:
 - .1 Contractor's report of site safety record and report of recent site activities, precautions or actions.
 - .2 Review any visits to the site and actions required by Ministry of Labour or Board Health, Wellness & Safety representatives or other Authorities Having Jurisdiction.
 - .3 Contractor's Health & Safety policy manual posted in site trailer.
 - .4 Copy of Ministry of Labour *Occupational Health & Safety Act and Regulations for Construction Projects* in site trailer.
 - .5 Name of General Contractor H&S representative.
 - .6 Continuing compliance with Safety Signage.
 - .7 Hoarding & fencing layout and condition.
 - .8 Access and egress measures and any breaches of requirements.

- .9 Confirmation of communications link between Site Superintendent & Flagman.
- .10 Work that may produce any noxious odours and the containment measures, (*i.e.*: schedule, type, approvals required therefore).
- .11 Copies of Material Safety Data sheets in site trailer.
- .12 Complete meeting minutes including details of Safety Checklist shall be copied to Architect, Board Project Manager and Principal.
- .7 Contractor to produce record of written Memorandum to all subtrades and suppliers detailing but not limited to: hours of delivery; site access procedures and restrictions; use of existing facilities.
- .8 Contractor to prepare detailed and accurate written record of all meetings to be kept and issued to all parties.

3.13 CONTRACTOR'S HEALTH AND SAFETY COMMITTEE MEETINGS

- .1 As required in item 3.1.2, the Contractor shall form a Health and Safety Committee, hold meetings and record minutes of meetings for the duration of the Contract.
- .2 Contractor to maintain a copy of Health & Safety Committee minutes on site for review by Ministry of Labour or Board representative(s).

END OF SECTION

PART 1 GENERAL

1.1 Related Sections

1. Section 01 11 00 - Summary of Work
2. Section 01 56 00 – Temporary Barriers and Enclosures
3. Section 01 73 03 – Execution Requirements (Cutting and Patching)
4. Section 04 21 13- Brick and Block Masonry
5. Section 01 33 00 - Submittal Procedures
6. Section 08 11 14- Metal Doors and Frames
7. Section 08 71 15 – Finish Hardware
8. Section 09 91 22- Painting
9. Section 09 21 16- Gypsum Board Assemblies
10. Section 09 51 13- Acoustic Panel Ceilings
11. Section 10 11 25- Manufactured Specialties
12. Mechanical and Electrical Sections

1.2 Scope

1. Scope includes but is not limited to:
 - .1 Demolition or alteration of all structural, architectural, mechanical, electrical or site components, equipment, fitments and finishes as required to execute the work.
 - .2 The removal, repair and reinstallation as required to make good of existing acoustic unit ceilings gypsum board bulkheads, windows, doors, hollow metal screens and partition walls where required to be removed for routing new services, general alterations or revising demising walls.
 - .3 Removal and reinstallation as indicated of any existing fixed in place millwork, chalkboards or tackboards or similar fitments or devices identified to remain and be reinstalled.
 - .4 Grinding and patching of walls where chalkboards or fitments have been removed and surface adhesives or similar surface deficiencies remain.
 - .5 Cutting and removal of slabs on grade to remove or replace existing drains, clean outs, oil interceptors, trenches and sub slab services contained within them, not previously removed by Abatement work.
 - .6 Making good of all walls and floors remaining where sections of walls or floors have been removed and surfaces require repair.
 - .7 Making good of all finishes to remain as result of selective demolition.
 - .8 Removal and cleaning of existing spray fireproofing on existing roof structure (where no longer required due to sprinklers in room/building).
 - .9 Grind and clean existing steel columns for new paint finish.

1.3 Existing Conditions

1. Existing Ground Floor structure contains in-floor heating system materials that are no longer in use but may remain abandoned in place. These may be encountered during construction.

2. Take over structures to be demolished or altered based on their condition on date that tender is accepted, at time of examination prior to tendering.
2. Contractor may confirm the prior removal of all asbestos containing materials in documentation left on site following prior abatement work contract. Should areas of asbestos be found which are not documented as removed or included in the scope of this work for removal, it shall be reported to the Consultant and Owner's representative for review and instructions for removal.
3. Prior to beginning alteration or demolition, confirm with Owner that no items to be salvaged or turned over to the owner remain in the work areas.

1.4 Protection

- .1 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades parts of existing building to remain. Provide bracing, shoring and underpinning required. Make good damage and be liable for injury caused by demolition.
- .2 Take precautions to support structures and, if safety of building being demolished or adjacent structures or services appears to be endangered, cease operations and notify Consultant.
- .3 Refer to structural drawings for Shoring Designs and Method Statements.
- .4 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.

Part 2 Products NOT USED

Part 3 Execution

3.1 Work

- .1 Dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction. Confirm in Divisions 15 and 16 for removal and re-use of mechanical and electrical materials and equipment.
- .2 Refer to drawings for furniture, materials or equipment to be removed and turned over to the owner. Carefully remove such items and store in location designated by Owner.
3. For a scope of work refer to all Drawings and also coordinate items to be altered, re-built, cleaned or otherwise "made good" as a result of the cutting and patching scope of work described in Section 01 73 03 Execution Requirements or other Sections.

3.2 Preparation

- .1 Disconnect electrical, telephone/PA and data service lines in work areas without disrupting main service to building and in accordance with regulations of authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .2 Disconnect and cap designated mechanical services in accordance with requirements of local authority having jurisdiction.
 - .1 Natural gas supply lines, if applicable to be removed by gas company by qualified tradesman in accordance with gas company instructions.

- .2 Remove, cap or dispose of other underground services as indicated in drawings.
- .3 Do not disrupt active or energized utilities traversing premises designated to remain undisturbed.
- .3 Floor scans to locate hidden or buried services in the work area have NOT previously been done. Prior to cutting, demolition or removal of any slabs on grade or areas where services may be concealed, engage a **private locate firm to provide magnetic and X-ray scans** of all areas involved. This is the responsibility of the General Contract and costs for such scans are to be included in the base contract price.

3.3 Disconnection and Removal of Materials and Equipment

- .1 Contractor shall cooperate with the Owner to determine which materials are to be removed and retained by Owner. The Owner will decide which items or equipment they wish to retain as their property and all other materials shall be removed from the premises by this Contractor. The equipment which is to be retained by the Owner shall be stored on site where directed by the Owner.
- .2 Refer to mechanical and electrical drawings and for disconnection and removal and/or relocated existing electrical, ductwork, piping and/or equipment.

3.4 Temporary Removals and Replacement

- .1 All items to be removed and installed shall be completed so that replaced materials are left in a clean undamaged state. If required to be replaced due to damage, the contractor shall include in his price for the component to be replaced and installed at no additional cost to the Contract.

3.6 Selective Demolition

- .1 Follow best trade practices for all demolition and alteration work. This includes but is not limited to the following items.
 - .1 The school will be mostly vacant during the construction, with the exception of some spaces being utilized intermittently. Despite this, ensure demolition work does not disrupt any ongoing aspect of the operation of the building.
 - .2 Confirm all demolition work (including potential noise, vibration, tools or equipment noise, etc.) in advance with the principal of the school on a daily basis. Similarly, notify all building occupants in advance at each possible interruption in services or utilities.
 - .3 Protect all areas from damage and intrusion by means of locking rooms under construction when not in use, use of dust tight screens and temporary partitions and hoarding. Demolish to minimize dusting. Refer to drawings for locations and other Specification Sections for requirements.
 - .4 Signage to be posted at all times. Take precautions to demolish only areas as necessary to complete the work, and avoid damage to adjacent areas. Make good all areas affected by demolition or renovation activities, whether specifically included in the contract documents or not.
 - .5 The Contractor shall be responsible for damage to all areas affected by renovation or alteration activities.

- .6 Prior to demolition, the Contractor shall carefully examine the drawings in relation to the site conditions, to ensure that all intended work can be carried out without ambiguity. Incorrect demolition of any work by the Contractor, will be back-charged to him. Any discrepancies between the drawings and the site conditions, must be reported to the Consultants immediately.
- .7 Demolish or remove interior and exterior elements as indicated.
- .8 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .9 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times.
- .10 Demolish masonry and concrete walls in small sections. **Salvage existing imperial block units in coordination with Section 04 21 13 to re-use as patching in existing imperial unit masonry.**
- .11 Carefully remove and lower structural framing and other heavy or large objects as required. Where partial walls of exposed concrete block masonry is to remain, grind all exposed edges to a bullnose and patch as required suitable for final painting.
- .12 Do not sell or burn materials on site.
- .13 Remove contaminated or dangerous materials from site and dispose of in safe manner to minimize danger at site or during disposal, in accordance with all governing legislation.
- .14 Where applicable, saw cut existing terrazzo floor and base as required and remove to nearest metal 'panel' joint to enable replacement at a full panel. **Replace with terrazzo flooring to match existing as closely as possible. Provide sample to consultant for approval.**
- .15 Following demolition and removals of floor trenches, walls and fitments, coordinate with Section 01 73 03. As part of the work of this section, scarify or otherwise grind existing or new slabs in preparation for slab in-fills and a self leveler skim slab by Section 01 73 03. That Section is responsible for the provision of a backfill, slab on grade patching and self leveling skim coat where required in advance of new VCT finishes by Section 09 65 19.
- .16 Patch and make good existing wall, ceiling and floor finish with identical original materials if affected by temporary protection or by previous Abatement contract.

3.7 Repair to all Finishes and Colours

- .1 Repaint all walls in rooms or areas modified as indicated in the Finish Schedule, or as directed by the Consultant.
- .2 Repair and make good all fixtures, finishes, trims and surfaces to all floor, wall and ceiling areas in rooms or areas whether or not they have been modified or affected by the work or by previous Abatement Contract.
- .3 Existing paint colours are to be matched exactly using computer colour matching.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

- .1 Make a thorough examination of the drawings, site, specification and soil report, to determine the intent, extent, materials and conditions of interfacing with other work and to be fully cognizant of the requirements.
- .2 Assume full responsibility for the design, for the adequacy and for the safety of all formwork and falsework.
- .3 The Contractor shall ensure that no asbestos containing materials are used in connection with the work of this section.

1.2 RELATED SECTIONS

- .1 Structural drawing notes.

1.3 REFERENCE STANDARDS

- .1 All codes, standard specifications and by-laws referred to in this specification shall be current editions including all revisions, addenda and supplements.
- .2 Conform to the Ontario Building Code and the Occupational Health and Safety Act.
- .3 Conform to the following CSA Standards:
 - .1 CSA-A23.1-09, Concrete Materials and Methods of Concrete Construction.
 - .2 CSA-A23.2-09, Methods of Test and Standard Practices for Concrete.
 - .3 CSA-A23.3-04, Design of Concrete Structures.
 - .4 CS-AA3000-08, Cementitious Materials Compendium.
 - .5 CSA-G30.18-M09, Carbon Steel Bars for Concrete Reinforcement.
 - .6 CSA-S269.3-M92(R2008), Concrete Formwork.
 - .7 CSA-S269.1-1975(R2008), Falsework for Construction Purposes.
 - .8 CSA-W 186-M 1990 (R2007), Welding of Reinforcing Bars in Concrete Construction.
 - .9 CSA-A283-06 , Qualification Code for Concrete Testing Laboratories.
- .4 Conform to the following ASTM Standards:
 - .1 ASTM C309-07, Standard Specification for Liquid Membrane Forming Compounds For Curing Concrete.
 - .2 ASTM C94/C94M-07, Standard Specification for Ready-Mixed Concrete.
 - .3 ASTM C1116-09, Standard Specification for Fiber Reinforced Concrete & Shotcrete.
- .5 Conform to ACI Standard 214R-02 Evaluation of Strength Test Results of Concrete.
- .6 In the event of conflict between reference standards, codes, drawings and specifications, the Contractor shall request clarification by the Consultant. The Consultant's decision as to which requirements govern shall be final and binding. Generally the more stringent provision shall govern. No extras to the contract will be approved due to such clarification.

1.4 SOURCE QUALITY ASSURANCE

- .1 Concrete supplied to this project shall meet the "Performance Based Specification" for concrete supply as adopted by the Ready Mix Concrete Association of Ontario.
- .2 Submittals:

- .1 Brand names, and when requested, manufacturer's data sheets, detail drawings or diagrams of all items which are proposed for use in the concrete mix, or which are to be cast in or attached to the concrete structure or will affect the concrete structure in any way, are to be submitted for review.
- .2 These shall include but not be limited to:
 - .1 A schedule of "Standardized mix designs" which indicates compliance with the Construction Documents. Schedule to include but not be limited to:
 - .1 Concrete mix for each exposure class and strength to be utilized in the project.
 - .2 Include "Pump Mixes" if proposed for use.
 - .3 Brand names of all admixtures to be incorporated into the mixes.
 - .2 Brand names and, if requested, manufacturers' data sheet of proposed curing compound.
 - .3 If requested, provide a certified copy of a mill test report of the reinforcing supplied, and samples of reinforcing bars to be used on this project for testing by the appointed Inspection and Testing company before delivery to the site.
 - .4 Shop drawings of elevators, showing complete details of proposed connections to the structure, including pockets, inserts and loadings.
 - .5 Shop drawings of exterior walls panels showing complete details of proposed connections to the structure, including pockets, inserts and loadings.
 - .6 Shop drawings of steel and precast concrete stairs showing complete details of connections to the structure including pockets, inserts and loadings. Shop drawings to be stamped by a Licensed Professional Engineer.
 - .7 Cement finishing of floors shall be by a specialist sub-contractor thoroughly experienced in this type of work and a member in good standing with the Concrete Floor Contractors Association of Ontario (CFCAO). Submit references when requested.

Part 2 Products

2.1 MATERIALS

- .1 Ready Mix Concrete:
 - .1 Unless otherwise specified, concrete shall be premixed, quality controlled conforming to CSA Standard A23.1 with minimum 28 day compressive strengths as noted in the following Table.

Proportion normal density concrete in accordance with CSA-A23.1, Alternative 1 to give following properties:

Location	Strength	Class of Exposure	Normal Size of Aggregate	Slump	Air Content (Max.)
Footings	25 MPa	N	20	50-100	0-3%
Foundation Walls/ Slabs-on-Grade	30 MPa	N	20	60-90	0-3%
Concrete in Block and	20 MPa	N	10 mm (max)	50-100	0-3%

Lintels					
Exterior Concrete Slabs	32 MPa	C-2	20	60-90	5-8%
Precast Concrete Topping	25 MPa	N	10	50-100	0-3%
Lean Concrete Fill, Mud Slabs	10 MPa	N	20	100-150	0-3%
All Other Concrete	25 MPa	N	20	50-100	0-3%

- .2 Cement shall be Portland Cement of Canadian manufacture conforming to CSA A3000, Type GU (10).
- .3 Supplementary Cementing Materials shall conform to the requirements of CSA Standard A3000.
- .4 Aggregates shall be clean, uncoated sand and coarse aggregates from approved sources conforming to CSA Standard A23.1. Nominal size of coarse aggregate shall not exceed 20 mm unless otherwise stated on the structural drawings or specifications.
- .5 Water shall be potable from a municipal supply.
- .6 Chemical Admixtures, where permitted shall conform to the requirements of CSA Standard A23.1.
 - .1 Provide an approved water-reducing agent in all concrete.
Acceptable Types:
 - .1 WRDA82 by Grace
 - .2 EUCON WR by Euclid
 - .3 CATEXOL 900 N by Axim
 - .4 PLASTOCRETE 161 HE by Sika
 - .5 POZZOLITH 100 XR by BASF (Master Builders)
 - .2 High Range Water Reducing Admixture (Super P)
Acceptable Types:
 - .1 RHEOBUILD 1000 by BASF (Master Builders)
 - .2 EUCON 37 by Euclid
 - .3 WRDA 20 by Grace
 - .4 SIKAMENT 686 by Sika
 - .5 CATEXOL 1000 SP-M by Axim
 - .3 Mid-Range Water Reducing Additive where approved for use:
Acceptable Types:
 - .1 POLYHEED (non-chloride) by BASF (Master Builders)
 - .2 EUCON MR by Euclid
 - .3 DARACEM 55 by Grace
 - .4 CATEXAL 2000 Ni by Axim
 - .5 SIKAMENT 686 by Sika
 - .4 Air-Entraining Agent:
Acceptable Types:
 - .1 AIREXTRA by Euclid
 - .2 DARAX AEA.ED by Grace
 - .3 SIKA AIR SIKA
 - .4 CATEXOL AE 260 by Axim
 - .5 MICRO AIR by BASF (Master Builders)
- .7 Calcium chloride or chloride based admixtures shall not be used.

- .8 Salt or other chemicals shall not be added to reduce the freezing point of concrete.
- .9 All admixtures shall be used in strict accordance with the manufacturers' instructions.
- .10 Typical Concrete Mixes: see Schedule on drawings.
- .2 CONSTRUCTION GROUTS: Non-shrink grout unless otherwise noted shall be a premixed non-metallic, non-shrink grout.
Acceptable Types:
 - .1 EUCO NS DRY PACK GROUT by Euclid.
 - .2 M BED STANDARD by Sika
 - .3 SET GROUT by BASF (Master Builders)
 - .4 CG-86 by Meadows
 - .5 CPD NON SHRINK GROUT by CPD
- .3 CURING, SEALING AND/OR CURING/SEALING COMPOUND where approved for use shall conform to ASTM Standard C309.
 - .1 Acceptable Types:
 - .1 KURE-N-SEAL by BASF (Master Builders)
 - .2 FLORTEC 22 by Sika
 - .3 SUPER DIAMOND CLEAR by Euclid
 - .4 CS-309.30 by Meadows
 - .5 ACRYLIC CURE & SEAL 30% by CPD
 - .2 Compounds must be compatible with applied finishes.
- .4 ADHESIVE CHEMICAL ANCHORS (if required for bonding anchors and dowels into predrilled holes in concrete).
Approved Types:
 - .1 HILTI
 - .2 UCAN
 - .3 POWERS (RAWL)
 - .4 CPD
 - .5 EUCLID
- .5 DOVETAIL ANCHOR SLOTS (If required): Provide minimum 0.6 mm thick galvanized steel with insulation filled slots.
Acceptable Types as supplied by:
 - .1 Acrow-Richmond
 - .2 Debro
- .6 SURFACE HARDENER: Unless otherwise noted shall be a non-metallic dry shake hardener.
 - .1 Acceptable Types:
 - .1 MAXIMENT by BASF (Master Builders)
 - .2 SUFLEX TR by Euclid
 - .3 DIAMAG 7 by Sika.
 - .4 CPD FLOOR HARDENER PREMIX by CPD
 - .2 Colour to be plain or natural.
 - .3 Coloured Surface Hardener Acceptable Types
 - .1 SURFLEX FRENCH GREY by Euclid.
 - .2 COLORPLETE FRENCH GREY by Sika.
- .7 BONDING AGENT:

- .1 ALBITOL CONCENTRATE by Sika
- .2 INTRALOK by Meadows
- .3 SBR LATEX by Euclid
- .4 CPD CONCENTRATED LATEX ADHESIVE by CPD
- .8 PRE-MOULDED JOINT FILLERS: Provide bituminous impregnated fibreboard conforming to ASTM D1751.
Acceptable Types:
 - .1 SEALTIGHT FIBRE EXPANSION JOINT FILLER by Meadows
 - .2 CPD ASPHALT FIBRE EXPANSION JOINT FILLER by CPD
- .9 JOINT FILLER FOR "SAW-CUT" CONTROL JOINTS: Two component self-leveling sealant; min. Shore A. Durometer hardness of 80 at 20°C.
Acceptable Types:
 - .1 EUCOLASTIC by Euclid
 - .2 SIKAFLEX by Sika
 - .3 SONOPLASTIC by BASF (Master Builders)
- .10 POLYETHYLENE MOISTURE BARRIER FOR SLAB-ON-GRADE
 - .1 Provide a moisture barrier cover over the prepared base material below all slabs-on-grade. Use only material which is resistant to decay when tested in accordance with ASTM E 154-99 (2005) as follows:
 - .1 Polyethylene Sheet complying with CAN/CGSB 51.34-M86 (AMEND) not less than 0.25 mm (10 mils) thick. Lap joints 150 mm (6") minimum and tape.
 - .11 Other materials or products which are not listed herein shall comply with the latest CSA, ASTM, C.G.S.B. OR A.C.I. Standards appropriate to those materials. Refer to SUBMITTALS article in PART 1 of this section.

Part 3 Execution

3.1 WORK BY THIS SECTION AS SUPPLIED BY OTHERS

- .1 Install anchors and other items to be cast into the concrete as supplied by others.

3.2 FORMWORK

- .1 In accordance with Section 03 10 00.

3.3 REINFORCING FABRICATION AND PLACEMENT

- .1 In accordance with Section 03 20 00.

3.4 CONCRETE

- .1 Mixing, Transportation and placement to conform to CSA A23.1.
- .2 Maximum time between adding mix water and complete discharge of concrete into forms shall be 120 minutes. Exemptions to this time frame shall only be permitted with approval by the Structural Consultant when previously approved chemical additives are used.

3.5 COLD WEATHER CONDITIONS

- .1 When the air temperature is at or below 5° C or when there is a probability of its falling to that limit within 24 hours of placing (as forecast by the nearest weather office), conform to the requirements of CSA Standard A23.1 including, but not limited to the following:

- .1 Job Preparation.
- .2 Concrete Temperature.
- .3 Concrete Placing.
- .4 Protection Requirements & Methods
 - .1 Heated Enclosures.
 - .2 Protective Covers and Insulation.
- .5 Cooling after protection.
- .6 Cold-Weather Curing.
- .2 All materials and equipment needed for adequate protection and curing shall be on hand and ready for use before concrete placement has started.

3.6 HOT WEATHER PROTECTION REQUIREMENTS

- .1 Conform with the requirements of CSA Standard A23.1.

3.7 FINISHING TREATMENT OF SLAB SURFACES (SCREEDING & TROWELLING)

- .1 Screeding, Bull Floating, Darbying, Trowelling.
 - .1 Conform with the requirements of article 7.5 of CSA Standard A23.1 and as modified hereinafter.
 - .2 Bring tops of floors to even level or sloping surfaces as shown on the drawings.
 - .3 Slabs shall be finished only when bleed water on the slab surface has evaporated.
 - .4 Machine trowel all floor slabs, except as required by the drawings and/or specifications to Class A Conventional (Smooth) classification.
 - .5 Surfaces of exterior exposed steps and platforms shall be finished with a wood float and given a "fine broom" finish to the Consultant's satisfaction. (Class A Conventional (Smooth) classification). Refer also to Architect's "Finish Schedule".
 - .6 Unless otherwise shown or specified, roof slabs shall be finished for waterproofing with a Steel Trowel Finish. (Class A Conventional (Smooth) Classification).
 - .7 Floors to receive separate finishes shall be screeded to proper elevation, and wood float finished. (Class A Conventional (Smooth) Classification).
 - .8 Class A Conventional (Smooth) Classification shall be as defined in CSA Standard A23.1-04 Table 22 and shall be determined by the Straight Edge Method as defined in article 7.5.1.2 or by F-number method as defined in Article 7.5.1.3 unless otherwise directed.
 - .9 Finished surfaces not conforming to the specified tolerances shall be deemed as **Defective Concrete**. See later in this section.
- .2 **Slab-On-Grade**
 - .1 **READY MIX CONCRETE**
 - .1 Refer to drawings and also to **Materials** clause in this Section.
 - .2 Superplasticizer
 - .1 Where shown on the drawings and specifications as slabs to have superplasticizer added to the mix, the approved superplasticizing agent shall be added at the site to increase the slump. **NO WATER IS TO BE ADDED AT SITE.**
 - .2 As an alternative, the specified Mid-Range Water Reducing additive, added at the batching plant, may be approved for use. Subject to the appropriate mix design being submitted for review and approval issued by the Consultant.

- .3 Quantities and procedure for admixtures shall be determined and supervised with the assistance of the manufacturer's technical staff.
- .2 Execution
 - .1 Refer to Field Quality Control article later in this section.
 - .2 Obtain Soil Consultant's approval of the granular fill before placing the concrete slabs-on-grade.
 - .3 Provide screeds set to an engineer's level for leveling the surface of floor slabs-on-grade.
 - .4 Provide keys or dowels at construction joints as detailed on the drawings.
 - .5 Control Joints
 - .1 Where shown on plans or on Typical Details, provide saw-cut control joints as indicated.
 - .2 Control joints in slabs-on-grade shall be cut using power driven abrasive or diamond tipped blades.
 - .3 Cutting shall begin as soon as the concrete surface has hardened sufficiently to resist raveling as the cut is made and before shrinkage cracks form in concrete. Generally, saw-cutting of slabs-on-grade shall be done within the first 24 hours after the slabs are placed. Alternatively, use the Soff-Cut method immediately after finishing the slab.
 - .4 The depth of control joints shall be 1/3 of the thickness of the slab, with a minimum of 40 mm (1-1/2") unless otherwise noted.
 - .5 Clear saw-cuts of all debris and ensure sides are clean and dry before proceeding.
 - .6 Mix saw-cut joint filler according to manufacturer's instructions.
 - .7 Pour filler into joints, flush with adjacent surfaces.
- .3 Surface Hardened Finishes
 - .1 For slabs designated to be surface hardened, apply the specified surface hardener in strict accordance with the manufacturer's instructions at a rate of 5.0 kg/m² (1.00 lb/ft²).

3.8 FINISHING OF FORMED SURFACES

- .1 Conform to the requirements of CSA A23.1-04 article 7.7.3.
- .2 Refer to Architectural Finish Schedules and Drawings.

3.9 SEALING AND CURING

- .1 Apply specified compounds in strict accordance with manufacturer's directions.
- .2 All floor slabs and all EXPOSED concrete surfaces, such as walls, beams, columns, etc., are to receive a minimum of one coat of curing and sealing compound unless not compatible with architectural finishes.
- .3 CURING
 - .1 Conform to the requirements of CSA A23.1-04 including but not limited to the following:
 - .1 Basic curing period.
 - .2 Additional curing for durability.
 - .3 Additional curing for structural safety.
 - .4 Methods for curing.
 - .5 Cold weather curing.
 - .6 Hot weather curing.
 - .7 Curing for Accelerated Strength Development.

- .4 Refer also to **Cold Weather Conditions** and **Hot Weather Protection Requirements**, elsewhere in this section.

3.10 PROTECTION OF SLAB SURFACES

- .1 Fully protect exposed concrete finishes from damage and staining.
- .2 Protect all exposed surfaces from dropping plaster, welding debris, paint, dirt or other marring agents, by heavy building paper, tarpaulins or other appropriate means. The surface must be perfectly dirt-free before this protection is placed.
- .3 Do not allow any pipe threading or similar machines using oil or other permanently staining liquid on any concrete floor unless set up on large oil-tight and properly constructed metal pans. Plywood sheets or other absorbent materials will not be permitted as a substitute for pans.

3.11 MISCELLANEOUS ITEMS

- .1 This section to provide and place concrete, formwork and reinforcing and/or grout fill for all concrete work shown on or implied by the drawings and specifications.
- .2 DRY-PACK GROUT: Provide and install specified non-shrink grout as required, in accordance with manufacturer's directions.
- .3 REINFORCED MASONRY LINTELS: Where required, provide reinforcing and place concrete in accordance with the Typical Notes and Details on the drawings.
- .4 VERTICAL MASONRY WALL REINFORCING BARS: Provide, for installation by the Mason, bars as required by the drawings and typical details.
- .5 MASONRY GROUT: Co-ordinate with the Mason for supply and installation of grout. Grout as specified on the drawings.
- .6 BONDING AGENT: Provide and install specified agent as required in accordance with manufacturer's directions.
- .7 Concrete Fill for Precast Slabs: (Refer Also To Section 03 41 13/03412)
Co-ordinate placement of forms, reinforcing and concrete as required by the precast hollow core slab supplier.
- .8 Drilled and Set Anchors and Dowels:
Provide and install the specified products and materials as required in accordance with manufacturer's directions.

.9 CONCRETE TOPPING

- .1 Prior to commencing work, arrange for a meeting of all parties associated with the placement of the topping. Presided by the Architect, the meeting shall include, but not be limited to; representatives of the Topping Slab Contractor, the General Contractor, the Topping Concrete Supplier, the Bonding Agent Supplier and the Structural Consultant.
- .2 The meeting shall review Specifications for work included under this Section and determine a complete understanding of requirements and responsibilities relative to; work included, storage of handling of materials, materials to be used, installation of materials, sequence and quality control, project staffing, restrictions on areas of pours, and other matters affecting the construction so as to permit compliance with the intent of this Section.
- .3 Materials:
- .1 Concrete: Refer to concrete mix schedule in Item 2.1.1 and on the drawings. (Maximum coarse aggregate to be 10 mm).
- .2 Bonding Agent: See elsewhere in this section.

- .3 Shrinkage Reducing Additive: Use Eucon SRA or an approved equivalent at the rate of 2% by weight of cementitious materials.
- .4 Execution:
 - .1 Conform to CAN/CSA-A23.1 Article 7.6 and as herein modified.
 - .2 Preparation of Surfaces: All laitance, dirt, dust, debris, grease or other substances, that would interfere with the bond between the Precast Slabs and the topping, shall be removed using one or more of the following methods:
 - .1 Wet or dry grit sand blasting.
 - .2 High-Pressure water blasting.
 - .3 Mechanical removal by scarifiers, scrabblers, shot blasting or grinding wheels.
 - .4 Power brooming and vacuuming.
 - .5 Acid etching (after acid etching, the surface shall be thoroughly rinsed prior to the application of the bonding agent. Provide and use goggles and protective clothing during acid etching and rinsing procedures).
 - .3 Contact the Consultant and the representative of the approved bonding agent supplier for a review and approval of the slab surface preparation prior to application of the bonding agent.
 - .4 The bonding agent shall be applied immediately prior to placing topping in strict accordance with the manufacturer's directions.
- .10 Finish and cure topping in accordance with procedures specified elsewhere in this section, (CURING SHALL BE BY A "WET" METHOD ONLY).

3.12 DEFECTIVE CONCRETE

- .1 Concrete not meeting the requirements of the specifications and drawings shall be considered defective concrete.
- .2 Defective concrete and concrete not conforming to lines, details, quality and grade specified or as shown on the Drawings shall be modified or replaced at no extra cost to the Owner, and to the satisfaction of the Architect.
- .3 Finished lines, dimensions and surfaces shall be correct and true within tolerances specified.
- .4 Non-exposed Surfaces: Honeycombing shall be cut out and filled and any fins which interfere with strapping, etc., shall be cut back. Holes left by form separators shall be filled.
- .5 Crack Repair: After concrete has cured, examine concrete floor surfaces and repair all cracks. Route out cracks with mechanical router to a minimum depth of 13 mm. Then clean and fill cracks in same manner as control joints.
- .6 Use approved curing/sealing compound in strict accordance with manufacturer's recommendations.

3.13 FIELD QUALITY CONTROL

- .1 General
 - .1 Routine testing of materials and of proposed mix designs shall be carried out by an independent Inspection and Testing company, appointed by the Owner and paid for out of Cash Allowances.
 - .2 Refer to Source Quality Assurance included in this section.
 - .3 If requested, provide a copy of the Concrete Suppliers Certificate confirming that the specified fibre reinforcement at the specified dosage was added to all required concrete delivered to the job site.

.2 Concrete Strength Tests

- .1 Obtain representative samples of fresh concrete from each one hundred (100) cubic metres or fraction thereof and of each mix design of concrete placed in any one day.
- .2 Perform a standard slump test to conform with CSA Standard A23.2 for each set of specimens.
- .3 Three specimens moulded in 100 mm diameter cylindrical steel moulds, stored and laboratory cured to conform with CSA Standard A23.2 shall comprise a strength test. One specimen shall be compression tested at seven (7) days and the remaining two at twenty-eight (28) days after sampling.
- .4 Reinforcing Identification:
 - .1 Identify and correlate reinforcing steel with mill test reports for compliance with the requirements of CSA Standard G30-18 M.
 - .2 Specimens of unidentified reinforcing steel or reinforcing steel from non-Canadian mills shall, when requested shall be tested for compliance with the specification. The cost of this inspection and testing shall be paid for by the Contractor.
- .5 Reports:
 - .1 Inspection company reports of concrete mix design review, of tests of materials, compression, slump and air tests of concrete cylinders shall be distributed to the Owner, the Architect, the Structural Consultant, the Contractor, the Building Department as required and any other parties as directed. Reports are to be issued promptly, if possible within 48 hours of the test being carried out.
 - .2 Concrete cylinder test reports shall contain the following information: whether specimens laboratory or field cured, date cast, date received in lab, date tested, unit weight of concrete, specified 28 day strength, correlate the exact location of each pour with the test cylinders in questions, concrete supplier, person who cast the cylinder, time mixer charged, time cylinder cast, measured slump, temperature of concrete and air, whether or not water was added at the job, and by whose authority, nominal aggregate size, type of admixture, mix designation, project identification and with sequential numerical identification.
 - .3 Should a crushed cylinder show a test result below that which is anticipated, the inspection company shall immediately advise the Consultant by telephone of such occurrence in order to expedite curing or remedial measures, which may be required.
 - .4 In the event that test cylinders indicate a strength of concrete below that which is specified, the test report shall state the probable reason for the lack of strength, when known, i.e. poor quality concrete in place, cylinders improperly taken, stored capped, frozen, improperly handled or faulty testing procedure. A correct analysis of the cause of poor tests will save unnecessary inconvenience when the report is submitted to all parties involved.
 - .5 The inspection company shall supply written reports of tests of materials and reinforcing steel, giving all pertinent information required by the above mentioned specifications and standards.
- .6 Responsibility of The Inspection Company:
 - .1 The representative of the inspection company shall not be required to supervise the work or to instruct the Contractor. The inspector's function shall be that of sampling and testing materials, observing procedures and reporting of same to the Consultant. If any material is at variance with the Specification the inspector shall immediately advise the superintendent and then inform the Consultant by telephone.

- .2 The inspection company will advise and co-operate with the Contractor regarding adequate protection of cylinders. The inspection company will supply copies, as directed, of a drawing and specification for an insulated storage box for cold weather curing of cylinders.

3.14 CLEAN-UP

- .1 Do not unload excess concrete from trucks during clean-up operations and do not deposit in undesignated or unauthorized locations within the property boundaries whether concealed or not.
- .2 Upon satisfactory completion of the work, clear away from the building and site, excess or waste materials and debris and leave the premises in a condition acceptable to the Consultant, within the contract time.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This Section specifies work which shall be performed by:
Section 04 22 00: Concrete Unit Masonry

1.2 QUALITY ASSURANCE

- .1 Requirements of Regulatory Agencies:
Modify requirements of the Specifications only as jurisdictional authorities may direct.

1.3 REFERENCES

- .1 ASTM C270-89: Standard Specification for Mortar for Unit Masonry.
- .2 CSA A179-04 (R2009): Mortar and Grout for Unit Masonry.
- .3 CSA A371-04 (R2009): Masonry Construction for Buildings.
- .4 CSA S304.1-04: Masonry Design for Buildings (Limit States Design).

1.4 SUBMITTALS

- .1 Affidavits:
Submit to Consultants affidavits of an inspection company that mortar and grout materials conform to requirements of the Specifications, if requested.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Handle and store cementitious materials protected against moisture.
- .2 Handle and store all mortar materials to prevent contamination by foreign materials, and damage by freezing or excessively high temperatures.

1.6 SITE CONDITIONS

- .1 Environmental Requirements:
When air temperature is less than 5° C, mix mortar as specified in CSA A371.

Part 2 Products

2.1 MATERIALS

- .1 Use materials only as specified in CSA Standard A179 referenced from CSA A371 and CSA S304.1 as applicable. Ensure that water and aggregate used in mortar, other than in walls buried in earth, will cause no efflorescence.
- .2 Incorporate only materials from same source in mortar exposed to view.
- .3 Water: Verify that water used contains no salts to cause efflorescence.
- .4 Portland Cement: to CAN/CSA-A3001, Type GU; grey colour, unless indicated

elsewhere.

- .5 Masonry Cement: to CAN/CSA-A3002, Type S.
- .6 Hydrated Lime: to ASTM C207, Type S-Special.
- .7 Mortar Aggregate: natural sand, to CSA A179, standard masonry type; clean, dry, protected against dampness, freezing and foreign matter.
- .8 Grout Coarse Aggregate: to CSA A179, maximum 10 mm size, 27 percent by volume.
- .9 Grout Fine Aggregate: to CSA A179, clean well graded sharp sand; 54 percent by volume.
- .10 Water: potable, clean and free of deleterious amounts of acids, alkalies or organic materials.

2.2 ADMIXTURES

- .1 Plasticizer: water reducing type, reducing porosity and absorption to increase bond strength.
- .2 Water Repellent: mixture of calcium carbonate and hydrous magnesium aluminum silicate powders.

2.3 MIXES

- .1 Mortar for Concrete Masonry Units: to CSA A179, Type S using the Proportion Specification Method c/w water repellent addition.
- .2 Mortar for Calcium Silicate Masonry Units: to CSA 179, Proportion Specification Method, consisting of 1-1-6 mix of Portland cement, hydrated lime and aggregate, c/w integral colour.
- .3 General: Ensure that water and aggregates used are all from same source and will meet required strengths. Batch mortar and grouts are acceptable provided source is approved prior to commencement of work.
- .4 Mix mortars as specified in CSA A179. Use only dry aggregate. Test for bulking to determine accurate proportioning.
- .5 Do not incorporate calcium chloride in mortar mix. In cold weather non-chloride accelerating admixtures may be utilised such as Accelguard 80 by Euclid Chemical Canada Inc., or equivalent meeting specified requirements of ASTM Specification C270.
- .6 Dirt resistant additives: aluminum tristearate, calcium stearate or ammonium stearate.
- .7 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
- .8 Colouring Additive: A mineral-oxide pigment, harmless to mortar set and strength, shall

be provided. Colour shall be one (1) colour per masonry unit type, as selected by the Consultant.

2.4 GROUT

- .1 Grout in Reinforced Masonry Cores, Bond Beams and Lintels:
 - : 20 MPa strength at 28 days
 - : 175 – 200 mm slump, mixed to CSA – A179, fine grout.

Part 3 Execution

3.1 MIXING

- .1 Mix mortar to consistency required for working.
- .2 Mix grout to semi-fluid consistency.
- .3 Incorporate colour and admixtures into mixes in accordance with manufacturer's instructions. Use clean mixer for coloured mortar.
- .4 Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour nor more than 2 hour then remix with sufficient water to produce mortar of proper consistency for pointing.

3.2 INSTALLATION

- .1 Grout fully all pockets in concrete foundation walls where structural components installed, under bearing plates at piers and elsewhere as noted on drawings.
- .2 Grout solid all reinforcing installed in concrete block walls.
- .3 Protect all mortar and grout installed from freezing or from excessive heat which will prevent bonding or decrease the required compressive strength.

3.3 PREPARATION

- .1 Protection:
Provide waterproof protection over construction surfaces at mixing areas to prevent deposit on them of mortar and mortar materials.

3.4 MORTAR TYPES

- .1 For laying concrete and brick unit masonry, use mortar type:
 - “S” in masonry walls in contact with earth.
 - “S” in masonry walls for all structural walls.
 - “N” in non-structural applications.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 This section to be read in conjunction with Section 04 21 13 for Execution Requirements.
- .2 Work performed by other Sections and which is related to this Section is specified in:
Section 03 10 00: Concrete Formwork: for dovetail anchor slots in concrete, concrete lintels.
- .3 Supply of work which shall be installed by this Section is specified in:

Section 05 12 23: Structural Steel for Buildings: to furnish bearing plates, steel lintels

Section 05 31 00: Steel Decking: to furnish weld plates. Miscellaneous inserts and attachment devices to support the installations of other Sections, frames and miscellaneous metal work
- .4 This Section shall include performance of work which is specified in:
Section 04 05 12: Mortar and Grout

1.2 SYSTEM DESCRIPTION

- .1 Tolerances:
Lay masonry to tolerances specified in CSA A371 and:
 - .1 Level within 6 mm in any bay or 6 m maximum distance, and 13 mm in 12 m or more.
 - .2 Opening sizes within 6 mm of designated dimension.
 - .3 With joints to dimensions indicated, but in no case greater than 13 mm.

1.3 QUALITY ASSURANCE

- .1 Requirements of Regulatory Agencies:
 - .1 Construct masonry as required by jurisdictional authorities.
 - .2 Before commencing masonry work, verify that site conditions will allow construction of masonry within required limitations for wall heights, wall thickness, openings, bond, anchorage, lateral support, and compressive strengths of masonry units and mortars.
 - .3 Construct masonry fire rated assemblies, which are validated by UDI, ULC, or NRC fire tests, in complete accordance with the test design specification. Fire rated assemblies constructed otherwise will be acceptable only on presentation of authorization by jurisdictional authorities.

1.4 REFERENCES

- .1 CAN/CSA-A165 SERIES-04 (R2009): Concrete Block Masonry Units
CAN/CSA-A370-04 (R2009): Connectors for Masonry
CAN/CSA-A371-04 (R2009): Masonry Construction for Buildings
CSA S304.1-04: Design of Masonry Structures (Limit States Design)

- .2 Reference standards quoted in Contract Documents refer to: ASTM A924/A924M-95, Specification for General Requirements for Steel Sheet Metallic Coated by the Hot-Dip Process.
CAN/CGSB-37.2-M88, Emulsified, Asphalt, Mineral Colloid Type, Unfilled, for Dampproofing and Waterproofing, and for Roof Coatings.

1.5 SUBMITTALS

- .1 Samples:
Submit samples of unit masonry for review.
- .2 Affidavits:
Submit affidavits by an approved independent testing laboratory stating that materials supplied are in accordance with the Specifications, if requested.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Isolate masonry units from contact with ground and other materials until laid, to prevent staining.
- .2 Ensure that moisture content of concrete masonry units is maintained within specified limits from time of shipment from plant, to time of installation.
- .3 Cover masonry unit stockpiles while stored to prevent exposure to weather. Keep water out of all holes and reglets in units during freezing weather.
- .4 Handle and store masonry units to prevent soiling and chipping.
- .5 Deliver products to the place on site as directed, and to meet installation schedule.

Part 2 Products

2.1 MATERIALS

- .1 Meet specified requirements of CSA A370 and CSA A371 for materials unless specified otherwise.
- .2 Asphalt Emulsion:
To meet specified requirements of CAN/CGSB-37.2.
- .3 Joint Packing at Walls:
.1 Fire Separation Packing: at tops of fire rated walls and partitions: Thermafiber 200 degree glass fibre insulation by Canadian Gypsum Company, Limited, or Firebarrier fibre firestopping by AD Distributors Ltd.
.2 Expansion Joint Packing: Glass fibre insulation, rigid board, density of 48 kg/cu.m.; or Rodofam by Sternson Limited, or closed cell neoprene DA2015 by Dur-O-Wal Ltd.
- .4 Joint Reinforcement:

- .1 Provide joint reinforcement in width to ensure that longitudinal rods at faces of wall have minimum mortar cover of 16 mm and that they are centred on shells of hollow core units.
 - .2 Horizontal joint reinforcing shall include longitudinal and cross rods, welded steel rod, Truss type extra heavy duty Blok-Lok BL-30 or 120 Truss-Mesh by Hohmann & Barnard Inc. Galvanizing as per Section 2.1.9.
 - .3 For Exterior single-wythe block wall horizontal joint reinforcement shall include cross ties hot dipped galvanized Truss type (Extra Heavy Duty). Spacing to be minimum every 3rd course, U.N.O.
 - .4 For Interior Single Wythe Load-bearing Walls shall include 4.8mm cross ties mill galvanized Truss type (Extra Heavy Duty). Spacing to be as per drawings.
 - .5 For Interior Single Wythe Non-Load-bearing Walls provide 3.76 mm dia. longitudinal and cross rods, welded steel rod, galvanized, ladder design (Standard). Spacing shall be every second block course.
 - .6 All joint reinforcing to be galvanized as per 2.19 of this Section.
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- .5 Wall Tie (Structural Steel Back-up):
Adjustable, dual component design; suitable for welded attachment; e.g. Blok Lok Flex o-lok ties BLT-9, hot dipped galvanized c/w V-Tie, 4.8 mm size; hot dipped galvanized, suitable length to provide placement of tie legs at central line of veneer.
 - .6 Strap Anchors: 6.35 mm thick steel plate, hot dipped galvanized; U-shaped and Z-shaped to suit application; e.g. BLT 11Z BY Blok-Lok.
 - .7 Galvanizing:
 - .1 For Joint Reinforcement, Bond Ties, Anchors, and Accessories in Exterior Walls: To meet specified requirements of ASTM Specification A153 , Class B, hot dip.
 - .2 For Joint Reinforcement, Anchors, and Accessories in Interior Walls: above grade Manufacturer's standard mill galvanising.
 - .3 For Joint Reinforcement, Bond Ties, Anchors, and Accessories in interior walls below grade: To meet specified requirements of ASTM Specification A153, Class B, Hot Dip Gavanized.
 - .8 Reinforcing Steel:
For reinforced block lintels: to meet specified requirement of CSA Standard G30.18.
 - .9 Dovetail Anchor:
25 mm x 2mm formed sheet steel dovetail brick anchor galvanised, with end bent to form hook, to suit dovetail anchor slot specified for installation by formwork constructor.
 - .10 Weep Holes:
Plastic tube, 10mm OD x 100 mm long, or 10 mm x 38 mm x 90 mm long rectangular; or DA1069 Cell Vent by Dur-O-Wall Limited.
 - .11 Concrete Masonry Units:
 - .1 To meet specified requirements of CAN3-A165 Series – 04.
 - .2 Include all special shapes, such as end, bond, sash groove and lintel units, required for complete masonry installation indicated on Drawings. Use bullnose corner block at all door jambs, vertical external corners and where otherwise indicated on Drawings.
 - .3 Modular size units.

- .4 Provide 100% solid units where required by jurisdictional authorities.
- .5 Moisture controlled ("M") units acceptable to Consultant.
- .6
 - .1 Normal Weight Units: For use in walls below ground floor elevation:
Hollow Units: H/15/A/O.
75% Solid Units: S/15/A/M.
Solid Units: Sc/15/A/O:
 - .2 Light Weight Units: For use in walls above ground floor elevation:
Hollow Units: H/15/C/M
75% Solid Units S/15/C/M
Solid Units: Sc/15/C/M
- .7 Supply lintel blocks for fabrication of lintels by Section 03 30 00.

Part 3 Execution

3.1 PROTECTION

- .1 Cover exposed tops of masonry walls when laying is not in progress and until protected by completed construction. Cover with non-staining waterproof material to overhang top edges of wall by 600 mm minimum and secured to prevent dislodgement.
- .2 Protect exposed external corners of masonry with materials which will not damage or soil finished surfaces.
- .3 Protect all finished surfaces from mortar droppings.
- .4 Take particular care to protect faces of concrete unit masonry from mortar droppings and smears as laying proceeds.
- .5 Turn over or cover scaffolds and mortar boards at completion of each day's work to avoid staining of finished surfaces by splashed rain.

3.2 LAYING MASONRY

- .1 Lay masonry to meet specified requirements of CSA A370 and CSA A371, unless otherwise specified.
- .2 Lay masonry to course as shown on Drawings and to minimise cutting of units.
- .3 Coordinate coursing of dissimilar sized units only as approved by Consultant.
- .4 Use only dry and unfrozen materials.
- .5 Remove sections of masonry which have been frozen before laying of masonry continues.
- .6 Lay masonry in running bond with vertical joints of alternate courses in line.
- .7 Lay concrete unit masonry with thick ends of webs on top.
- .8 Joints:

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- .1 Make joints of uniform thickness with vertical joints from course to course maintained plumb.
 - .2 Provide full bed and head joints for shear walls.
 - .3 When laying is resumed on walls previously laid with mortar either partially or totally set, remove loose units and mortar from top and adjoining surfaces. Remove mortar completely when masonry is removed and replaced with new.
 - .4 Form tooled concave joints wherever exposed to view, whether behind cabinets, fitments, and wall accessories, or not. When mortar has become "thumb-print" hard, tool joints and clean off burrs with trowel or burlap. Use a tool with a bearing surface of 550 mm minimum length on horizontal joints to avoid uneven depressions.
 - .5 Rake out joints to masonry exposed to view to provide for caulking
 - : at junction of interior and exterior walls with columns.
 - : at junction of interior with exterior walls.
 - : intersections of walls and partitions where joint reinforcement is installed.
 - : at caulked joints where indicated typically.
 - .9 Stop off horizontal runs of walls by racking back a half unit in each horizontal course: do not touch.
 - .10 Do not wet concrete units.
 - .11 Distribute masonry units of varying colours and textures to avoid spotty appearance over wall surfaces exposed to view. Do not use units which contrast too greatly with overall range.
 - .12 Use chipped and blemished units only where concealed. Do not use defective or broken units. Do not lay concrete units with markedly smooth face that will appear slick where exposed to view, whether painted or not.
 - .13 Maintain bracing of walls and piers continuously during construction until structure provides support.
 - .14 Lintels:
 - .1 Build in Lintels supplied by Section 03 30 00 and 05 50 00. Set and level lintels on a bed of mortar.
 - .2 Build in precast concrete block lintels fabricated under work of Section 03 30 00.
 - .3 Provide means to prevent damage due to differential movement resulting from expansion or contraction and from deflection of lintel.
 - .4 Bridge openings not exceeding 450 mm in width with 6 mm mild steel plate lintels bearing 100 mm on each side of opening. Width of plate shall be wall thickness less 25 mm. Joint at lintel to be dry packed. Provide weep joints in mortar at 800 mm above lintels.
 - .15 Built-In Items:
 - .1 Verify that built-in items specified in other Sections are available for building in before laying of masonry commences. Co-operate in the setting and aligning of built-in items and provide for later installation of items which are installed by other Sections, to avoid cutting, fitting, and patching.
 - .2 Build masonry around pressed steel door frames supplied and set as specified in other sections. Ensure that anchors are well secured and that frames are true and plumb. Completely fill frames with mortar as each course is laid. Maintain

protective frame covering and ensure that no mortar is left on frame faces.

- .16 Cope, cut and split concrete masonry units with power-driven abrasive discs. Cut units wherever electrical outlets, grilles, and pipes occur. Allow 3.2 mm clearance around items which are incorporated in walls.
- .17 Do not expose open cells, cores or frogs of masonry units to view.
- .18 Coat faces of concrete covered with less than 200 mm of masonry veneer at exterior walls and parapets with prime coat and one dampproof coat of asphalt emulsion.
- .19 Locate bearings and piers as indicated on Drawings; provide solid masonry units at bearings.
- .20 Extend walls and partitions at top to deck, slab or structural members, as applicable, except where otherwise noted on Drawings. Incorporate both lateral support and deflection space at termination of walls as required by this Section. Where walls terminate at bottoms of steel joists, close space at joists to deck or slab with metal lath and plaster on one side of joist or with 16 mm thick fire rated, Type X. gypsum board secured to each side of joists, if infilling with masonry is impractical; and to meet specified requirements of Section 09 21 16. Ensure that construction at joists completely closes and seals space.
- .21 Masonry Solid Wall Anchorage:
 - .1 Use dovetail anchors for slots at concrete construction.
 - .2 Keep masonry a minimum of 12.7 mm clear of faces of structural members or as indicated on Drawings, and fill space with glass fibre board, leaving space for caulking at joints exposed to view or the weather.
 - .3 Bed anchors solidly in mortar joints.
 - .4 Fill cores of hollow units solidly with mortar where anchors are embedded.
 - .5 Co-ordinate with Section 031 0 00 to ensure that dovetail anchor slots in concrete are located correctly. Assist in their installation if requested.
 - .6 Coordinate with Section 11 52 00 locations of all wall mounted Gymnasium equipment and fill blocks solid above, below, and within mounting locations.
- .22 Joint Reinforcement:
 - 1. Install joint reinforcement in single wythe masonry walls and partitions. Place reinforcement continuously in horizontal joints spaced as noted on structural drawings, beginning with course 400 mm above bearing, unless otherwise specified or indicated.
 - 2. Place reinforcement additionally in courses 200 mm, 400 mm and 800 mm above and below openings, and extending 600 mm beyond jambs of openings.
 - 3. Where changes in wall thickness occur, extend reinforcement of lesser width 450 mm beyond changes of width.
 - 4. Lap reinforcement a minimum of 150 mm at splices.
 - 5. Do not run reinforcement through control joints.
 - 6. Wherever walls and partitions intersect one another, or each other, continue reinforcement through. Do not carry reinforcement through intersections where

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- lateral support anchors are installed or at intersections of walls and partitions with solid piers.
7. Bond cavity walls together with cavity-wall ties staggered in alternate course and spaced not to exceed 800 mm horizontally and 600 mm vertically. Provide additional ties spaced not more than 400 mm apart within 200 mm of openings and on each side of control and expansion joints, except where wythes are bonded together with masonry returns or otherwise.
 8. Install vertical reinforcing to size and spacing as shown on Drawings. Fill voids with minimum 10 MPa grout.
 9. Properly position vertical bar reinforcement in concrete masonry pilasters, columns, and walls and secure against displacement.
 10. Provide two 15M size reinforcing bars grouted vertically into masonry unit cores on both sides of masonry openings. One bar per cell.
 11. Solidly fill block cores containing vertical reinforcement or anchor bolts with grout.
 12. Lap splices 30-bar diameters minimum. Clear distance between vertical bars and masonry units shall be 15 mm.
 13. Provide 20M size reinforcing bars full height, each cell, complete with 25MPa concrete as shown on drawings.
- .23 Deflection Space:
- .1 Incorporate a deflection space between tops of non-load-bearing walls and partitions and structure to prevent transference of structural loads to masonry.
 - .2 Fill deflection space with glass fibre board compressed to 50% of original thickness to completely seal space.
 - .3 Co-ordinate laying of masonry with installation of lateral support specified in this Section and as provided by Section 05 50 00.
- .24 Penetrations of Masonry:
- .1 Fill voids of masonry to within 19 mm of structural members, pipes, ducts and conduit that penetrate masonry walls and partitions, unless otherwise indicated.
 - .2 Keep masonry units similarly clear of such penetrations.
 - .3 Finish mortar smooth at face of masonry.
 - .4 Pack remainder of annular void surrounding penetrating item with fire separation packing to within 12.7 mm of face of masonry to allow for sealant.
- .25 Shrinkage Control Joints:

- .1 Incorporate vertical shrinkage control joints in walls of which concrete masonry units are a part.
 - .2 Install control joints at junctions of walls and columns, at intersections of unit concrete masonry load-bearing walls, and wherever indicated on Drawings, and otherwise in wall with no openings, at a maximum spacing of 6000 mm o/c. Carry joints full height of walls.
 - .3 Ensure complete vertical separation through walls incorporating control joints. Make control joints 9.5 mm wide, rake back 19 mm at junctures with concrete, and leave joints free and clear for caulking, as specified in Section 07 92 10.
 - .4 Construct control joints of standard block and fill void between block with 20 MPa concrete grout to form a continuous key full height of joint by installation of continuous building paper between concrete key and block on one side of joint.
- .26 Expansion Joints:
- .1 Incorporate expansion joints in walls where indicated on Drawings.
 - .2 Maintain expansion joints free of mortar with temporary filler when laying masonry. Pack joints full height with glass fibre board compressed to 50% of original thickness.
 - .3 Leave clean space in joints for caulking as specified in Section 07 92 10.
- .27 Fire Separations:
- .1 Construct fire separation walls tightly to construction at perimeter, and without openings or voids.
 - .2 Do not reduce the thickness of masonry fire separations to less than the thickness indicated for the required fire separation rating.
 - .3 All load bearing and non-load bearing partitions shall carry to the underside of structure above.
 - .4 All openings in partitions, even above ceilings shall be patched to maintain sound and fire separation.
 - .5 In partitions and walls not required to be fire separations, fill space between partitions and structural elements with rock wool compressible filler to maintain complete sound separation.
 - .6 In fire separations, spaces to be firestopped in accordance with Section 07 84 00 – Firestopping.
 - .7 Use U.L.C. labeled mortar for all patching in fire separations.
- .28 Lateral Support Anchors:
- .1 Vertical:
 - .1 At intersecting and abutting load bearing walls, use prefabricated corners and tees to match horizontal reinforcing.
 - .2 At intersection of non-load bearing walls with load bearing or non-load bearing walls, use corrugated galvanized ties.
 - .3 At wood parapet and similar conditions, use model BL404 with BLT9 ties, all by BlokLok. Ensure ties extend a minimum of 50 mm into the brick or block outer wythe.
- .29 Bonding
- .1 Walls of two or more widths: bond using metal ties in accordance with

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- subsection 5.6 of CAN3-A371.
- .2 Submit procedure and obtain approval by Architect.
 - .3 In cavity walls, keep all cavity spaces free of mortar and debris by placing a wood strip on the ties. Retain strip on a wire line and pull up level and clean off droppings prior to placing next course of ties. Install mortar control device at 300 mm o.c. horizontally, in a staggered pattern so as to overlap each other on each side. Install in every 2nd course above foundation and shelf angles.
- .30 Thru-wall flashing and Thru-wall Building Paper at Control Joints
- .1 Install thru-wall flashing at ground floor elevation in all walls on foundations.
 - .2 Leave 2" (50 mm) of thru-wall flashing or building paper hanging, projecting off all lintels and all required locations. Architect will review prior to cutting.
 - .3 Cutting protruding flashing: This procedure is to ensure that thru-wall flashing is installed where intended.
- .31 Base Course Detail
- .1 Provide square base block in areas of porcelain tile installation for porcelain cove base and fitted corners. Contractor to grind upper 50mm of block corner to match upper courses of bullnose block walls Refer to Details
- .32 Cold Weather Protection
- .1 Refer to the Ontario Masonry Contractor's Association's provision and publications. Include for tarped heated enclosures, heated mortar mixing pans - no non-freeze additives such as calcium will be tolerated on this project.

3.3 ADJUSTMENT AND CLEANING

- .1 Patch damaged masonry in walls which have been rejected as unacceptable.
- .2 Point all holes in mortar joints except weepholes.
- .3 Point all voids in concrete unit masonry faces.
- .4 Cut out defective mortar joints to a minimum depth of 13 mm and repoint.
- .5 Clean concrete masonry units with dry brushes and as otherwise recommended by the supplier to remove mortar and stains.
- .6 Do not use wire brushes for cleaning.
- .7 Should specified cleaning methods be insufficient, proceed with other methods only with approval.
- .8 Protect adjacent materials, construction and finished surfaces from damage while cleaning.
- .9 Ensure that all efflorescence and mortar deposits are removed from surfaces to receive coating.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 09 91 22 – Painting

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-[02], Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-[02], Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-[02], Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-[97], Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-1.181-[92], Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-[98], General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-[M92(R1998)], Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16.1-[01], Limit States Design of Steel Structures.
 - .4 CSA W48-[01], Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-[1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .4 The Environmental Choice Program
 - .1 CCD-047a-[98], Paints, Surface Coatings.
 - .2 CCD-048-[98], Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Protection:
 - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

- .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

Part 2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 50 for tubes and Grade 44W for Plates and Flat Shapes.
- .2 Welding materials: to CSA W59.
- .3 Bolts and anchor bolts: to ASTM A307.
- .4 Stainless steel tubing: to ASTM A269, Type 302 or 304 alloy, Seamless welded with AISI No. 4 finish.
- .5 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 PRIMERS, COATINGS AND SHOP PAINTING

- .1 Interior Steel in Dry Areas: Quick drying oil alkyd conforming to CISC/CPMA 2.75.
- .2 Exterior Steel, Interior Steel in Unheated Areas, Steel Embedded in Concrete: Hot dip galvanized conforming to CSA G164, minimum Z275 coating. Galvanizing of structural steel components and loose lintels: refer to Section 5120.
- .3 Galvanized Coating Touch-Up: W.R. Meadows "Galvafroid" or Kerry Industries "Z.R.C." zinc rich coating or similar manufacturer containing minimum 90% zinc by weight.
- .4 Apply one shop coat(s) of primer or coating as indicated above and according to manufacturer's recommendations. Do not prime aluminum, stainless steel or those components to be galvanized or encased in concrete.
- .5 Use primer unadulterated, as provided by manufacturer. Paint on dry surfaces free from rust scale and grease. Do not paint when temperature is lower than 10 deg. Celsius and rising.
- .6 Clean surfaces to be field welded; do not paint.

2.3 FASTENINGS

- .1 Use nuts and bolts conforming to ASTM A307, A325, and A563 as applicable.
 - .1 For interior work, use cadmium-plated fastenings where other protection is not specified.
 - .2 For exterior work, use Type 300 or 400 stainless steel.

2.4 ANCHORS AND SHIMS

- .1 For exposed anchorage of aluminum, if applicable, use stainless steel and otherwise to match metal anchored. For non-exposed work, anchors and shims may be galvanized steel.

2.5 PIPE

- .1 To ASTM A53, extra strong steel pipe for bollards.

2.6 BITUMINOUS PAINT

- .1 Alkali-resisting to meet specified requirements of CAN/CGSB-1.108, Type 2. Use to insulate contact between dissimilar metals.

2.7 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- .5 Weld all connections where possible, and bolt where not possible unless indicated otherwise on drawings.
- .6 Weld all stainless steel by the Argon Arc Process. Grind smooth and polish joints, crease-free, and flush without seams.

2.8 LIST OF MISCELLANEOUS METAL FABRICATIONS

- .1 This Section includes, but is not limited to the following list as may be drawn or noted in the drawings or specified elsewhere. Note : Galvanize all exterior items and other items noted. Prime paint all interior items.
 - .1 Anchors, Bolts, Inserts, Sleeves for work in this Section.
 - .2 Hangers and Supports (for work in this Section).
 - .3 Lintels (if not by Structural Steel).
 - .4 other items identified on large format and AD drawings.

Part 3 Execution

3.1 GENERAL

- .1 Supply and install all miscellaneous metal work indicated on the Drawings and not indicated in work of other Sections in addition to items listed below.

3.2 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

- .8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding. Spray or brush apply a minimum of three (3) coats of zinc-rich paint to achieve a dry film thickness of 8 mils. Apply a finish coat of aluminum paint to provide a colour blend with

3.3 GALVANIZED STEEL

- .1 Galvanize steel members, fabrications, and assemblies after fabrication by the hot dip process in accordance with CSA G164, minimum Z275 coating.
- .2 Galvanize bolts, nuts and washers and iron and steel hardware components in accordance with CSA G164.
- .3 Safeguard products against steel embrittlement in conformance with ASTM A143.
- .4 Design features which may lead to difficulties during galvanizing shall be pointed out prior to dipping.
- .5 The composition of metal in the galvanizing bath shall be not less than 98.0% zinc.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 DISSIMILAR MATERIALS

- .1 Where dissimilar metals are in contact, adequate drainage should be provided to avoid standing water which can act as an electrolyte and promote galvanic corrosion. Insulate materials from one another with bitumastic, paint or other inert coating. Stainless steel can be used in contact with, or inbedded in masonry, concrete and plaster, without danger of corrosive attack.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 03 10 00 – Concrete Forms and Accessories.
- .2 Section 08 11 14- Steel Doors and Frames.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA B111-[1974(R1998)], Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-G164-[M92(R1998)], Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA O121-[M1978(R1998)], Douglas Fir Plywood.
 - .4 CAN/CSA-O141-[91(R1999)], Softwood Lumber.
 - .5 CSA O151-[M1978(R1998)], Canadian Softwood Plywood.
 - .6 CAN/CSA-O325.0-[92(R1998)], Construction Sheathing.
 - .7 CAN/CSA-086M-01(R2006), Engineering Design in Wood.
- .2 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber [2000].

1.3 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Divert unused wood materials from landfill to recycling, reuse, composting facility approved by Consultant.
- .3 Do not dispose of preservative treated wood through incineration.
- .4 Do not dispose of preservative treated wood with materials destined for recycling or reuse.
- .5 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Consultant.

- .6 Dispose of unused wood preservative material at official hazardous material collections site approved by Consultant.
- .7 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other locations where they will pose health or environmental hazard.

Part 2 Products

2.1 LUMBER MATERIAL

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
 - .1 Douglas fir Graded 122-C, construction or No. 2 Pine, pressure treated in accordance with CSA 080M.
 - .2 Board sizes: "Standard" or better grade.
 - .3 Dimension sizes: "Standard" light framing or better grade.
 - .4 Post and timbers sizes: "Standard" or better grade.
 - .5 Fasteners: Proprietary fasteners toggle bolts, expansion shields and lag bolts, crews and lead or inorganic fire plugs, explosive actuated fastening devices, recommended for purpose by manufacture. Use stainless steel or galvanized to CSA G164-M1981 fasteners for all exterior fastening and for any damp or moist areas.
 - .6 Wood Preservatives: Surface-applied wood preservative: clear copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.
 - .7 Material shall be straight, sawn square, true, dressed four sides properly sized, shaped to correct dimensions from nominal sizes noted on Drawings.
- .3 Framing Lumber:
 - .1 Western Red Cedar species, well seasoned, processed and stamped at the same mill with appropriate grade markings. Conform to requirements of standard grading rule for Canadian Lumber of National Lumber Grades Authority (NLGA) with latest supplement, approved by Canadian Lumber Standard Administrative Board, as follows:
 - .1 Posts: 'Structural No.2 or Better' grade, with dressed smooth surfaces.
 - .2 Fence Boards and Framing: 'No.2 Clear or Better' grade with dressed smooth surfaces.

2.2 PANEL MATERIALS

- .1 Douglas fir plywood (DFP): to CSA O121, standard construction, good one side with waterproof adhesive.

2.3 ACCESSORIES

- .1 Nails, spikes, staples, screws, bolts anchors lag screws, special fastening devices and supports required for erection of all carpentry components: to CSA B111. Use galvanized components where exposed to exterior atmosphere.
- .2 Rough Hardware (cedar): Provide rough hardware such as nails, spikes, staples, bolts, nuts, washers, screws, clips, strap iron and including hardware for temporary enclosures. Nails shall be spiral type. All nails, spikes and staples shall conform to CSA B111. All rough hardware shall be galvanized unless otherwise noted.
- .3 Surface applied wood preservative: Green coloured copper napthenate or 5% pentachlorophenol solution, water repellent preservative or same copper based preservative as used for shop impregnation, in accordance with CAN/CSA O80.
- .4 Fire retardant treatment of lumber and plywood: 'Dricon' fire retardant treatment by J. A. Biewer or approved equivalent, conforming to CAN/CSA-O80.20 and CAN/CSA-O80.27 respectively, to provide a flame spread rating of 25 or less in accordance with CAN/ULC-S102.
- .5 Tube Forms: Spirally wound, adhesive laminated fibre paper tube forms having bursting pressure of 965 kPa, coated with hot wax, diameters as required, 'Handiform', or 'Permaform' by Perma Tubes Ltd., or 'Sonotube' by Sonoco Limited.
- .6 Concrete: Minimum 20.684 MPa (3,000 psi) concrete conforming to CAN/CSA-A23.1/A23.2.

2.4 FINISHES

- .1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work and interior highly humid areas.

Part 3 Execution

3.1 GENERAL

- .1 Supply and install all other carpentry shown on drawings or as required for completion of work. Co-operate with other trades in installing items supplied by other sections, cut openings in woodwork when so required and make good disturbed surfaces.

3.2 PREPARATION

- .1 Do all wood framing in accordance with the Ontario Building Code and CAN3 - 086M – 01 - (2006).
- .2 Machine dressed work shall be slow fed using sharp cutters and finished members shall be free from drag, feathers, slivers or roughness of any kind.
- .3 Frame materials with tight joints rigidly held in place.

- .4 Design construction methods for expansion and contraction of the materials.
- .5 Erect work plumb, level, square and to required lines.
- .6 Be responsible for methods of construction for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other trades.

3.3 FURRING AND BLOCKING

- .1 Supply and install furring and blocking, required.
- .2 Align and plumb faces of furring and blocking to tolerance of 1:600.

3.4 ROUGH BUCKS AND NAILERS

- .1 Install wood bucks and nailers, as indicated, including wood bucks and linings around frames for doors and windows.
- .2 Except where indicated, otherwise, use material at least 38 mm thick secured with 9 mm bolts located within 300 mm from ends of members and uniformly spaced at 1200 mm between.
- .3 Countersink bolts where necessary to provide clearance for other work.

3.5 ROOF FASCIAS, CANTS, NAILERS CURBS

- .1 Install wood cants, fascia backing, nailers, curbs and other wood supports for roofing, sheet metal fork, roof mounted equipment.
- .2 Secure with galvanized 9 mm bolts, where indicated, galvanized nails elsewhere. Locate fastenings within 300 mm from ends and uniformly spaced between. Space bolts at 1200 mm and nails at 600 mm centres, except where indicated otherwise.
- .3 Staple vapour retardant sheet strip to underside of nailers before installation. Apply strip continuous with 200 mm overlap at joints, free of wrinkles and tears, with at least 200 mm exposed for overlap on roof deck.
- .4 Install wood nailers for roof hoppers, dressed, tapered and recessed slightly below top surface of roof insulation.

3.6 SUPPORTS FOR MECHANICAL UNITS

- .1 Performed by Section 07 51 12. Refer to Details and Mechanical and Architectural Drawings and specifications.

3.7 PRESSURE TREATED WOOD

- .1 Use wood pressure treated in accordance with CSA 080M for all wood members in contact with exterior walls and roofs.

- .2 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.8 INSTALLATION OF HOLLOW METAL FRAMES

- .1 Set frames plumb and square in their exact location and at correct elevation. Firmly block and brace to prevent shifting. Shim up where required to ensure proper alignment dimensions from finished floor to head of frame. Install temporary wood spreaders at mid-height.
- .2 Where pressed steel frames are installed in concrete walls, secure frames to concrete using lead expansion shields and anchor bolts through pipe sleeves. Perform drilling of concrete as required. Fill recessed bolt heads flush to frame face with approved metal filler and sand smooth.
- .3 Install fire rated door frames in accordance with requirements of National Fire Code Volume 4, produced by The National Fire Protection Association (NFPA 80).

3.9 GENERAL

- .1 Supply and install all other carpentry shown on drawings or as required for completion of work. Co-operate with other trades in installing items supplied by other sections, cut openings in woodwork when so required and make good disturbed surfaces.

3.10 ERECTION

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.

3.11 INSTALLATION

- .1 Lay out work carefully and to accommodate work of others. Cut and fit accurately. Erect in position indicated by drawings. Align, level, square, plumb, and secure work permanently in place. Brace work temporarily as required. Join work only over solid bracing.
- .2 Bore holes true to line and to same size as bolts. Drive bolts into place for snug fit, and use plates or washers for bolthead and nut bearings. Turn up bolts and lag screws tightly when installed, and again just before concealed by other work or at completion of work.
- .3 Co-operate with work of other Sections to ensure that unity of actions will ensure orderly progress to meet construction schedule.
- .4 Provide anchors, bolts and inserts, required for attachment of the work of this Section, to those performing the work of other Sections and who are responsible for their installation.
- .5 Work shall include rough hardware such as nails, bolts, nuts, washers, screws, clips, hangers, connectors, and strap iron required for installation of work and all operating hardware required on work of this Section for temporary use.

- .6 Do not attach work by wood plugs or blocking in concrete or masonry. Use lead shields, expansion shields, concrete nails, or similar methods only as approved by the Architect.
- .7 Do not regard grounds, blocking, furring, and such other fastening provisions as shown on Drawings as exact or complete. Provide required provisions for fastening, located and secured to suit site conditions, and adequate for intended support.
- .8 Cut fastening work into lengths as long as practicable and with square ends. Erect work plumb, in true planes, and fastened rigidly in place.
- .9 Grounds around openings in cavity wall systems, under sills and thresholds to provide continuous support shall be 50mm (2") minimum thickness, preservative treated.
- .10 Install supports and furring members as required to receive components of cabinetwork.
- .11 Install blocking at roofs, as indicated on Drawings, secured permanently to structure, trimmed and levelled to accommodate roofing components, and to receive flashings.
- .12 All members shall be accurately cut to length, angle and be true to line to assure tight joints.
- .13 Correct alignment and plumb must be maintained until specified lateral bracing is installed. Cutting and altering of trusses is not permitted except by approval by the Engineer. Heavy concentrated loads must not be placed on top of trusses until permanent bracing and decking have been installed. In any event, these temporary loads must not exceed the truss design loads.

3.12 SCHEDULES

- .1 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19mm thick plywood on 19 x 38 mm furring around spacing, perimeter and at maximum 300 mm intermediate

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 06 10 11 – Rough Carpentry.
- .3 Section 09 91 22 - Painting.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)
 - .1 ANSI A208.1-[99], Particleboard.
 - .2 ANSI A208.2-[94], Medium Density Fiberboard (MDF).
- .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM E1333-[96], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
 - .2 ASTM D2832-[92(R1999)], Standard Guide for Determining Volatile and Non-volatile Content of Paint and Related Coatings.
 - .3 ASTM D5116-[97], Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 AWMAC Quality Standards for Architectural Woodwork [, 1994].
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.
- .5 Canadian Standards Association (CSA)
 - .1 CSA B111-[74(R1998)], Wire Nails, Spikes and Staples.
 - .2 CSA O112.4-[M1977(R1999)], Standards for Wood Adhesives.
 - .3 CSA O112.5-Series-M-[1977(R1999)], Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).
 - .4 CSA O112.7-Series M-[1977(R1999)], Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).
 - .5 CSA O115-[M1982(R2001)], Hardwood and Decorative Plywood.
 - .6 CSA O121-[M89(R1998)], Douglas Fir Plywood.
 - .7 CAN/CSA O141-[91R1999], Softwood Lumber.
 - .8 CSA O151-[M1978(R1998)], Softwood Plywood.
 - .9 CSA O153-[M1980(R1998)], Poplar Plywood.
 - .10 CSA Z760-[94], Life Cycle Assessment.

- .6 Environmental Choice Program (EPC)
 - .1 ECP-44-[92], Adhesives.
 - .2 ECP-45-[92], Sealants and Caulking Compounds.
 - .3 ECP-76-[98], Surface Coatings.
- .7 International Organization for Standardization (ISO)
 - .1 ISO 14040-[97], Environmental Management-Life Cycle Assessment - Principles and Framework.
 - .2 ISO 14041-[98], Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.
- .8 National Electrical Manufacturers Association (NEMA)
 - .1 NEMA LD-3-[95].
- .9 National Hardwood Lumber Association (NHLA)
 - .1 Rules for the Measurement and Inspection of Hardwood and Cypress [, January 1996].
- .10 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber [, 2000].

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .1 Scales: profiles full size, details 1/2 full size.
- .3 Indicate materials, thicknesses, finishes and hardware.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate samples: sample size 300 x 300 mm samples of each type of paneling laminate, melamine and each type of solid wood or plywood to receive stain or natural finish.
- .3 Submit a typical prototype unit representative of the work of this section.

1.5 GUARANTEE

- .1 This architectural woodworker shall furnish the Owner with a two (2) year Guarantee Certificate to the full value of the architectural woodwork sub-contract, certifying that the architectural woodwork has been manufactured and/or installed in accordance with the standards incorporated in the AWMAC Quality Standards Manual. The Guarantee shall cover replacing and/or refinishing to make good any defects in architectural woodwork due to faulty workmanship or defective materials supplied by this architectural woodworker, which appear during a two (2) year period following the date of substantial completion of the project.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Protect millwork against dampness and damage during and after delivery.
- .2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

Part 2 Products

2.1 MATERIALS

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 10 % or less for interior work in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
 - .3 AWMAC premium grade, moisture content as specified.
- .2 Hardwood lumber: moisture content 10 % or less for interior work in accordance with following standards:
 - .1 National Hardwood Lumber Association (NHLA).
 - .2 AWMAC premium grade, moisture content as specified.
 - .3 Species: to be Maple unless otherwise noted.
- .3 Hardwood plywood: to CSA O115, of thickness indicated, rotary cut face veneer, birch plywood, veneer core, No. 1 grade. Select veneers to provide book match veneer strips to be 240 mm wide minimum.
 - .1 Species: to be Birch or Maple, unless otherwise noted.
- .4 Nails and staples: to CSA B111, galvanized for exterior work, interior high-humidity areas and for treated lumber; plain finish elsewhere. Use spiral thread nails except where specified elsewhere.
- .5 Particle Board core: to CAN3-0188.1-M78, minimum 45 density, in thickness indicated.

2.2 PLASTIC LAMINATE

- .1 Conforming to CAN3-A172, General Purpose - standard grade (GP-S), 1.25 mm thick for tops, Post Forming - standard grade (PF-S) 1.25 mm thick for post forming. Balance all panels with 0.5 mm backing sheet (BK) by same manufacturer as face panel. Use waterproof adhesive capable of holding materials together without failure. Provide acid resistant grade where shown. "Matte" finish is typical.
- .2 Acceptable Manufacturers include: Formica, Wilsonart, Nevamar-ARP abrasion resistant surface distributed by McFaddens, or Arborite. Submit product data. Allow for maximum of 4 colours from full range as chosen by Consultant.

2.3 MELAMINE FACED PARTICLEBOARD

- .1 To CAN3-0.188.1-M78, minimum 45 density, particleboard sanded faces, 13 mm, 16 mm, and 19 mm thickness, faced with laminated plastic on both sides. Melamine resin impregnated cover sheet with coloured and/or pattern paper inner layer. Thermally fuse to rigid particleboard substrate. Melamine faces shall be 8 mil thickness. Wood grain pattern to be "Hard Rock Maple".
 - .1 Acceptable Material: Melamine faced particleboard as manufactured by Flakeboard, Formica or Arborite Division of Domtar Construction Materials Ltd., are of acceptable quality but colour/pattern requires approval prior to confirmation of full acceptance. No alternatives or substitutions are acceptable.

2.4 EDGE BANDING

- .1 Solid polyvinyl chloride (PVC), 3 mm thickness x full width of panel edge banding, colour/pattern to match finished face of melamine panel or as selected by Consultant. All exposed edges of banding to be radiused to 2 mm radius after installation on panels. Submit sample of edge-banded panel with radiused edges to Consultant for approval prior to fabrication of architectural woodwork.
 - .1 Acceptable Material: Solid PVC edging as manufactured by "Woodtape" Edge-Banding.
 - .2 Acceptable Material: Solid PVC edging as manufactured by "Complast Inc."
- .2 All exposed edges are to have edge banding, including front facing edges of shelves within units, doors and gables (including edges facing floor).

2.5 CABINET HARDWARE

- .1 Furnish and install all hardware to custom casework as follows:
 - .1 Cupboard Doors - 19 mm thick.:
 - .1 Hinges 110° Blum or Hettich
 - .2 Roller Catches 807N 2G(SgDr) Onward
 - .3 Elbow Catches T03222 C15 (DhDr)
 - .4 Door Pulls CBH235-3 1/2" C32D
 - .5 Cupboard Locks 8703/8704 14a National
 - .2 Drawers - 19 mm thick.:

.1	Drawer Slides	“Accuride Slide” 3832-2G full extension with ball bearing rollers, 100lb. capacity
.2	Drawer Pulls	CBH235-3 1/2” C32D
.3	Drawer Locks	8703 - 14a National
.3	Shelving:	
.1	System 32	with 5mm holes, 32mm apart
.2	Ferow sleeves	for adjustable shelving
.4	Display Cabinet Shelving:	
.1	Pilaster strips	KV255 Zinc Knap & Vogt
.2	Shelf Clips	KV256 Zinc Knap & Vogt
.5	Cupboard Doors - 35 mm thick.:	
.1	Hinges	F179 76x76 Stanley C15
.2	Roller Catches	504N Onward C26
.3	Surface bolt	043-4 X Angle Strike C15
.4	Door Pulls	CBH245-4 1/2” C32D
.5	Cupboard Locks	supplied and installed under Section 08710
.6	Closet Rods and Flanges	
.1	Rods:	chrome finish, Ø 33 mm.
.2	Flanges:	chrome finish, closed flanges at both ends of rods.
.7	Library Book Cart: springs for bottom panel support: 4 springs – “Producto” AM19908C 1/2” bar.	
- .2 Acceptable alternates: equivalent cabinet hardware products by Blum, Hager & Stanley. 19mm Cabinet door hinges must be Blum or Hettich.
- .3 This section shall also include accessories such as rubber door silencers (2 per drawer or door), and other items necessary for the completion of the millwork.
- .4 Cabinet Keying: Key all cabinet and drawer locks alike for the entire school, except teachers’ closets.

2.6 MELAMINE CLAD CABINETWORK

- .1 All cabinet frames whether for base, wall or tall floor standing cases, shall be fabricated so each is a self-contained module. Front side top and bottom, exterior and interior surfaces shall be finished allowing future relocation of any module, into any bench arrangement, without need of any additional finishing. Melamine gables are not to be in contact with floor. All wood bases are to be wrapped with rubber base.
- .2 Maximum width between gables shall be 900mm.
- .3 Gables and panels shall be fabricated from 19 mm thick melamine surfaced panels with a P.V.C. edging applied to all exposed edges including exposed edge facing floor.

- .4 Bottoms shall be fabricated utilizing the same materials and edge finish as gables. Front edge will be edged with solid 3 mm thick PVC edging. All other edges will be thoroughly sealed and moisture proofed prior to attachment to gables.
- .5 Rails shall be fabricated and machined to join the gables and form a rigid cabinet frame.
- .6 Tops (applies to wall and tall units only) shall be fabricated utilizing the same material and edge finish as gables. Front edge will be edged with P.V.C. edging.
- .7 Toe kick rail shall have a 100 mm x 19 mm section, machined to receive four screw nails for attachment to bottom front edge of gables. Cabinet base shall be plywood attached to melamine cabinet separately, insuring the melamine particle core gables do not come in contact with the floor.
- .8 Backs in base cupboards shall be fabricated from a 13 mm thick melamine surfaced panels.
- .9 Backs in wall and tall cabinets shall be fabricated from 13 mm thick melamine surfaced panels securely glued and screw nailed into the check out provided in the backs of gables, tops, and bottoms.
- .10 Shelves shall be fabricated from 25 mm melamine surfaced panels with a P.V.C. edging applied to front edge. All shelves shall be adjustable using System 32, with 5mm holes spaced at 32mm apart. Shelves are to have ferrow sleeves inserted.
- .11 Doors shall be fabricated from 19 mm thick melamine surfaced panels. All four edges shall be P.V.C. edging.
- .12 Drawer fronts shall be fabricated from 19mm thick melamine surfaced panels. All four edges shall be P.V.C. edging. Fronts will be secured to drawer bodies with five screw nails through the front of the drawer body into the core of the drawer front.
- .13 Drawer bodies shall consist of box construction fabricated from 13 mm thick melamine surfaced panels front, sides and back with PVC edging on top edges. Joint front, sides and back with carefully fitted glued and tenoned joints. Alternately, Blum Metabox drawer body and side can be used.
- .14 Finish:
 - .1 Melamine surfaced panels shall be finished both sides in Hard Rock Maple.
 - .2 Miscellaneous solid hardwood pieces shall be sanded, then sealer coated, and sanded with two finish coats of catalytic type varnish.

2.7 SHOP FABRICATION

- .1 Shop install cabinet hardware.
- .2 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

- .3 Shop assemble work for delivery to site in size easily handled and to insure passage through building openings.

2.8 BENCHES

- .1 32 x 92 solid maple boards with 32 x 108 solid maple edges. Lengths, as indicated on Plans, secured to metal supports. Polyurethane finish, semigloss.
- .2 Bench support brackets to be Hafele Hebgo bracket. Model to be coordinated by millwork contractor based on size and load capacity of 150 kg per 600mm.

2.9 SLATWALL

- .1 Maple or birch veneered slatwall panels, with metal inserts
- .2 Standard slatwall panel sizes 1219 mm x 2438 mm (4'x8') x 19mm (3/4") thick.
- .3 Grooves 150mm (6") OC (industry standard) to accept standard industry slatwall accessories.
- .4 To be applied to Library Workroom walls (Library side) per interior elevations.

2.10 PLASTIC LAMINATED TOPS

- .1 19 mm thick particle board core with post-forming grade plastic laminate finish bonded with resorginal formaldehyde resin glue to a particleboard core. All countertop front face to return vertically 35 mm $\pm$. All front and backsplash edges to be rounded.
- .2 Underside to receive a backing sheet, sanded one side and bonded same as surfacing material.
- .3 Exposed edges to be finished with same material as used for the top.
- .4 Drip grooves to be cut into underside of the top where exposed edges occur.
- .5 Splash backs, curbs and curb shelves are to be of similar construction as the tops.
- .6 At all wall termination, provide backsplash return.

2.11 QUARTZ COMPOSITE COUNTERTOPS (Solid Surfacing)

- .1 Countertops as noted to be solid engineered quartz composite by 'Caesarstone Canada', "HanStone Quartz" or "Corian Quartz" coordinated, supplied and installed by this Section.
- .2 Fabricate counters in Library as described on millwork AD drawings.
- .3 Allow for one (1) colour to be selected by Consultant from full colour line.
- .4 Fabricate quartz surface counters according to manufacturer's recommendations to achieve design intent shown on details and dimensions on drawings.

- .5 Submit two 300 x 300 samples of all surfacing to show all edge details, cutouts, and splashes etc.

2.12 MOULDING AND TRIMS

- .1 Fabricate mouldings in maximum practical lengths to profile shown. Install with concealed fasteners.

2.13 FABRICATION

- .1 Set nails and countersink screws apply plain wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .3 Shelving to cabinetwork to be adjustable unless otherwise noted.
- .4 Provide cut-outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .7 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .8 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
- .9 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- .10 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .11 Apply laminated plastic liner sheet where indicated.

2.14 CABINET LOCKS

- .1 Supply and install matching locksets to all cupboard and drawer units.
- .2 Locksets for all groups of units to be keyed alike and keying to be grouped as follows:
 - .1 Key 1: Library - Control desk units: all uppers and all lowers.
 - .4 Key 2: Resource Room - all uppers and all lowers with doors.

Part 3 Execution

3.1 INSTALLATION

- .1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.
- .2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.
- .3 Set and secure all material and components in place, rigid, plumb and square.
- .4 Provide heavy duty fixture attachments for wall mounted cabinets.
- .5 Use draw bolts in countertop joints.
- .6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.
- .7 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.
- .8 After installation, fit and adjust operating hardware for wood and laminated plastic cabinet doors, drawers and shelves.

3.2 CLEANING

- .1 Clean millwork and cabinet work inside cupboards and drawers and all outside surfaces.
- .2 Remove excess glue from surfaces.

3.3 PROTECTION

- .1 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The section is included for the purpose of **infilling & patching section of roof** to the existing roofing. Refer to drawings.
- .2 General Conditions of the Contract as supplemented in Section 00 73 00, and the General Requirements form part of this section, and must be read in conjunction with the requirements of this section.

1.2 EXISTING ROOFING

- .1 Existing roof system inspected by Tremco Roofing and noted in report to WRDSB as follows:

WORK HISTORY

- Complete roof replacement in 2016 by Spinton roofing
- 2 Year QA warranty inspection carried out in 2018
- 5 year QA warranty inspection carried out in 2022

EXISTING ROOF COMPOSITION

- Metal Deck
- AVC Vapour Retarder
- 2 Layers of 2.5" Polyisocyanurate Insulation - Low-rise foam
- 1" ModulR Insulation - Low-rise foam
- 3-Ply Composite felt membrane - Burmastic adhesive
- Flood Coat - Burmastic adhesive
- Pea Gravel

1.1 SECTION INCLUDES

- .1 Built-up membrane roofing, cold-applied method.

1.2 REFERENCES

- .1 ASTM D4601: Standard Specification for Asphalt-Coated Glass Fibre Base Sheet Used In Roofing.
- .2 CSA A123.4: Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.
- .3 CGSB 37-GP-9Ma: Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
- .4 CGSB 37-GP-52M: Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric.
- .5 CAN/CGSB-51.33: Vapour Barrier Sheet, Excluding Polyethylene, for Use In Building Construction.
- .6 CAN/ULC-S704: Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
- .7 CAN/ULC-S706: Standard for Wood Fibre Thermal Insulation for Buildings.
- .8 Ontario Building Code 5.2.2.2. Determination of Wind Load (see appendix A)
 1. This Article applies to the determination of wind load to be used in the design of materials, including their connections, that separate dissimilar environments or are exposed to the exterior, where these are:
 - a. Subject to wind load, and
 - b. Required to be designed to resist wind load
 2. Except as provided in sentence (3), wind load referred to in sentence (1) shall be

100% of the specified wind load determined in accordance with Article 4.1.7.1.

3. Where it can be shown by test or analysis that a material, component, assembly or connection referred to in sentence (1) will be subject to less than 100% of the specified wind load, the wind load referred to in sentence (1) shall not be less than the load determined by test or analysis.
4. Except as provided in sentence (5), the wind uplift resistance of membrane roofing assemblies shall be determined in accordance with the requirements of CSA A123-21, "Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane Roofing Systems". (See Appendix A)
5. Membrane roofing assemblies with proven past performance for the anticipated wind loads need not comply with sentence (4). (See A-5.1.4.1. (4) in Appendix A.

1.3 SYSTEM DESCRIPTION

- .1 Roofing System: three ply cold-applied built-up roofing system with thermal barrier underlay board, rigid board insulation, composite ply roofing membranes, roof pavers and aggregate surfacing
- .2 Provide Products that are compatible with one another under field conditions, as demonstrated by roofing manufacturer.
- .3 Provide watertight roofing system capable of resisting specified uplift pressures, thermally induced movement and exposure to weather without failing during the specified warranty period.

1.4 SUBMITTALS

- .1 Make Submittals in accordance with Section 01 00 00.
- .2 Product Data
 - .1 Submit Product data for each major component, including membrane, thermal barrier underlay board, vapour retarder, rigid board insulation, pavers and adhesives. Highlight critical criteria for proper installation.
- .3 Shop Drawings
 - .1 Submit Shop Drawings for prefabricated work and details.
 - .2 Include plans, sections, details in accordance with performance requirements, and for attachment to other portions of the Work.
 - .3 Sloped Insulation: Indicate degree of slope and layout of sloping insulation on roof surfaces. Ensure positive drainage to roof drains.

1.5 CERTIFICATES

- .1 Manufacturer Certificates: Signed by roofing manufacturer verifying that installer is approved, authorized or licensed by manufacturer to install specified Products.
- .2 Installer Certificates: Signed by installer verifying that they have the specified qualifications described below.

1.6 TEST REPORTS

- .1 Submit test reports as specified in Section 01 00 00.
- .2 Product Test Reports: based on the evaluation of comprehensive tests conducted by an independent testing agency of the specified roofing Products.
- .3 Manufacturer Field Inspection Reports: manufacturer's written acceptance of roofing installation based on regular inspections.

1.7 QUALITY ASSURANCE

- .1 Manufacturer: qualified manufacturer having roofing systems listed by UL and approved for use by Factory Mutual.
- .2 Installer: Roofing contractor must be one of the companies from the list provided below.
- .3 Conform to CRCA Roofing Specifications and roofing membrane manufacturer's instructions.

1.8 APPROVED ROOFING CONTRACTORS

Vendor Name	Phone Number	Email
Atlas-Apex Roofing (Kitchener) Inc	(519) 894-4422	inquiries@atlas-apex.com
Dean-Thackeray Roofing Company Ltd	(519) 745-7386	patrick.dtr@bellnet.ca
Flynn Canada Ltd	(519) 624-8797	Joseph.Raposo@flynn.ca
LaFleche Roofing Services	(800) 387-1549	chris@laflecheroofing.com
Nedlaw Roofing Limited	(519) 648-2218	adam@nedlawroofing.com
Schreiber Brothers Ltd	(905) 561-7780	marinos@schreiberroofing.com
Semple Gooder Roofing Limited	(519) 623-3300	jsottile@semplegooder.com
Spinton Roofing Limited	(905) 575-3686	mira@spintonroofing.com
Triumph Roofing & Sheet Metal Inc.	(416) 534-8877	info@triumphinc.ca
Wm. Green Roofing Ltd.	(519) 822-6414	sbrookes@wmgreenroofing.ca

1.9 PRE-INSTALLATION MEETINGS

- .1 Conduct pre-installation meeting.
- .2 Meeting: prior to commencement of deck installation, review and document methods and procedures related to roof deck and roofing system construction, including the following:
 - .1 representatives of the Owner,
 - .2 authorized architect, engineer,
 - .3 roofing Subcontractor, roofing manufacturer, and installers of roof accessories and roof-mounted equipment.
- .3 Review methods and procedures related to roofing installation, including manufacturer's written installation instructions.
- .4 Review construction schedule and confirm availability of Products, Subcontractor personnel, equipment and facilities.
- .5 Review deck installation criteria and finishes for conformance with roofing system criteria, including issues of flatness and fastening.
- .6 Review structural loading conditions and limitations of roof deck both during and after roofing application.
- .7 Review flashing details, special roofing details, roof drainage, roof penetrations, equipment curbs, and other conditions affecting roofing installation.
- .8 Review governing regulatory requirements, and requirements for insurance and certificates as applicable.
- .9 Review safety requirements, including temporary fall-arrest measures.
- .10 Review field quality control procedures.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store Products undamaged in original containers with manufacturer's labels and seals intact.
- .2 Store Products in designated areas elevated off the ground and protected from ultra-violet radiation, inclement weather and construction activities.
- .3 Store solvent-based liquids away from excessive heat and open flame.
- .4 Store adhesives and sealants at temperature above 5 degrees Celsius.
- .5 Store membrane rolls on end, dry, and protected from moisture and damage. Cover rolls, insulation and other moisture-sensitive Products with tarpaulins.
- .6 Store Products on roof deck in a manner to prevent overloading the structure and properly secured to prevent movement due to wind or other forces.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply any roofing materials during inclement weather.
- .2 Comply with manufacturer's recommendations for minimum and maximum temperatures and humidity during application.
- .3 Do not install Products when temperatures are below -10 degrees C.
- .4 Consider effects of wind chill on adhesives and ensure they will not prematurely set before proper adhesion takes place.
- .5 Keep water-based Products from freezing. Do not apply water-based Products if temperatures are below 5 degrees C.

1.12 WARRANTY

- .1 Submit extended warranties in accordance with the General Conditions of the Contract.
- .2 Installer's Extended Warranty: standard OIRCA 2 year warranty, commencing from the date of Substantial Performance of the Work.
- .3 Manufacturer's Extended Warranty: The Manufacturer shall issue a non-prorated warranty for a period of Twenty Years. All components including the vapor retarder, insulation, cover board, membrane, flood coat, perimeter flashings including metal shall be covered under this warranty. Wind uplift warranty shall cover wind velocity up to a maximum wind speed of not greater than 117km/h (73 mph).

Warranty shall include inspections in years 2, 5, 10 & 15 of the warranty. The following duties shall be carried out at no extra cost to the Owner as required, by the Manufacturer.

- Sealing of flashing seam
- Filling of pitch pockets
- Repairs to blisters and ridges
- Caulking at metal details as required
- Written inspection report
- Removal of light debris from roof
- Cleaning of drain screens

1.13 ADDITIONAL WARRANTY SERVICES

- .1 The manufacturer shall provide to the owner access to an Online Data Base. All pertinent details regarding this project shall be entered on the data base such as:
 - Store roof plans, roof dimensional information, roof assembly types, roof inspection reports, roofing budgets, roof specs, etc. all per building.:
 - Generate roof replacement budgets and capital plans
 - Schedule inspections and recommended roof replacements
 - Provide designated Board employees secure access to this inventory system through a username and password. Once access is granted, all information and functions should be accessible and retrievable to the Board employee.

- Provide training to the Board employee to use the Online Roof Management Program.
- The supplier must provide examples of web-based roof inventory systems they have created for other clients.

The manufacturer shall provide to the owner access to an Online Data Base. All pertinent details regarding this project shall be entered on the data base such as:

- Roof condition by category
- Construction of the roof system including all components.
- Inspection schedule (warranty requirements)
- Substantial completion date.
- Accurate future budgetary reports for a minimum of 20 years
- Condition photos on a per roof basis
- Aerial images via Google Satellite
- Service Activity – what was done and by whom
- Warranty information
- Leak history/sensitivity
- Leak reporting service
- Square footage reports of all roof areas
- CAD Drawings
- Specifics on drainage, perimeter and interior projection flashings, slope and drainage.
- Supporting documents.
- Emergency Leak call service.
- Infra-Red analysis by means of Drone.
- Hand Held Infra-red analysis reports.

2 PRODUCTS

2.1 ROOF SYSTEM MANUFACTURERS

- .1 Products and systems specified herein are based on the BurMastic Cold-Applied system by Tremco Canada as per Tender 6862-KP-18.

2.2 MATERIALS

- .1 Primer: non-fibred, asbestos free, water-based, low-VOC formulation; to CGSB 37-GP-9Ma; equivalent to Tremco Improved Tremprime WB.
- .2 Thermal Barrier Underlay Board: (1/2") 13 mm thick glass mat faced gypsum panel with water-resistant core, and meeting the following criteria:
 - .1 Combustibility: Noncombustible to ASTM E136.
 - .2 Surface Burning Characteristics: to ASTM E84, maximum flame spread of 0, smoke developed of 0.
 - .3 Acceptable Products:
 - .1 Dens-Deck Prime by G-P Gypsum.
- .3 Roof Vapour Retarder: Self adhering 1.0 mm (40 mil) thick, self adhered air and vapour control membrane consisting of SBS rubberized asphalt laminated to slip-resistant, cross-laminated polyethylene surface film, with release paper backing. Provide substrate primer as recommended by manufacturer. AVC Membrane and Primer by Tremco Canada or approved equal.

- .4 Roof Insulation: Polyisocyanurate rigid board; to CAN/ULC-S704, Type 3, Class 2, closed cell type:
 - .1 Board Size: (4'-0" x 4'-0") 1220 x 1220mm.
 - .2 Long Term Thermal Resistance (CAN/ULC-S770): (R6.0) RSI 1.04 per (1") 25mm thickness of board.
 - .3 Compressive Strength: (20psi) 140kPa minimum.
 - .4 Dimensional Stability (ASTM D2126): < 2 percent linear change.
 - .5 Water Absorption (ASTM C209): < 1 percent by volume.
 - .6 Edges: square.
 - .7 Faces: non-asphaltic, fibre-reinforced felt facers both sides.
 - .8 Combustibility: meets CAN/ULC-S107-M87 and CAN/ULC-S126-M86.
 - .9 Thickness: minimum two layers required, total thickness: 6 inches.
 - .10 Acceptable Products:
 - .1 Trisotech Roof Insulation by Tremco Canada or approved equal.
- .5 Overlay Board: (1/2") 13mm thick asphalt-coated fiberboard, to CAN/ULC-S706, Type I, Grade 1.
- .6 Roofing Ply Membrane: polyester-glass-polyester tri-laminate reinforced asphalt-coated sheet, (0.055") 1.4mm thick, (31 lb/100ft²) 1.5 kg/m² weight, to ASTM D4601, Type II; BURmastic Composite Ply HT by Tremco Canada.
- .7 Flexible Flashing Membrane: (0.045") 1.14 mm thick, reinforced EPDM/SBR elastomeric sheeting; TRA by Tremco Canada.
- .8 Aggregate Ballast: pea gravel free of fines, long splinters, dust or foreign matter, nominal (3/8") 10mm diameter.

2.3 ACCESSORIES

- .1 Adhesive for Underlay Board, Vapour Retarder, Roof Insulation Boards and Overlay Boards: Two component (1:1 ratio) solvent free, elastomeric urethane adhesive. Asbestos free, low odor and does not contain any bitumen or VOC's. Tremco Low Rise Foam Adhesive.
- .2 Adhesive for Aggregate Ballast and Roofing Plies: Asbestos-free, cold-process asphalt adhesive; Tremco BurMastic Adhesive.
- .3 Adhesive for Flashing Membranes: Single-component, bitumen-modified, moisture cure polyurethane; Tremlar –LRM-V by Tremco Canada.
- .4 Mechanical Fasteners: Flat-head, countersunk, self-tapping screws; size, type and length in accordance with FMG; corrosion resistant coating in accordance with FM 4470, with locking plastic or metal plates.
- .5 Pavers: (24" x 24" x 2" thick) 610 x 610 x 50mm thick, precast concrete paver units; [smooth][diamond] surface pattern; color as selected by Owner.
- .6 Stack Flashings: to CSA-B272, insulated aluminum stack jacks complete with bitumen

- protection dam and screw-secured cover;
 - .1 SJ-26/SJ-27, by Thaler Metal Industries Ltd., Mississauga ON.
 - .2 Flash-Tite VSC-S Series, by Lexcor, Etobicoke ON.
- .7 Roof Penetration Flashings: to CSA-B272, insulated aluminum, complete with bitumen protection dam and screw-secured cover;
 - .1 Thaler Metal Industries Ltd., Mississauga ON, or
 - .2 Flash-Tite™, by Lexcor, Etobicoke ON.
- .8 Irregular Roof Protrusion Flashings: Pre-fabricated mastic sealer pockets; (5") 127mm high x appropriate diameter to exceed diameter or width of protrusion by (2") 50mm. Pockets to be sealed with pourable self-leveling sealant;
 - .1 Chemlink Advanced Construction Products.
 - .2 Hi-Tuff TPO Molded Sealant Pockets by Lexcan Limited.
- .9 Roof Drains: as specified in Section 22 14 26.
- .10 Prefinished Sheet Metal: for flashing & copings exposed to view, (24ga.) 0.7mm minimum base thickness commercial quality sheet steel to CSA-S136, hot-dip galvanized to CAN/CSA-G164, prefinished with factory applied 2-coat silicon-modified polyester system, Stelco 8000 Series finish; color as selected by Owner.
- .11 Miscellaneous Sheet Metal: for hook strips, fastening strips, metal bellows, and other flashings generally concealed from view; (22ga.) 0.93mm galvanized steel.
- .12 Cant Strips: purpose made asphalt-impregnated fiberboard, (3" x 3") 75 x 75 mm size.
- .13 Stripping Membrane: Vinyl-coated fiberglass mesh; Burmesh by Tremco Canada.
- .14 Stripping Adhesive: Single-component bitumen modified polyurethane, vertical grade, Tremlar LRM-V by Tremco Canada.
- .15 Pitch Pan: pre-manufactured type; (24 gauge) 0.7mm thick galvanized steel sheet, minimum (4") 100mm high.
- .16 Pitch Pan Filler: Quick set grout. Tremseal PP Sealer by Tremco.
- .17 Sealants: as specified in Section 07 92 00.
- .18 Termination Bar: (1/8") 3mm thick aluminum bar, (1") 25mm wide profile, pre-drilled for mechanical attachment.
- .19 Prefabricated Control or Expansion Joint Flashing: sheet butyl reinforced with closed cell urethane foam backing, seamed into metal flashing flanges, including sheet butyl counter flashing each side.

3 EXECUTION

3.1 EXAMINATION

- .1 Inspect existing conditions to ensure they are suitable for roofing work to begin. Do not proceed until unacceptable conditions are corrected.
- .2 Ensure substrate is solid, clean, dry and free of any contaminants prior to commencing any roofing work.
- .3 Ensure Products are dry prior to installation. Replace damaged Products.

3.2 PREPARATION

- .1 Protect existing roofing from damage with minimum (1/2") 13 mm thick plywood runways.
- .2 Remove all existing roof membrane components down to the deck and remove from the roof surface.
- .3 Prime metal and concrete surfaces designated to be covered with asphaltic Products.
- .4 Apply primer at an average rate of (200 ft²/gal.) 4.9 m²/litre. Allow to cure.
- .5 Ensure primer does not enter building through cracks and other openings.

3.1 THERMAL BARRIER UNDERLAY BOARD

- .1 Mechanically attach thermal barrier underlay board to roof deck with screws and plates using one fastener per (3 ft²) 0.27m². Stagger boards (12") 300 mm. Drive fasteners flush to top surface.
- .2 Adhere thermal barrier underlay board to metal deck with approved adhesive at manufacturer's recommended rate. Stagger boards (6") 150 mm.
- .3 Install thermal barrier underlay boards with long axis perpendicular to ribs, with end joints fully supported.
- .4 Firmly butt each board to surrounding boards. Do not jam or deform boards.
- .5 Cut and fit boards where roof deck intersects vertical surfaces.
- .6 Provide filler boards every (18") 450 mm in both directions and secure with minimum two fasteners per board.
- .7 Tape joints of thermal barrier underlay board with (2") 50 mm wide tape.

3.2 VAPOUR RETARDER

- .1 Adhere roof vapour retarder to existing substrate or thermal barrier underlay board with approved adhesive at manufacturer's recommended rate.
- .2 Overlap vapour retarder minimum (4") 100mm for side laps and (6") 150mm for end laps.
- .3 Extend vapour retarder under cant strips and blocking. Extend to perimeter and deck protrusions.

- .4 Seal roof vapour retarder to wall air/vapour barrier system with flexible flashing membranes to ensure continuity of building air/vapour barrier envelope.

3.3 INSULATION AND OVERLAY BOARD

- .1 Install insulation boards to maintain continuity of thermal envelope. Minimize joints.
- .2 Mechanically fasten base layer of roof insulation, through vapour retarder, thermal barrier underlay board and roof deck. Use minimum 1 fastener per (square foot) 0.3 m² of board area. Stagger joints (6") 150 mm.
- .3 Adhere base layer of roof insulation to vapour retarder with approved adhesive at manufacturer's recommended rate.
- .4 Adhere top layer of roof insulation to base layer of roof insulation with approved adhesive at manufacturer's recommended rate.
- .5 Adhere tapered roof insulation where indicated and in accordance with approved layout.
- .6 Fit insulation tight to roof penetrations.
- .7 Firmly butt insulation boards. Do not jam or deform boards.
- .8 Minimize lipping between adjacent boards.
- .9 Stagger joints minimum (12") 300 mm.
- .10 Adhere single layer of overlay board over roof insulation with approved adhesive at manufacturer's recommended rate.
- .11 Stagger overlay board seams with insulation board seams.

3.4 CANT STRIPS

- .1 Install cant strips at intersections of roofing and vertical surfaces.
- .2 Embed in a continuous bed of approved adhesive applied to overlay boards.
- .3 Lay true to line, level and with flush, butt joints and accurately mitred corners.

3.5 ROOF MEMBRANE

- .1 Install three plies of roof membrane in shingle fashion, starting at roof low point. Apply membrane perpendicular to overlay board joints. Conform to manufacturer's recommended method.
- .2 Overlap starter strips (26") 660mm with first ply, then overlap each succeeding ply (25") 625mm.
- .3 Place ply sheets to ensure water will flow over or parallel to, but not against, exposed edges.
- .4 Shingle in direction to shed water. Extend ply membranes over and terminate beyond cants and cut evenly.

- .5 Embed plies in approved adhesive, at manufacturer's recommended rate, and solidly coating each ply for full width.
- .6 Ensure complete and continuous seal and contact between adhesive and ply membranes, including ends, edges and laps without wrinkles, fish mouths or blisters.
- .7 Do not step or walk on felts during or immediately after application until adhesive has set.
- .8 Install each ply so that it shall be firmly and uniformly set, without voids, into adhesive. Thoroughly and effectively broom or roll each membrane application to ensure full adhesion.
- .9 Lap ply membrane ends (6") 150 mm. Stagger end laps (39") 1 metre minimum.
- .10 Overlap previous day's work (24") 600 mm, as required.
- .11 Terminate all ply layers to outer edge of roof perimeter.

3.6 ELASTOMERIC FLASHINGS

- .1 Provide membrane flashings in accordance with manufacturer's written installation guidelines.
- .2 Install flashings to ensure the roof is watertight at the end of each working day.
- .3 Extend flashing membrane minimum (6") 150 mm over roof membrane.
- .4 Extend flashing membranes minimum (10") 250 mm up vertical surfaces.
- .5 Secure flashings at (8") 200 mm OC. Secure vertical flashings through termination bar.
- .6 Overcoat lap edges with end lap stripping adhesive and membrane.
- .7 Tie-in leading edge of elastomeric sheet flashing with stripping ply membrane embedded between alternate courses of stripping ply adhesive.
- .8 Canted Eave:
 - .1 Extend reinforced elastomeric sheeting over outside face of cant and extend minimum (1") 25 mm below blocking. Mechanically fasten with (1½") 38mm common roofing nails, (8") 200 mm OC.
 - .2 Extend reinforced elastomeric sheeting down over cant strip and embed in flashing adhesive from top of cant to at least (6") 150 mm beyond toe of cant onto roof.
 - .3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.

- .9 Canted Eave with Fascia
 - .1 Extend reinforced elastomeric sheeting over outside face of cant and fascia and secure to underside of fascia. Mechanically fasten with (1½") 38mm common roofing nails, (8") 200 mm OC.
 - .2 Extend reinforced elastomeric sheeting down over cant strip and embed in flashing adhesive onto roof surface a minimum of (6") 150 mm.
 - .3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.
- .10 Low Parapet Wall Flashing
 - .1 Seal exposed joint between the wall and roof deck for airtight seal.
 - .2 Adhere elastomeric sheeting completely to flashing surface, cant, and roofing with flashing adhesive.
 - .3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 100 mm and adhere with flashing adhesive.
 - .4 Extend elastomeric sheeting up and over parapet at least (1½") 38mm and face nail with 38 mm common roofing nails, (8") 200 mm OC.
- .11 Gravel Stop
 - .1 Prior to setting and nailing horizontal flanges of edge flashings, uniformly trowel a (0.060") 1.5 mm thick layer of cold flashing adhesive to roofing surface designated to receive metal flange.
 - .2 Install metal gravel stop with formed drip edge, incorporating lock-type joints to allow expansion and contraction. Set flange in cold flashing adhesive.
 - .3 Nail interior portion of flange to wood blocking (3") 75mm OC, staggered.
 - .4 Prime metal flange with asphaltic primer.
 - .5 Fully adhere a sufficiently wide strip of elastomeric sheeting to flashing with flashing adhesive. Ensure complete bond and continuity without wrinkles or voids lap sheeting ends (4") 100mm and adhere with flashing adhesive. Elastomeric sheeting to cover gravel stop completely and overlapping onto adjacent roof minimum (6") 150mm.
 - .6 Seal edge of flashing membrane at metal upturn.
- .12 Flashing At [Edges] [and] [Gutters]
 - .1 Fabricate and install new one-piece [edge.] [gutter with downspouts. Slope gutter to downspouts.]
 - .2 Prior to setting and nailing horizontal flanges of gutter, uniformly trowel a (0.60") 1.5mm thick layer of cold flashing adhesive to roofing surface designated to receive metal flange.

- .3 Nail flange to wood blocking (3") 75mm OC, staggered.
- .4 Prime metal flange with asphaltic primer.
- .5 Adhere sufficiently wide strip of elastomeric sheeting completely to flashing surface with flashing adhesive. Ensure complete bond and continuity without wrinkles or voids lap sheeting ends (4") 100 mm and adhere with flashing adhesive. Elastomeric sheeting to cover gravel stop completely and overlap onto adjacent roof a minimum of (6") 150 mm.
- .6 Seal edge of flashing membrane at metal upturn.
- .13 Wall Flashing
 - .1 Seal exposed joint between the wall and roof deck for airtight seal.
 - .2 Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive.
 - .3 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends 100 mm and adhere with flashing adhesive.
 - .4 Elastomeric sheeting width: sufficient to extend at least (6") 150 mm beyond toe of cant onto roof surface and (8") 200 mm above the roof surface.
 - .5 Secure top of elastomeric sheeting to vertical plane with termination bar. Mechanically fasten (12") 300 mm OC. Overcoat bar with end lap stripping adhesive and membrane.
- .14 Building Expansion Joints
 - .1 Fill joint with loose insulation.
 - .2 Provide ([1/2"][3/4"]) [13][19]mm thick plywood to top of wood blocking, secured one side only; as specified in Section 06 10 00.
 - .3 Apply foam rubber or (1") 25 mm thick mineral fibre insulation to top of plywood.
 - .4 Install elastomeric sheeting centred over expansion joint.
 - .5 Fully adhere sheeting to horizontal and vertical blocking surfaces with flashing adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .6 Elastomeric Sheeting Width: Sufficient to extend onto adjacent roofing minimum (6") 150 mm.
 - .7 Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.
- .15 Expansion Joint at Wall

- .1 Extend vapour retarder from deck level up wall sufficiently and secure to wall.
 - .2 Fill joint with loose insulation.
 - .3 Install blocking, sheathing and compressible insulation as detailed on Drawings and as specified in Section 06 10 00.
 - .4 Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive.
 - .5 Ensure complete bond and continuity without wrinkles or voids. Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.
 - .6 Elastomeric Sheeting Width: sufficient to extend at least 150 mm beyond toe of cant onto roof surface and (8") 200 mm above the roof surface.
 - .7 Secure top of elastomeric sheeting to vertical plane with a termination bar. Mechanically fasten (12") 300 mm OC. Overcoat bar with end lap stripping adhesive and membrane.
- .16 Area Divider
- .1 Install elastomeric sheeting centered over area divider extending onto roof membrane a minimum of (6") 150 mm beyond toe of cant on either side.
 - .2 Fully adhere sheeting with flashing adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .3 Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.
- .17 Control Joint
- .1 Install elastomeric sheeting centered over joint.
 - .2 Fully adhere sheeting to horizontal and vertical blocking surfaces with flashing adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .3 Flashing Width: Sufficient to extend onto adjacent roofing minimum (6") 150mm.
 - .4 Lap sheeting ends (4") 100mm and adhere with flashing adhesive.
- .18 Curb Flashing
- .1 Fully adhere sheeting to horizontal and vertical blocking surfaces with flashing adhesive. Press sheeting into adhesive. Ensure complete bond and continuity without wrinkles or voids.
 - .2 Elastomeric Sheeting Width: Sufficient to extend from top of curb down onto adjacent roofing minimum (6") 150mm. Mechanically fasten sheeting on top face of curb.

- .3 Lap sheeting ends (4") 100 mm and adhere with flashing adhesive.
- .4 If membrane does not completely cover sleeper, secure top edge with a termination bar. Mechanically fasten (12") 300 mm OC. Overcoat bar with end lap stripping adhesive and membrane.
- .19 Projection Flashing
 - .1 Apply flashing adhesive to prepared area and Provide aluminum base over pipe and set into the flashing adhesive.
 - .2 Select proper step of rubber cap and cut off above index ring.
 - .3 Install cap onto base collar and press edge to ensure proper seal.
 - .4 Provide clamp around pipe and rubber cap. Prime flange.
 - .5 Install elastomeric sheeting with stripping ply adhesive and membrane.
 - .6 Cover flange completely. Extend flashing minimum (4") 100 mm onto adjacent roofing. Remove wrinkles and voids. Lap flashing ply ends (4") 100 mm.
- .20 Cartwheel and Collar
 - .1 Provide cartwheel and collar flashing around projection using elastomeric sheeting and flashing adhesive.
- .21 Coping
 - .1 Test mortar bond of coping units. Remove loose mortar from bell joint and clean surfaces.
 - .2 Pack flashing adhesive into bell joint and extend up onto bell approximately (3") 75mm and down onto shank of adjoining unit a similar distance.
 - .3 Cut proper lengths of (6") 150 mm wide reinforcement membrane and dry trowel membrane into flashing adhesive; tight and wrinkle-free.
 - .4 Overcoat reinforcing membrane with flashing adhesive.
- .22 Pitch Pans
 - .1 Uniformly apply a (1/8") 3mm thick layer of flashing adhesive to surfaces designated to receive metal flange.
 - .2 Install pre-manufactured pitch pan into adhesive. Prime flange prior to installation.
 - .3 Ensure minimum (2") 50mm clearance between projection and side wall.
 - .4 Fully adhere elastomeric sheeting to flashing surface with flashing adhesive. Cover flange completely. Extend flashing at least (4") 100 mm onto adjacent roofing. Ensure complete bond and continuity without wrinkles and voids. Lap sheeting ends minimum (4") 100 mm.

- .5 Fill pitch pan (1") 25mm from top with pitch pan base filler.
- .6 Fill remainder with rubberized elastomer mastic. Crown top of mastic to ensure water run-off.
- .23 Equipment Stands (Pipe)
 - .1 Provide (8") 200mm high sleeve flashing with (4") 100mm wide flange. Flange to extend completely around flashing periphery. Solder joints. Double solder vertical joints.
 - .2 Nail flange to wood blocking minimum (3") 75mm OC; staggered.
 - .3 Prime flange with asphaltic primer.
 - .4 Install elastomeric sheeting to stand and roofing with continuous (0.60") 1.5mm thick application of flashing adhesive.
 - .5 Sandwich top edge of sheeting between two layers flashing tape.
 - .6 Secure top of sheeting with stainless steel drawband. Seal top of drawband and sheeting-to-pipe interface. Provide watershed and tool neatly.
 - .7 Fabricate umbrella and install drawband; cover sleeve flashing minimum (3") 75mm. Install immediately above sleeve flashing. Tighten drawband.
 - .8 Wipe clean top of umbrella and projection with metal cleaner. Prime surface with metal primer.
 - .9 Seal projection-to-sheet metal interface. Provide watershed and tool neatly.
- .24 Piping Through Roof Boxes
 - .1 Install wood blocking as specified in Section 06 10 00.
 - .2 Provide two-piece pipe box. Fabricate bottom portion with (4") 100mm flange. Notch top section to fit over piping. Provide openings (8") 200mm above the roof surface.
 - .3 Set flange in mastic, nail flange to wood blocking at (3") 75mm OC. Prime flange.
 - .4 Fill box interior with mineral fibre insulation.
 - .5 Fasten top and closure detail to bottom.
 - .6 Clean surfaces of box and piping with metal cleaner and then prime. Seal joint between box and piping.
 - .7 Install elastomeric sheeting with flashing adhesive and membrane.

.25 Roof Drain

- .1 Install drain assembly in accordance with manufacturer's written installation guidelines.
- .2 Plug and seal drain to prevent water entry until service connection is completed.
- .3 Provide (24" x 24") 600mm x 600mm size elastomeric sheeting reinforcement, centered over drain; and fully adhered with flashing adhesive. Remove wrinkles and entrapped air.
- .4 Apply mastic to exposed edge of membrane inside the drain opening.
- .5 Reclamp flashing collar to drain in bed of flashing adhesive.
- .6 Trim excess sheeting within drain.

.26 Roof Drain Insert

- .1 Cut (9") 225 mm OD opening through membrane and insulation; coinciding with existing drain opening.
- .2 Install roof drain insert into existing drain pipe in accordance with drain insert manufacturer's written installation guidelines.
- .3 Adhere drain flange to membrane with flashing adhesive.
- .4 Provide (36" x 36") 914mm x 914mm size elastomeric sheeting reinforcement, centered over drain; and fully adhere sheeting with flashing adhesive. Remove wrinkles and entrapped air.
- .5 Trim excess sheeting within drain.
- .6 Seal leading edge of sheet with reinforcing membrane embedded between alternate continuous courses of flashing adhesive.

3.7 SURFACING

- .1 Install concrete pavers on pedestals where indicated on Drawings.
- .2 Flood coat roof surface with cold-process asphalt adhesive, applied at manufacturer's recommended rate.
- .3 Immediately broadcast aggregate ballast into cold adhesive at a rate of (416 lb/sq) 20 kg/m², covering flood coat completely.
- .4 Do not use power buggies or heavy equipment to distribute ballast.
- .5 Rake out aggregate to a neat, even surface.

3.8 FIELD QUALITY CONTROL

- .1 Contractor Inspection: Prior to application aggregate surfacing, inspect completed membrane and flashing for punctures, tears, and discontinuously sealed seams.

- .2 Apply additional layer of membrane over punctures and tears, extending minimum (12") 300mm beyond damaged area in all directions, and seal seams.
 - .3 Manufacturer's Field Service: arrange for manufacturer's technical representative to regularly (daily) inspect the roofing application and confirm that the roofing system installation is in strict accordance with manufacturer's recommendations.
- 3.9 CLEANING
- .1 Refer to Section 01 00 00.
 - .2 Clean drains, gutters and downspouts of debris, ensuring free drainage.
 - .3 Clean adjacent roof surfaces, levels and ground level areas of debris and excess Products.
- 3.10 PROTECTION
- .1 Adequately protect Products and work from damage by weather, traffic and other causes.
 - .2 At the end of each Working Day, seal exposed edges of roofing membrane to be watertight.
 - .3 Protect adjacent Work from damage. Repair damage.

END OF SECTION

1. GENERAL

1.1 Section Includes

1. Section includes for provision of all labour, materials, equipment and services for sheet metal flashing and trim Work in accordance with Contract Documents.

1.2 Related Sections

1. Section 06 10 00 Rough Carpentry
2. Section 07 51 00 Built-up Bituminous Roofing
3. Section 07 51 01 2-Ply Modified Bitumen Roofing
4. Section 07 92 00 Joint Sealers
5. Section 08 50 50 Aluminum Windows

1.3 References

1. Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA) – Architectural Sheet Metal Manual
2. ASTM A 525M, Standard Specification for Sheet Steel, Zinc Coated (Galvanized) by the Hot Dipped Process, General Requirements.
3. Canadian Roofing Contractors Association (CRCA) – Specification Manual
4. Canadian Sheet Steel Building Institute (CSSBI) Bulletin No. 9, Core and Maintenance of Pre-finished Sheet Steel Building Products.

1.4 Operations

1. Perform operations, at times designated by the *Owner*, that will not adversely affect occupants of building and operations in and around site access and egress.

1.5 Protection

1. Protect work of this section from damage. Damaged work which cannot be satisfactorily repaired, restored or cleaned, shall be replaced at no cost to *Owner*.

1.6 Submittals

1. Submit samples of flashing and sheet metal type and colour to *Consultant* and *Owner* for review prior to commencing work.

1.7 Mock-Up

1. Fabricate mock-ups in minimum 2440 mm (8 ft.) lengths with reviewed materials, approved methods including, joints, seams, expansion joints, starter strips and fasteners.

2. Mock-up, if accepted, shall represent the minimum standard for work. Mock-up may be included as part of final work

1.8 Quality Assurance

1. Flashing and Sheet Metal Work shall be executed in accordance with SMACNA Architectural Sheet Metal Manual - 1993 (Addendum No. 1 – October 31, 1997), by skilled trades having experience installing this product.

1.9 Warranty

1. Provide minimum two (2) year Warranty from date of Substantial Performance, as certified by *Consultant*. Warranty shall be submitted against defects in workmanship and materials.
2. *Contractor* must extend the Warranty on replaced parts and workmanship for a period of two (2) years from date of acceptance of replacement parts and workmanship. Defects will include but will not be limited to leaking, failure to stay in place, lifting, deformation and breaking of weathertight seals.
3. Provide all additional Warranties that may be available from manufacturer.

2. PRODUCTS

2.1 Material

1. Prefinished steel sheet: Galvanized steel, 0.71 mm (24 gauge) core nominal thickness, conforming to ASTM A525, Z275 zinc coated (galvanized) to designation G90 by the hot dip process, with a prefinished coat. Profiles as detailed.
2. Precoat Finish: Perspectra Plus Series, factory applied coating. Colour to be approved by Owner from standard colours listed in General Colour Card.
 1. Colour – to be selected by consultant from standard colours.
3. Starter strips: Fabricated from prefinished steel sheet, 0.87 mm (22 gauge) core nominal thickness. Minimum 75 mm (3 in.) wide face or as detailed and to be continuous.
4. Termination Bar: 3 mm x 25 mm (1/8 x 1 in.) extruded aluminum bar.
5. Touch-up paint: As supplied and recommended by sheet steel manufacturer.
6. Exposed Sheet Metal Fasteners: Self-Drilling Hex Head with washer and colour coded cap.
7. Cap, Counter and Fascia Metal to be fabricated to layouts and details shown on drawings and to extent required.
8. Overflow Scuppers: Overflow (Where Shown on Drawings): Fabricated from 0.71 mm (24 gauge) stainless steel. To be a minimum 200 mm wide x 100 mm high (8 x 4 in.) with continuously soldered seams with a 150 mm (6 in.) wide apron/flanges.
9. Fasteners: In accordance with Section 06 10 00 – Rough Carpentry
10. Sealants: In accordance with Section 07 92 00 – Joint Sealers

3. EXECUTION

3.1 Fabrication

1. Shop fabricate flashing, sheet metal and trim in accordance with requirements of SMACNA and the Contract Documents. Form sheet metal on bending brake, shaping, trimming and hand seaming on bench.
2. Form sections square, true, and accurate to size. Flashings shall be free from distortion, oil canning, twists, buckles, discolouration and other defects detrimental to appearance and performance.
3. Double back all edges a minimum of 13 mm (1/2 in.). Raw cut-edges are not acceptable.
4. Form joints with S-locks and make allowances for movement. Mitre and form standing seams at all corners. Make allowance for movement at joints.
5. Fabricate cap flashings, counter flashings and starter strips to details shown and where required.
6. Fabricate metal in 2400 mm (8 ft.) maximum lengths with an unbroken face less than 225 mm (9 in.). Form flashings with an exposed unbroken face exceeding 225 mm (9 in.) and a girth greater than 610 mm (24 in.) in 1220 mm (4 ft.) maximum lengths.
7. Provide horizontal stiffening rib "V" on all face metal exceeding 225 mm (9 in.) in girth and where shown on drawings.
8. Provide an 'S-Lock' joint at all end joints and at all horizontal joints between the cap flashing and the vertical flashing and between the vertical flashing and base counter flashing.
9. Where soldered joints are absolutely necessary and where approved for use in prepainted metal, clean paint off both surfaces before soldering for minimum area necessary.
10. Exposed sheet metal coming in contact with a metal of a different type must be back painted with two (2) coats of isolation coating.

3.2 Sheet Metal Flashing and Trim

1. Provide a continuous starter strip on exterior side for all metal cap, fascia and counter flashings and secure at a maximum 305 mm (12 in.) on centre with flat headed screws.
2. Install flashings and sheet metal that includes but not limited to; cap flashings, counter flashings, curb and sleeper counter flashings, starter strips and other miscellaneous trim work in accordance with Contract Documents.

3. Parapet and perimeter cap flashings shall be installed with a **minimum 10% positive slope** to interior of roof. Slope to be provided by installation of continuous wood shims, plywood and wood blockings as detailed and in accordance with Section 06 10 00 – Rough Carpentry.
4. Saw cut new reglet, minimum 13 mm high x 25 mm deep (1/2 in. x 1 in.) into masonry surfaces to accommodate installation of sheet metal counter flashings.
5. Return top edge of metal counter flashings into reglet 19 mm (3/4 in.). Secure flashings with pin grips spaced at maximum 305 mm (12 in.) on centre and apply sealant bead to shed water.
6. Install sheet metal work with concealed fasteners. Install exposed fasteners only when and where permitted by *Consultant*. Install fasteners in an approved manner as to prevent water penetration at point of fastening and to be evenly and neatly distributed.
7. Provide continuous termination bar at top edge of membrane flashings. Fasten termination bar to substrate at a maximum 305 mm (12 in.) on centre with appropriate and approved fasteners. Top edge of counter flashing shall be inserted under cap flashings.
8. Fasteners are to be located minimum of 305 mm (12 in.) above roof membrane – where possible.
9. End joints of adjacent lengths shall be completed using 'S-Lock' joints. This shall be accomplished by inserting end of one length in a 25 mm (1 in.) deep "S" lock formed in end of adjacent length. Concealed portion of "S" lock shall extend 25 mm (1 in.) outwards and shall be secured to substrate with flat head screws at 100 mm (4 in.) on centre.
10. Provide three (3) exposed fasteners on interior side of cap flashing, evenly spaced at 610 mm (24 in.) per 2400 mm (8 ft.) length. Use colour ceded screws with washers.

3.3 Overflow Scuppers

1. Where indicated on drawings, install new scuppers and secure to substrate. Overflow scuppers shall be set no higher than 50 mm (2 in.) above lowest point of roof area.
2. Flash in scupper flanges in accordance with Section 07 52 16 SBS Modified Bituminous Membrane Roofing

3.4 Clean-up

1. Remove all excess materials, debris, tools and equipment as work proceeds and on completion, or sooner if requested by *Consultant*.

End Of Section 07 62 00

Part 1 General

1.1 RELATED WORK

- .1 Fire stopping and smoke seals within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in Division 26 and 33 respectively.

1.2 REFERENCES

- .1 Underwriters Laboratories of Canada (ULC)
 - .1 ULC-S115-[1995], Fire Tests of Firestop Systems.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

1.4 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

1.6 SYSTEM DESCRIPTION

- .1 Firestopping Materials: CAN4-S115M ASTM E814 to achieve a fire protection rating as noted on Drawings.
- .2 It is the intent of this Section that in conjunction with Divisions 26 and 33 a competent, single source be responsible for the firestopping and smoke seals of the entire project.

1.7 QUALITY ASSURANCE

- .1 Manufacturer: Company specializing in manufacturing products of this Section with minimum five years documented experience.
- .2 Applicator: Approved, licensed and supervised by the manufacturer of firestopping materials. Company with minimum five years documented experience.

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- .3 Product: Manufactured under ULC Follow-up Program. Each container or package shall bear ULC label.

1.8 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for fire protection ratings.
- .2 Provide certificate of compliance for authority having jurisdiction indicating approval.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials in a dry, protected area, off ground in original, undamaged, sealed containers with manufacturer's labels and seals intact.

1.10 PROJECT AND SITE CONDITIONS

- .1 Application temperature and ventilation as per Manufacturer's instructions.

1.11 SEQUENCING AND SCHEDULING

- .1 Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.

Part 2 Products

2.1 MATERIALS

- .1 A/D Firebarrier Firestop Systems, by A/D Fire Protection Systems Inc., capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended.
- .2 Mineral Wool Backing Insulation: ULC labeled, preformed non-combustible material (A/D Firebarrier Mineral Wool) by A/D Fire Protection Systems Inc.
- .3 Retainers: Clips to support mineral wool.
- .4 Firestopping Sealant: ULC labeled, single component silicone bases, A/D Silicone Firebarrier Sealant by A/D Fire Protection Systems Inc.
- .5 Firestopping Seal: ULC labeled, single component water-base seal, A/D Firebarrier Seal by A/D Fire Protection Systems Inc.
- .6 Firestopping Foam: ULC labeled, two components silicone foam, A/D Firebarrier RTV Foam by A/D Fire Protection Systems Inc.
- .7 Firestopping Mortar: ULC labeled, non-combustible fibre reinforced, foamed cement mortar, A/D Firebarrier Mortar by A/D Fire Protection Systems Inc.
- .8 Damming Material: In accordance with tested assembly being installed as applicable and as acceptable to authorities having jurisdiction.

Part 3 Execution

3.1 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.
- .5 Verify that openings are ready to receive the Work of this Section.
- .6 Confirm compatibility of surfaces to receive firestopping and smoke seal materials.
- .7 Beginning of installation means acceptance of existing surfaces and substrate.

3.2 INSTALLATION

- .1 Install firestopping in wall cavities in accordance with the OBC 3.1.11., in cavities 25mm and greater, spaced 3.0m max. vertically and 20m max. horizontally.
- .2 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
- .3 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .4 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .5 Tool or trowel exposed surfaces to a neat finish.
- .6 Remove excess compound promptly as work progresses and upon completion.
- .7 Apply in sufficient thickness to achieve rating to uniform density and texture.
- .8 Protect installed material until cured or set.

3.3 INSPECTION

- .1 Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 SCHEDULE

- .1 Firestop and smoke seal at:

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- .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - .2 Top of fire-resistance rated masonry and gypsum board partitions.
 - .3 Intersection of fire-resistance rated masonry and gypsum board partitions.
 - .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - .6 Openings and sleeves installed for future use through fire separations.
 - .7 Around Mechanical and Electrical assemblies penetrating fire separations.
 - .8 Refer to Drawings for horizontal and vertical fire stop locations and for typical firestopping detail at cavity wall, for top of wall fire separation assembly and for fire separation locations.

3.5 CLEAN UP

- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
- .2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

1. GENERAL

1.1 Section Includes

1. Section includes for provision of all labour, materials, equipment and services for joint sealers in accordance with Contract Documents.

1.2 Related Sections

1. Section 06 10 00 Rough Carpentry
2. Section 07 52 16 SBS Modified Bituminous Membrane Roofing
3. Section 07 62 00 Sheet Metal Flashing and Trim

1.3 References

1. Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualifications Board for Joint Sealant.
2. CAN/CGSB-19.24 - Multi-Component, chemical curing sealing compound.
3. CAN/CGSB-19.13 - Single Component, elastomeric, chemical curing sealing compound.
4. CGSB 19-GP-14 - Sealing Compound, One-Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.

1.4 Operations

1. Perform operations, at times designated by the *Owner*, that will not adversely affect occupants of building and operations in and around site access and egress.

1.5 Protection

1. Protect work of this section from damage. Damaged work which cannot be satisfactorily repaired, restored or cleaned, shall be replaced at no cost to *Owner*.

1.6 Submittals

1. Submit samples of sealant type and colour to *Consultant* and *Owner* for review prior to commencing work.

1.7 Quality Assurance

1. Skilled trades with specific training and expertise in related experience shall execute Work.

1.8 Mock-Up

1. Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, sealant and tooling. Mock-up may be included as part of finished work.

1.9 Warranty

1. Provide minimum two (2) year Warranty from date of Substantial Performance, as certified by *Consultant*. Guarantee shall be submitted against defects in workmanship and materials.
2. *Contractor* must extend Warranty on replaced parts and workmanship for a period of two (2) years from date of acceptance of replacement parts and workmanship. Defects will include but will not be limited to; joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, change of colour, loss of adhesion, loss of cohesion and staining of adjoining or adjacent materials on surfaces.
3. Provide all additional Warranties that may be available from manufacturer.

1.10 Environmental Requirements

1. Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for application and curing of sealants.
2. Materials must be stored at minimum of 20°C (68°F) immediately prior to application. Sealant applications must be carried out when ambient temperature is above 0°C (32°F).

2. PRODUCTS

2.1 Material

1. All materials in a sealant system shall be compatible with each other and with substrate.
2. Colour(s) of sealants shall be selected to match adjacent substrate and shall be approved by *Consultant* or *Owner*.
3. Elastomeric Sealants: One part elastomeric, non-sag urethane based sealant, for masonry to masonry, masonry to metal junctions. Acceptable Material:
 1. Dymonic as manufactured by Tremco Incorporated.
 2. Precast Wall (Vertical Joints) - Three-component, chemically curing, epoxidized polyurethane sealant, 'Dymeric 240' by Tremco Incorporated.
4. Silicone sealants: Silicone based sealant, for metal to metal junctions. Acceptable Material:
 1. Spectrum 2 as manufactured by Tremco Incorporated.
 2. Dow Corning 999-A Silicone Building & Glazing Sealant by Dow Corning Canada Inc. Colour to match adjacent surfaces.
 3. DOWSIL983 Structural Glazing Sealant by Dow Corning Canada Inc.

5. Butyl sealants: Butyl rubber and polyisobutylene blend sealant. Butyl sealant to be compatible with modified bituminous membrane flashings. Acceptable Material:
 1. Tremco Butyl Sealant as manufactured by Tremco Incorporated.
 2. Modified Membrane manufacturer's approved sealant.
6. Joint Backing: Polyethylene, urethane, neoprene or vinyl, extruded foam recommended by the sealant manufacturer. Circular shape with diameter 25% greater than joint width before installation.
7. Void Filler: Glass fibre insulation with a nominal density of 14 kg/m³ (Sized for 25% compression).
8. Primer: As recommended by sealant manufacturer to assure adhesion of compound and to prevent staining of substrate materials.
9. Joint Cleaner: Non-corrosive and non-staining type, compatible with joint forming materials and sealant as recommended by sealant manufacturer.
10. Bond Breaker Tape: Polyethylene bond breaker tape, which will not bond to sealant.

3. EXECUTION

3.1 Preparation

1. Clean joint surfaces of: dust, oil, grease, oxidation, millscale, coatings and all other loose and deleterious material by cutting, brushing, scrubbing, scraping and grinding of substrate that may impair work.
2. Examine joint sizes and conditions to establish correct depth to width ratio for joint backing and sealant.
3. Rake out joints, cracks and crevices to receive sealant, to a depth measuring half the joint width. Provide new reglets at all masonry mortar joints to receive metal counter flashing and sealant.
4. Ensure joint surfaces are dry and frost free. Prepare substrate as recommended by sealant manufacturer ensuring adjacent surfaces are not damaged.
5. Commencement of Work implies acceptance of existing conditions and assuming full responsibility for finished condition of the Work.

3.2 Priming

1. To prevent staining, mask adjacent surfaces prior to priming and caulking.
2. Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.3 Sealant Application

1. Install joint backing all joints prior to applying sealants. Diameter of backing material shall be 25% more than width of joint.
2. **Maintain minimum 2:1 width to depth ratio for sealant.**
3. Apply bond breaker tape where joints are of insufficient size to install joint backing or at 90° junctions or where required by sealant manufacturer or *Consultant*. Ensure bond surface area meets the minimum required size recommended by sealant manufacturer.
4. Apply sealant in continuous beads, in solid contact to underlying surfaces with sufficient pressure to fill voids and joints solid.
5. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities. Superficial skin bead is not acceptable.
6. Tool exposed surfaces before skinning occurs to attain concave shape using approved tools.
7. Cure sealant in accordance with the manufacturer's requirements. Do not cover up sealants until proper curing has taken place.

3.4 Clean-up

1. Clean adjacent surfaces immediately and leave work neat and clean.
2. Remove excess and droppings using recommended cleaners as work progresses.
3. Remove bonding tape after initial set of sealant.
4. Remove all excess material, debris, tools and equipment as work proceeds and on completion, or sooner if requested by *Consultant*.

End of Section 07 92 00

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 92 10 - Joint Sealing: Caulking of joints between frames and other building components.
- .3 Section 08 71 10 - Door Hardware - General: Supply of finish hardware, including weatherstripping and mounting heights.
- .4 Section 09 91 23 - Interior Painting.
- .5 Section 09 91 13 - Exterior Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A653/A653M-[01a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM B29-[92(1997)], Specification for Refined Lead.
 - .3 ASTM B749-[97], Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-[99], Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CGSB 41-GP-19Ma-[84], Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 G40.20/G40.21-[98], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA W59-[M1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Metric Version).
- .4 Canadian Steel Door Manufacturers' Association, (CSDMA).
 - .1 CSDMA, Specifications for Commercial Steel Doors and Frames, [1990].
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, [1990].
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-[99], Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-[99], Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN4-S104-[80(R1985)], Fire Tests of Door Assemblies.

- .2 CAN4-S105-[85(R1992)], Fire Door Frames Meeting the Performance Required by CAN4-S104.
- .7 CAN/ULC-S701-[01], Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .8 CAN/ULC-S702-[97], Thermal Insulation, Mineral Fibre, for Buildings.
- .9 CAN/ULC-S704-[01], Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.3 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.
- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 WORK INCLUDED

- .1 A single manufacturer shall fabricate products included within the scope of this Section.
- .2 Manufacturer shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).
- .3 Supply only of steel frame products including frames, transom frames, sidelight and window assemblies with provision for glazed, paneled or louvered openings, fire labeled and non-labeled, as scheduled or detailed by the Consultant.
- .4 Supply only of flush steel doors with provision for glazed, paneled or louvered openings, insulated and un-insulated, fire labeled, with or without temperature rise ratings and non-labeled, as scheduled or detailed by the Consultant.
- .5 Supply only of steel panels, similar in construction to steel doors, with flush or abetted bottoms for steel frames, transom frames, sidelight and window assemblies, fire labeled and non-labeled, as scheduled or detailed by the Consultant.

1.5 RELATED WORK

- .1 Building-in of frame product into unit masonry, previously placed concrete, structural or steel or wood stud walls.
- .2 Supply and installation of wood, plastic or composite core doors.
- .3 Supply and installation of builders' hardware except as specified for acoustic assemblies.
- .4 Drilling and tapping for surface mounted or non-templated builders' hardware.
- .5 Caulking of joints between frame product and other building components.
- .6 Supply and installation of gaskets or weather-strip.

- .7 Supply and installation of louvers or vents.
- .8 Supply and installation of glazing materials.
- .9 Site touch-up and painting.
- .10 Wiring for electronic or electric hardware.
- .11 Field measurements.
- .12 Fasteners for frame product in previously placed concrete, masonry or structural steel.
- .13 Steel lintels, posts, columns or other load-bearing elements.
- .14 Field welding.

1.6 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, or louvred, arrangement of hardware and fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing and fire rating finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .5 Submit test and engineering data, and installation instructions.

1.7 REQUIREMENTS

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M [NFPA 252] for ratings specified or indicated.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Divert unused paint and sealant materials from landfill to official hazardous material collections site approved by Consultant.
- .3 Do not dispose of unused paint and sealant materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

- .4 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.
- .5 Damaged or broken glazing materials are not recyclable. These materials must not be disposed of with materials destined for recycling.

1.9 TESTING AND PERFORMANCE

- .1 Door constructions covered by this specification shall be certified as meeting Level “A” (1,000,000 cycles) and Twist Test Acceptance Criteria (deflection not to exceed 6.4 mm /13.6kg force, total deflection at 136.1kg force not to exceed 63.5 mm and permanent deflection not to exceed 3.2 mm) when tested in strict conformance with ANSI-A250.4-1994. Test shall be conducted by an independent nationally recognized accredited laboratory.
- .2 Fire labeled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S106. 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 Architect to be fire rated, not qualify for labeling due to design, hardware, glazing or any other reason, the Consultant shall be so advised before manufacturing commences.
- .4 Core materials for exterior doors shall attain a thermal resistance rating of RSI 1.06 (R6.0) when tested in accordance with ASTM C177 or ASTM C518.
- .5 Product shall be manufactured by a firm experienced in the design and production of standard and custom commercial steel door and frame assemblies, the integration of builders’ or electronic hardware and glazing materials and their impact on the scope of work.
- .6 Manufacturer shall be assessed and registered as meeting the requirements of Quality Systems under ISO 9001.
- .7 Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.10 TEST REPORTS

- .1 All alternates to this specification shall be submitted to the Architect for acceptance ten (10) days prior to bid date, complete with test reports from independent, nationally recognized testing authorities, certifying that:
 - .1 Steel door and frame assemblies furnished under this section meet the acceptance criteria of ANSI-A250.4-1994, Level “A”.
 - .2 Insulated door cores furnished in exterior doors under this Section meet the specified thermal resistance rating.

- .2 All reports shall include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of the test.

1.11 WARRANTY

- .1 All steel door and frame product shall be warranted from defects in workmanship for a period of two (2) years from date of shipment.
- .2 All steel door and frame product shall be warranted against rust perforation for a period of ten (10) years when the installed and finish painted with a commercial quality paint to the manufacturers recommendations.
- .3 Finish paint adhesion on all door and frame product shall be warranted for a period of ten (10) years when the product has been properly cleaned and finish painted with a commercial quality paint applied as recommended by the paint manufacturer. This warranty shall not exceed that provided by the paint manufacturer.

Part 2 Products

2.1 MATERIALS

- .1 Doors shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designation ZF75, known commercially as paintable Galvanneal.
 - .1 Acceptable Manufacturer: Flemming
 - .2 Acceptable Alternate Manufacturer: Trillium Steel Doors Limited, or others meeting these exact specifications outlined in this section and accepted in writing during the tender period.
- .2 Door Cores:
 - .1 Honeycomb:
 - .1 Structural small cell (25.4 mm maximum) kraft paper “honeycomb”. Weight: 36.3 kg per ream (minimum), density: 16.5 kg/m³ (minimum), sanded to the required thickness.
 - .2 Polystyrene:
 - .1 Rigid extruded, fire retardant, closed cell board, density 16kg/m², thermal values: RSI 1.06 minimum, conforming to ASTM C578.
 - .3 Temperature Rise Rated (TRR):
 - .1 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 Architect.
 - .4 Adhesives:
 - .1 Honeycomb Cores and Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement or ULC approved equivalent.

- .5 Interlocking Edge Seams:
 - .1 Resin reinforced polychloroprene (RRPC), fire resistant, high viscosity, sealant/adhesive or UL approved equivalent.
- .6 Polystyrene Cores:
 - .1 Heat resistant, epoxy based, low viscosity, contact cement.
- .7 Primer:
 - .1 Rust inhibitive touch-up only.
- .8 Exterior Top Caps:
 - .1 Rigid polyvinylchloride (PVC) extrusion.

2.2 DOOR FABRICATION

- .1 Contractor is to site confirm dimensions of all existing hollow metal frames to remain and receive new hollow metal doors, including coordination of all hardware installation between frame and door.
- .2 This section is based on doors and frames as manufactured by Fleming. Doors and frames by other manufacturers are acceptable subject to be similar to the one specified and meeting the terms of this section.
- .3 Doors shall be swinging, 44.4 mm thick of the types and sizes indicated on the Architect's schedules or drawings.
- .4 Exterior doors shall be lock seam, flush.
- .5 Face sheets for exterior doors shall be fabricated from (16) gauge steel.
- .6 Longitudinal edges of exterior doors shall be fully welded, ground smooth with no visible seams.
- .7 Face sheets of interior doors shall be fabricated from 18 gauge steel, except for heavy traffic doors (noted **HT** in Door Schedule) face sheet to be 16 gauge.
- .8 Longitudinal edge of heavy traffic doors (noted **HT** in Door Schedule) shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.
- .9 Interior doors shall be stiffened, insulated and sound deadened with honeycomb core laminated under pressure to each face sheet.
- .10 Stiffened, insulated and sound deadened with Fleming's propriety core where Temperature Rise Rated (TRR) fire labeled doors are specified on the Architect's schedules.
- .11 Longitudinal edges of interior doors shall be mechanically interlocked, adhesive assisted with edge seams and tack-welded every 150 mm and filled flush.

- .12 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.
- .13 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.
- .14 Lock and hinge edges shall be beveled 3 mm in 50 mm unless builders' hardware or door swing dictates otherwise.
- .15 Top and bottom of doors shall be provided with inverted, recessed, 16 gauge steel end channels, welded to each face sheet at 150 mm on center maximum.
- .16 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labeled exterior doors shall be provided with factory installed flush steel top caps.
- .17 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or hardware Suppliers' schedules or details, fire labeled doors shall be provided for those openings requiring fire protection ratings and temperature rise ratings, as determined and scheduled by the Architect.
- .18 Exterior doors and high traffic doors shall be internally reinforced with 20 gauge continuous; interlocking steel stiffeners at 150mm O.C. max, with voids between stiffeners filled and insulated with 24kg/m3 density loose batt type fiberglass material to suit fully welded design.
- .19 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.
- .20 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
- .21 Doors shall be factory reinforced only for surface mounted hardware.
- .22 Templated holes 12.7mm diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by the contractor responsible for installation on site, at the time of application. Templated holes less than 12.7mm diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.
- .23 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.
- .24 Hinge and pivot reinforcements shall be 10 gauge steel minimum high frequency type reinforcing.
- .25 Hinge reinforcements for acoustic doors and doors in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

- .26 Lock, strike and flush bolt reinforcements shall be 12 gauge steel minimum.
- .27 Reinforcements for concealed closers and holders shall be 12 gauge steel minimum.
- .28 For surface mounted hardware, reinforcements shall be 16 gauge steel minimum.
- .29 All pairs of fire labeled doors shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.
- .30 Pairs of doors up to 2450mm x 2450mm, to 1½ hour fire rating maximum shall be provided without astragals. Lock edge seam of such doors shall be tacked-welded and ground smooth. All other fire labeled pairs shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.
- .31 Where electrically or electronically operated hardware is specified on the Architects' schedules or details of the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and interconnected with CSA Approved 12.7mm diameter conduit and connectors.
- .32 Prepare doors to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

2.3 GLAZING

- .1 Where 6mm thick glazing materials are specified on the Architects schedules or details, doors shall be provided with 20 gauge steel glazing trim and snap-in glazing stops.
- .2 Where other than 6mm glazing is specified on the Architect's schedules or details, doors shall receive 20 gauge steel trim and screw fixed glazing stops. Screws shall be #6 x 32mm oval head scrulox (self-drilling) type at 300mm on center maximum.
- .3 Glazing trim and stops shall be accurately fitted, butted at corners, with removable glazing stops located on the 'push' side of the door.

2.4 LOUVER

- .1 Where specified on the Architect's schedules or details, non-labeled doors shall be prepared on accordance with the louver manufacturer's details.
- .2 Where specified on the Architect's schedules or details, fire labeled doors shall be prepared for UL listed sight-proof fusible link louvers in accordance with the louver manufacturer's details.
- .3 Louvers shall be supplied and installed by others.

2.5 FINISHING

- .1 Remove weld slag and splatter from exposed surfaces.

- .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth uniform surfaces.
- .3 On exposed surfaces where zinc coating has been removed during fabrication, doors shall receive a factory applied touch-up primer.
- .4 Primer shall be fully cured prior to shipment.

2.6 PANELS

- .1 Panels shall be fabricated from the same materials, construction and finished in the same manner as doors as specified in Section 2.1.

2.7 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.

2.8 PAINT

- .1 Field paint steel doors and frames in accordance with Section[s] 09 91 22 – Painting. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.9 FRAMES FABRICATION GENERAL

- .1 Steel:
 - .1 Frame product shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designated ZF75, known commercially as paintable Galvanneal.
- .2 Primer:
 - .1 Rust inhibitive touch up only.
- .3 Miscellaneous:
 - .1 Door Silencers: GJ-64, Single Stud rubber/neoprene type
 - .2 Thermal Breaks: Rigid polyvinylchloride (PVC) extrusion
 - .3 Fiberglass: Loose batt type, density: 24kg/m³ (minimum), conforming to ASTM C665.
- .4 General:
 - .1 All steel frame product shall be as manufactured by Fleming of the types, sizes and profiles indicated on the Architects' schedules or details.
 - .2 Exterior frames shall be thermally broken, Fleming *Therma-Frame* Series, fabricated from 16 gauge steel.
 - .3 Exterior frame product shall be supplied profile welded (PW)
 - .4 Interior and exterior sections of thermally broken frames shall be separated by a continuous PVC thermal break.

- .1 Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners and welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.
- .2 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with 24kg/m³ loose batt type fiberglass material.
- .5 Insulation of open sections (jambs, heads and sills) on exterior frame product shall be provided and installed by the contractor responsible for installation.
- .6 Interior frames shall be Fleming F-Series, fabricated from 16 gauge steel.
- .7 Interior frame product shall be supplied profile welded (PW)
- .8 Knocked-down and knocked-down drywall frames shall not be acceptable.
- .9 Jambs, heads, mullions, sills and center rails shall be straight and uniform throughout their lengths.
- .10 Frame product shall be square, free of defects, wraps or buckles.
- .11 Corner joints shall be profile welded (PW) (continuously welded on the inside of the profiles' faces, rabbets, returns and soffit intersections with exposed faces filled and ground to a smooth, uniform, seamless surface)"
- .12 Joints at mullions, transom bars, sills or center rails shall be coped accurately, butted and tightly fitted, with faces securely welded, matching corner joint faces.
- .13 All steel mullions will be fabricated from the same materials as specified for the steel frames. Steel mullions will be fabricated as a fully assembled three piece unit consisting of a front, back and full height one piece attachment clip as per Fleming F Series. The attachment clip will completely fill the stop area of the mullion on both sides and span the void between each side forming a grid channel like structure. Mullions used as hinge mullions or strike mullions between doors will be filled with grout by the general contractor either prior to or following installation of the frame. The head of the frame shall have an opening sufficient for the grout to be poured in to the mullion.
- .14 Mullions shall be fabricated with continuous 20 gauge galvalume steel internal reinforcing clips.
- .15 Frame product shall be fabricated with integral door stops having a minimum height of 16mm.
- .16 Glazing stops shall be formed 20 gauge steel, 16mm height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 32mm oval head scrulox (self-drilling) type screws at 300mm on center maximum.
- .17 Where required due to site access, as indicated on the Architects' schedules or details, when advised by the contractor responsible for co-ordination or installation, or when shipping limitations so dictate, frame product shall be fabricated in sections for splicing in the field.

- .1 Field spliced jambs, heads and sills shall be provided with 16 gauge steel splice plates securely welded into one section, extending 100mm minimum each side of splice joint.
- .2 Field splices at closed sections (mullions or center rails) shall be 16 gauge steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100mm minimum into closed sections when assembled.
- .3 Field splice joints shall be welded, filled and ground to present a smooth uniform surface by the contractor responsible for installation after assembly.
- .18 Each door opening shall be provided with two (2) temporary steel jamb spreaders welded to the base of the jambs or mullions to maintain proper alignment during shipping and handling. Spreaders shall be removed by the contractor responsible for installation prior to anchoring of frame to floor.
- .19 Each door opening shall be prepared for GJ-64 or equivalent, single stud door silencers, three (3) for single door openings, two (2) for double door openings. Silencers shall be shipped loose for installation by the contractor after finish painting.
- .20 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or Hardware Suppliers' schedules or details, fire labeled frame product shall be provided for those openings required fire protection ratings as determined and scheduled by the Architect.
- .21 Hardware Preparations:
 - .1 Frame product shall be blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templated provided by the hardware supplier.
 - .2 Frame product shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
 - .3 Frame product shall be reinforced only for surface mounted hardware.
 - .4 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.
 - .5 Frames shall be prepared for 114.3mm standard weight hinges (minimum).
 - .6 Hinge and pivot reinforcements shall be 10 gauge steel minimum reinforcing, high frequency type shall be provided.
 - .7 Hinge reinforcements for acoustic frames and frames in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.
 - .8 Strike reinforcements shall be 16 gauge steel minimum.
 - .9 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 12 gauge steel minimum.
 - .10 Mortised cutouts shall be protected with 22 gauge steel minimum guard boxes.
 - .11 Where electrically or electronically operated hardware is specified on the Architects schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes,

where indicated on templates, shall be provided and inter-connected with CSA Approved 12.7mm diameter conduit and connectors.

- .12 Prepare frames to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

.22 Anchorage:

- .1 Frame product shall be provided with anchorage appropriate to floor, wall and frame construction.
- .2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb, except as indicated below.
- .3 Frame product installed in unit masonry partitions shall be provided with 4.0mm diameter steel wire anchors, 18 gauge steel adjustable stirrup and strap or “T” type anchors as conditions dictate.
- .4 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 16 gauge steel floor anchors. Each anchor shall be provided with two (2) holes for mounting to the floor and shall be securely welded to the inside of the jamb.
- .5 Floor anchors for thermally broken exterior frames shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frame sections.
- .6 Frame product installed in drywall partitions shall be provided with 20 gauge steel snap-in or “Z” type stud type anchor.
- .7 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 150mm from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcements and directly opposite on the strike jamb. Each preparation shall be provided with 16 gauge anchor bolt guides.
- .8 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the contractor responsible for installation.
- .9 After sufficient tightening of the anchor bolts, the heads shall be welded do as to provide a non-removable application. Welded bolt head and dimple shall be filled and ground to present a smooth uniform surface by the contractor responsible for installation, prior to finish painting.
- .10 Where indicated on the Architects’ schedules or details, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 12 gauge steel formed channel, mounting angles welded to inside of frame head and adjusting brackets. Formed channels, adjusting brackets and fasteners shall be shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by contractor responsible for installation.

.23 Finishing:

- .1 Remove weld slag and spatter from exposed surfaces.

- .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth and uniform surfaces.
- .3 On exposed surfaces where zinc has been removed during fabrication, frame product shall receive a factory applied touch-up primer.
- .4 Primer shall be fully cured prior to shipment.

2.10 SIZES AND TOLERANCES

- .1 All sizes and tolerances shall be in accordance with the Canadian Steel Door Manufacturers Association "Recommended Dimensional Standards for Commercial Steel Doors and Frames" as follows:
 - .1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of $\pm 1.6\text{mm}$, -0.8mm .
 - .2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of $\pm 1.2\text{mm}$.
 - .3 Unless builders' hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3mm clearance at jambs and head. A clearance of 19mm between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be $\pm 1.2\text{mm}$.
 - .4 Manufacturing tolerances on formed frame profiles shall be $\pm 0.8\text{mm}$ for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbet shall be $\pm 1.6\text{mm}$ and $\pm 0.4\text{mm}$ respectively. Hardware cutout dimensions shall be as per template dimensions, $+0.4\text{mm}$, -0 .

2.11 HARDWARE LOCATIONS

- .1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified in 2.4.
- .2 Top of upper hinge preparation for 114.3mm hinges shall be located 180mm down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3mm hinges shall be located 310mm from finished floor as defined in 2.4.3. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930mm and 1403mm from finished floor.
- .3 Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 1033mm from finished floor. Strikes for deadlocks shall be centered at 1200mm from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.
- .4 Push and/or pulls on doors shall be centered 10701mm from finished floor.
- .5 Preparations not noted above shall be as per hardware manufacturer's templates.
- .6 Hardware preparation tolerances shall comply with the ANSI A115 series standards.

Part 3 Execution

3.1 SITE AND PROTECTION OF MATERIALS

- .1 The contractor responsible for installation shall remove wraps or covers from door and frame product upon delivery at building site.
- .2 All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported in writing to the supplier. All damage shall be noted on the carriers' Bill of Landing.
- .3 Contractor responsible for installation shall ensure all materials are properly stored on planks or dunnage in a dry location. Product shall be stored in a vertical position, spaced with blocking to permit air circulation between them. Materials shall be covered to protect them from damage from any cause.
- .4 Contractor shall notify the supplier in writing of any errors or deficiencies in the product itself before initiating any corrective work.

3.2 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDMA Installation Guide.
- .3 Install doors and frames in accordance with the Door and Hardware Institute "Installation guide for doors and hardware".
- .4 Set frame product plumb, square, aligned, without twist at correct elevation.
- .5 Frame Product Installation Tolerances:
 - .1 Plumbness tolerance, measured through a line from the intersecting corner of vertical members and the head to the floor, shall be $\pm 1.6\text{mm}$.
 - .2 Squareness tolerance, measured through a line 90^0 from one jamb at the upper corner of the product, to the opposite jamb, shall be $\pm 1.6\text{mm}$.
 - .3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be $\pm 1.6\text{mm}$.
 - .4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be $\pm 1.6\text{mm}$.
- .6 Fire labeled product shall be installed in accordance with NFPA-80.
- .7 Secure anchorages and connections to adjacent construction.
- .8 Brace frame product rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at mid points of frame rabbet height and at floor level to maintain frame widths. Provide vertical support at center of head for openings exceeding 1250mm in width. Remove wood spreaders after product has been built-in.

- .9 Frame product in unit masonry shall be fully grouted in place.
- .10 Install doors maintaining clearances outlined in Section 2.4.
- .11 Install louvers and vents.
- .12 Adjust operable parts for correct clearances and function.
- .13 Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.
- .14 Any grout or other bonding material shall be cleaned from products immediately following installation.
- .15 Exposed field welds shall be finished to present a smooth uniform surface and shall be touched-up with a rust inhibitive primer.
- .16 Exposed surfaces that have been scratched or otherwise marred during shipment, installation or handling shall be touched-up with a rust inhibitive primer.
- .17 Finish paint in accordance with Section 099116 and 099123.
- .18 Install glazing materials and door silencers.

3.3 INSPECTION

- .1 In accordance with Section 011100- Summary of Work, upon assignment of an inspection agency the following inspections shall be performed:
 - .1 review of shop drawings for compliance with specification
 - .2 shop inspection during production. Should inspection notification not be given suitable to review fabrication, destructive testing of one or more doors will be undertaken either in the shop or on site at no additional cost to the owner. Doors destroyed for invasive inspection shall be replaced as part of the contract price.
- .2 Upon notification of initial door installation, contractor shall notify inspector to witness installation practice and at periodic points for duration of installation period.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 GLAZING

- .1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing.

END OF SECTION

Part 1 General

1.1 GENERAL NOTES

- .1 Find the Door Schedule on the following pages.
- .2 Refer to the large format drawings for door and frame types and details.

1.2 ABBREVIATIONS CODE

- .1 The following abbreviations are used in the Door Schedule.
- .2 Code Reference
- .3 DC Door Contact (security)
- .4 P Paint
- .5 HM Hollow Metal
- .6 TG Tempered Glass
- .7 45 MIN 45 minute fire rating
- .8 HT Heavy Traffic – see spec for welded seams, special reinforcing.
- .9 B/F Barrier-Free
- .10 WD Laminate Faced Wood Door
- .11 P.LAM Plastic Laminate Finish on Wood Door
- .12 ALUM. Aluminum
- .13 ANNO. Anodized Finish
- .14 ST Stained

1.3 DOOR SCHEDULE

- .1 Door Schedule designation “DC” refers to “Door Contacts” used in the security system. Refer to Electrical Drawings and Division 16 Specifications for locations, zoning and description of system.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures.
- .2 Section 08 44 13 Glazed Aluminum Curtain Wall.
- .3 Section 08 80 50 Glazing.

1.2 REFERENCES

- .1 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA 2605-05, Voluntary Specification for High Performance Coatings on Architectural Extrusions and Panels.
 - .2 AAMA CW-10-04, Care and Handling of Architectural Aluminum from Shop to Site.
- .2 American National Standards Institute (ANSI):
 - .1 ANSI, H35.1M-2009, Alloy and Temper Designation Systems for Aluminum (Metric).
- .3 American Society for Testing and Materials (ASTM):
 - .1 ASTM A167-99(2009), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 - .2 ASTM B221M-08, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes and Tubes.
 - .3 ASTM F738M-02(2008), Specification for Stainless Steel Metric Bolts, Screws, and Studs.
- .4 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.
- .5 Canadian Standards Association (CSA):
 - .1 CSA W59-M-03(R2008), Welded Steel Construction (Metal Arc Welding).

1.3 DESIGN REQUIREMENTS

- .1 Design aluminum doors in accordance with following Climatic Design Data for Oakville contained in the Ontario Building Code:
 - .1 Design temperature: January 1%, July 2 1/2% .
 - .2 Hourly wind pressures: 1 in 50 year occurrence.
- .2 Design aluminum doors to accommodate following without producing detrimental effect:
 - .1 Cyclic 40 degrees C daily thermal swing of components.
 - .2 Cyclic, dynamic loading and release of loads such as wind loads.
 - .3 13 mm vertical deflection in supporting structure and movement of supporting structure due to live, dead load, and creep or deflections, seismic load, sway displacement and similar items.

- .3 Prevent deflection and permanent or progressive glazing displacement. Restrict horizontal and vertical deflection to less than $L/175$ (under uniformly distributed positive design wind load), and 10 mm maximum regardless of span.

1.4 SUBMITTALS

- .1 Shop drawings:
 - .1 Submit shop drawings in accordance with the Section 01 33 00 indicating:
 - .1 Plans, sections, details, type of extrusions, profiles, anchorage, glazing details, and finishes.
 - .2 Section and hardware reinforcement.
- .2 Samples:
 - .1 Submit samples in accordance with the Section 01 33 00 of the following:
 - .1 One complete corner detail of door frame, glazing, and finish for each door type.
 - .2 Each door hardware item for the Consultant's approval.
- .3 Reports:
 - .1 Submit substantiating engineering data, and independent test results of pre-tested, existing doors to substantiate compliance with the design criteria.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Handle aluminum work in accordance with AAMA CW-10.
- .2 Protect aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURER(S) AND SYSTEM(S)

- .1 Aluminum doors:
 - .1 Interior – non-thermal, heavy duty: approved products:
 - .1 'Canadiana HD – 600B' by Alumicor Limited.
 - .2 '350 Tuffline' by Kawneer Company Canada Limited.

2.2 MATERIALS

- .1 General:
 - .1 All materials under Work of this Section, including but not limited to, sealants and coatings are to have low VOC content limits.
 - .2 Wherever possible, metals used in work of this Section are to contain recycled content.
- .2 Aluminum extrusions and channels: ASTM B211 and ANSI H35.1 AA6063 alloy, T6 temper.

- .3 Reinforcements and anchors: ASTM A167, Type 304 to AISI No. 2B finish. Size as shown.
- .4 Glass and glazing materials: As specified in Section 08 80 50.
- .5 Frame sealant: Type as recommended by the aluminum work manufacturer.
- .6 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 304.
- .7 Isolation coating: CAN/CGSB-1.108-M; Bitumastic coating, acid and alkali resistant material.
- .8 Foam insulation: One component polyurethane foam for installation within closures and fillers; Enerfoam by Dow Chemical Canada Inc.
- .9 Weatherstripping: Durable, non-absorbing material resistant to deterioration by aging and weathering.
- .10 Door hardware: Supplied by Section 08 71 00, preparation and installation by this Section.

2.3 FABRICATION

- .1 Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners.
- .2 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints. Apply frame sealant at joints for weatherproof seams.
- .3 Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.
- .4 Do not expose manufacturer's identification labels on aluminum assemblies.
- .5 Fabricate doors and frames complete with internal reinforcements, cut-outs, and recesses to accommodate finish hardware. Reinforce cut-outs to assure adequate strength.
- .6 Double weatherstrip doors. Install weatherstripping in specially extruded ports and secure to prevent shrinkage or movement.
- .7 Fabricate doors of welded construction.
- .8 Glazing stop: Square, snap-on type, designed for neoprene glazing system.

2.4 FINISH

- .1 Extrusion finish: Clear anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A41.

Part 3 Execution

3.1 INSTALLATION

- .1 Install aluminum doors in accordance with reviewed shop drawings, and manufacturer's written instructions.
- .2 Install Work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.
- .3 Apply isolation coating at 0.8 mm dry film thickness to prevent corrosive or electrolytic action between dissimilar materials such as aluminum to concrete, masonry, galvanized steel and similar conditions.
- .4 Fill voids between aluminum framing and adjacent construction with foam insulation.
- .5 Install aluminum door manufacturer's standard weatherstripping at door frame perimeter. Install weatherstripping throughout entire length and width of doors at jambs and heads.
- .6 Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.
- .7 Adjust operable parts for correct function.
- .8 Remove damaged or unacceptable Products and assemblies from Site and replace to Consultant's acceptance.
- .9 Install glass presence markers, in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

3.2 CLEANING

- .1 Maintain aluminum doors, inside and outside, in clean condition throughout construction period.
- .2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

1. Section 08 71 10 – Door Hardware
2. Section 01 33 00 – Submittals

1.2 REQUIRMENTS OF REGULATORY AGENCIES

1. Fabricate and install all doors to the following standards. AWMAC Quality Standards for Architectural Woodwork, latest edition
2. CAN/CSA-0132.2 Series-90, Wood Flush Doors
3. CAN4-S104-M80, fire tests of door assemblies
4. CAN4-S105-M85, Fire Door Frames
5. NFPA-80, Fire doors and Windows, latest edition.

1.3 SAMPLES

1. Submit samples in accordance with Section 01 33 00
2. Submit one 12" x 12" corner sample of each type of door
3. Show door construction, core, glazing details and faces.

1.4 SHOP DRAWINGS

1. Submit shop drawings in accordance with Section 01300 Submittals.

1.5 GUARANTEE

1. All doors shall be fully guaranteed for a period of three (3) years against manufacturing defects, core ghosting and warping, delamination of veneer, after Substantial Completion.

Part 2 General

2.1 MATERIALS

1. Acceptable door manufacturers:
 - .1 Algoma
 - .2 Cambridge
 - .3 Dormond
 - .4 Lambton
 - .5 Marshfield

2. Doors shall be of the sizes, thickness and type as shown on the drawings.
3. Solid core doors shall be constructed with urea-formaldehyde free particle board to ANSI A208.1, ID2. For Fire rated doors provide core in accordance with fire test requirements..
4. Doors shall be provided with vision panels as called for on the Door Schedules and supplied complete with wood glazing stops for 20 minute rated doors and ULC approved metal glazing stops for 45 minute or 60 minute rated doors.
5. Doors shall be complete with labels indicating approved fire resistance rated as required.
6. Undercut or rebate bottom rails as required.
7. Crossband – 3 ply hardwood plywood not less than 1/8” thick before sanding
8. Vertical and horizontal edges, stops and beads for glass and grilles to match face veneer. Edges shall be minimum 1 1/2” wide by thickness of door.
9. Stiles and rails to be low density softwood staved type minimum 1 1/2” wide with 3/4” thick hardwood edge banding. Moisture content shall not exceed 8%.
10. Glazing beads to be flush type front edge recessed 1/8” at bottom. Mitre cut and fil all corners to form tight flush joints.
11. Face veneer shall be 3-ply grade A hardwood veneer, quarter sliced. Finish to be TR-8 Poly-urethane. Wood to be maple, white oak or birch.
12. Final stain colour to be later selected by Consultant from standard range of stains.

2.2 FABRICATION

1. Door cores unframed, solid laminated wood stave core construction, comprising narrow pieces of kiln dried wood, grain running vertically and end joints well staggered, solid, (no voids) and electronically glue bonded. Floating core construction will not be accepted. Sand door cores both sides prior to application of faces.
2. If particle board core or fire rated cores used, frame with 1 1/8” minimum wood stiles and 2 3/4” minimum wood rails; edge stiles with birch 3/4” wide minimum, full length piece. Glue tiles and rails to core and apply face veneer and machine flush with door edges.
3. Seal top and bottom edges with two coats urethane finish or lacquer applied to door manufacturer’s plant.
4. Attach ULC labels to fire doors and frames as required
5. Preparation of doors shall include provision for extra hinges, heavy weight butts and mortised or cylinder locksets as required of hardware tender documents.
6. Preparation of doors and frames shall make appropriate provision for sound seals as indicated on Door Schedule.
7. Prepare glazing stops to receive insulated, sealed glazing as required on Door Schedule.

Part 3 Execution

3.1 FITTING AND HANGING DOORS

1. Doors shall be delivered to site, protected in transit from any damage from weather or handling and similarly stored in a protected area until hung in place.
2. Doors shall be hung by skilled carpenters.
3. Any planning of edges required for proper installation shall be sanded smooth prior to final installation.
4. Neatly and accurately fit required finishing hardware. Refer to section 08 71 10 - Finishing Hardware.
5. The completed installation required all doors to fit accurately in their frames, swing easily without binding and close snugly without movement when latch is engaged.

3.2 HARDWARE INSTALLATION

- .1 Receive hardware from Section 08 71 10.
- .2 Installation of the hardware is the responsibility of the General Contractor.
- .3 Adjust for correct function.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 61 00 - Common Product Requirements.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 05 50 00 - Metal Fabrications: Metal fabricated framed openings, structural support framing for sloped glazing.
- .5 Section 07 27 10 - Air Barriers - Descriptive or Proprietary.
- .6 Section 07 84 00 - Firestopping: Fire safing between floor edge and curtain wall system.
- .7 Section 07 92 10 - Joint Sealing: System perimeter sealant and back-up materials.
- .8 Section 08 80 50 - Glazing.
- .9 Section 09 91 23 - Interior Painting: Field painting of interior surface of infill.

1.2 REFERENCES

- .1 Aluminum Association Designation System For Aluminum Finishes (AA)-[1997].
 - .1 DAF 45 [2003], Designation System For Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA CW-DG-1-[96], Aluminum Curtain Wall Design Guide Manual.
 - .2 AAMA CW-10-[97], Care and Handling of Architectural Aluminum From Shop to Site.
 - .3 AAMA CW-11-[85], Design Wind Loads for Buildings and Boundary Layer Wind Tunnel Testing.
 - .4 AAMA T1R-A1-[02], Sound Control for Fenestration Products.
 - .5 AAMA 501-[94], Methods of Test for Exterior Walls.
 - .6 AAMA 503-[92], Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems.
 - .7 AAMA 611-[98], Voluntary Specifications for Anodized Finishes Architectural Aluminum.
 - .8 AAMA 612-[02], Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.
 - .9 AAMA 2603-[02], Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

- .10 AAMA 2604-[02], Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- .3 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A36/A36M-[103a], Specification for Carbon Structural Steel.
 - .2 ASTM A123/A123M-[02], Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A167-[99], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A653/A653M-[03], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM B209-[02a], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .6 ASTM B221-[02], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .7 ASTM E283-[91(1999)], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
 - .8 ASTM E330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
 - .9 ASTM E331-[00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
 - .10 ASTM E413-[87(1999)], Classification for Rating Sound Insulation.
 - .11 ASTM E1105-[00], Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .4 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB 1.108-[M89], Bituminous Solvent Type Paint.
 - .2 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.
- .5 Canadian Standards Association (CSA International).
 - .1 CSA-G40.20/G40.21-[98(R2003)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
 - .2 CAN/CSA-G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CSA-S136-[01], North American Specification for the Design of Cold-Formed Steel Structural Members.
 - .4 CAN3-S157-[M83(R2002)], Strength Design in Aluminum.
 - .5 CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.
- .6 Environmental Choice Program (ECP).
 - .1 CCD-45-[95], Sealants and Caulking Compounds.

- .2 CCD-47-[1998], Surface Coatings.
- .3 CCD-48-[95], Recycled Water-Borne Surface Coatings.
- .7 Society for Protective Coatings (SSPC).
 - .1 SSPC - Paint 20 Zinc Rich Coating.
 - .2 SSPC - Paint 25 Alkyd, Zinc Oxide Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.3 SYSTEM DESCRIPTION

- .1 Work included: Furnish labour, materials and other services to complete the fabrication and installation of the framing, including all materials and fitments required for the operation of any entrance units included, in the manner, direction and performance shown on the shop drawings and specified herein. Work not included: Structural support of framing, interior trims. Related work specified elsewhere.

1.4 QUALITY ASSURANCE

- .1 Installation crews engaged or provided by the approved supplier shall have proven experience specifically trained and qualified in this work. Individuals are to be either employees of the manufacturer and/or workers approved by the manufacturer.
- .2 Provide an experienced, qualified foreman in charge of the work to be on site at all times when work is taking place. Individual to be designated in charge from start of activities on site until final deficiencies are complete. Foreman may only be changed by written approval *or request* of the Consultant or owner.
- .3 Window supplier is to have adequate plant and skilled tradesmen and is known to have manufactured and installed similar windows in the Province of Ontario.

1.5 PERFORMANCE REQUIREMENTS

- .1 Structural performance shall be based on CSA standard CAN3-S157 "Strength Design in Aluminum" and a maximum deflection of 1/175 of the span.
- .2 Air infiltration shall not exceed 0.06 cfm/ft² (0.0003 m³/s-m²) when tested in accordance with ASTM E283 at a pressure differential of 6.24 p.s.f. (300 Pa.)
- .3 There shall be no water infiltration when tested in accordance with ASTM E331 with a pressure differential of 15.0 p.s.f. (720 Pa.) Thermally, the grid members shall have a condensation resistance equal to or better than the area along the bottom of a 1" sealed glass unit with standard metal spacer edge construction.
- .4 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.
- .5 Provide system to accommodate, without damage to components or deterioration of seals:
 - .1 Movement within system.
 - .2 Movement between system and perimeter framing components.
 - .3 Dynamic loading and release of loads.

- .4 Deflection of structural support framing.
- .5 Shortening of building concrete structural columns.
- .6 Creep of concrete structural members.
- .6 Vapour seal with interior atmospheric pressure of 25 mm sp, 22 degrees C, 40% RH: No failure.
- .7 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- .8 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

1.6 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide component dimensions; describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.

1.7 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate system dimensions, framed opening requirements and tolerances, internal million reinforcement, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
- .3 Curtain wall shop drawings are to be approved for structural integrity by a Professional Engineer licensed to design structures in the Province of Ontario. Shop drawings are to bear Engineer's seal of approval.

1.8 SAMPLES

- .1 Drawings and specifications for work of this section are based upon Kawneer 1600 series Curtain Wall system. For all approved products and acceptable alternatives, submit supporting technical literature, samples, drawings and performance data to meet or exceed these specifications.
- .2 Submit two samples 800 x 800 mm in size illustrating prefinished aluminum surface, finish, colour, texture, specified glass units, insulated infill panels, glazing materials illustrating edge and corner.

1.9 DESIGN DATA

- .1 Submit design data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.

1.10 TEST REPORTS

- .1 Submit test reports in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and supportive data.

1.11 REGULATORY REQUIREMENTS

- .1 Conform to applicable code for acoustic attenuation, and sound transmission.
- .2 Use the following paragraph for assessing full sized erected assemblies for review of construction, coordination of work of several sections, testing, or observation of operation. A mock-up may also be used for assessing field applied finishes.

1.12 MOCK-UP

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Locate where directed.
- .3 Allow 24 hours for inspection of mock-up Consultant before proceeding with work.
- .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may not remain as part of finished work.

1.13 PRE-INSTALLATION MEETING

- .1 Convene one week before starting work of this section.

1.14 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, handle and protect materials in accordance with Division 1 requirements.
- .2 Handle work of this section in accordance with AAMA CW-10.
- .3 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.15 ENVIRONMENTAL REQUIREMENTS

- .1 Do not install sealants when ambient and surface temperature is less than 5 degrees C.
- .2 Maintain this minimum temperature during and after installation of sealants.

1.16 SEQUENCING

- .1 Coordinate work of this section with installation of fire stopping, air barrier placement, vapour retarder placement, flashing placement, installing ductwork to rear of louvers.

1.17 WARRANTY

- .1 Submit a manufacturer's warranty against defects in materials and workmanship covering the components of the window system for a period of ten (10) years. The manufacturer shall supply a non-pro-rated warranty covering labour, materials, tools and equipment to repair and/or replace any materials defects at no additional cost, for a period of ten (10) years including defects or failures due to poor workmanship and installation.
- .2 The supplier shall also submit a warrantee, in accordance with Section 088050-Glazing, for 10 years warranting the sealed units against defects.

1.18 MAINTENANCE DOCUMENTS AND MATERIALS

- .1 Provide 2 copies of data for maintenance and routine cleaning.
- .2 Provide 2 copies of final record reviewed shop drawings for owner's records.
- .3 Contractor shall supply all accessories as may be required for the operation and performance of the windows system.

1.19 EXTRA MATERIALS

- .1 Provide extra materials of glass units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide protected and packaged in wood crates suitable for storage. Clearly identify each crate.
- .3 Deliver Consultant, upon completion of the work of this section.
- .4 Store where directed by Consultant.

1.20 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

Part 2 Products

2.1 MATERIALS

- .1 Drawings and Details are based on 1600 series Curtain Wall by Kawneer (2 ½" - 63.5 mm x 149mm & 187mm – incl. glazing & cap) with 526 series operable vents.
- .2 Must be designed to withstand a wind load of min. 30 psf.
- .3 Fixed (non opening) thermally broken anodized aluminum curtain wall system, glazed with tempered, insulating vision glass and tempered spandrel glass.
- .4 Standard pressure cap for most locations. Provide 100mm extended pressure cap where noted on drawings.

- .5 Acceptable Materials : Curtain wall systems meeting or exceeding these specifications manufactured by:
 - .1 Alumicor
 - .2 Aerloc Industries
 - .3 Alwind Industries
 - .4 Kawneer Company of Canada
- .6 Extrusions shall be 6063 T54 alloy and temper.
- .7 Formed aluminum components shall be sheet of alloy and temper suitable for their purpose and finish.
- .8 Fasteners shall be 300 series stainless steel or 400 series stainless steel cadmium plated and of sufficient size and quantity to perform their intended function.
- .9 Weathering and glazing gaskets shall be extruded, black, closed cell or dense elastomer of durometer appropriate to the function.
- .10 Provide glazed and aluminum spandrel sections where indicated on drawings.
- .11 Provide structural silicone mullions where described on drawings.
- .12 Refer to Section 08 80 50 – Glazing for information on tinted glazing sections and glazed spandrel panels. Refer to drawings for locations.
- .13 Manufacturer / Installer to determine if mullions require internal reinforcement to achieve specified load resistance.

2.2 FINISHES

- .1 CLEAR ANODIZED (TO MATCH EXISTING)
 - .1 Exposed aluminum sections shall be given an anodic oxide treatment in accordance with Aluminum Association specification AA-M12C22A31.

2.3 FABRICATION

- .1 Fabricate aluminum work in accordance with reviewed shop drawings and manufacturer's written instructions.
- .2 Fabricate framing from extrusions of size and shape shown on shop drawings.
- .3 Vertical and horizontal members shall be tubular extrusions designed for shear block corner construction.
- .4 All joints shall be accurately machined, assembled and sealed to provide neat weather tight joints. Shielded drainage and pressure equalization vents shall be provided where required. AH horizontal members shall be sealed to vertical members to provide individual compartments within the system in accordance with the rain screen principle.

- .5 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .6 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- .7 Prepare components to receive anchor devices. Install anchors.
- .8 Arrange fasteners and attachments to ensure concealment from view.
- .9 Reinforce framing members for external imposed loads.
- .10 Visible manufacturer's identification labels not permitted.
- .11 Break shapes must be approved by the Consultant prior to use.
- .12 At all curtain wall spandrel panels exposed on interior of building, curtain wall spandrel panels shall be laminated w/ aluminum panel of same pre-finish as mullions with bent edges.
- .13 Provide spandrel panels at locations of exterior light fixtures as shown on elevations. Coordinate with Div. 16 for lighting location and size of openings.
- .14 All perimeter sections to be tubular/closed back sections for continuous adhesion and continuity of building envelope membrane.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify dimensions, tolerances, and method of attachment with other work.
- .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

- .1 Framing shall be installed, glazed and adjusted by experienced personnel in accordance with the manufacturer's instructions and approved shop drawings. All items in this section shall be set in their correct location and shall be set level, square, plumb and at proper elevations and in alignment with other work.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.

- .4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .5 Provide thermal isolation where components penetrate or disrupt building insulation.
- .6 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials.
- .7 Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- .8 Install fire-safing in areas as indicated.

3.3 FIELD QUALITY CONTROL

- .1 Inspection will monitor quality of installation and glazing.
- .2 Test to ASTM E1105, and AAMA 501.
- .3 Evaluate installed system by thermo-photographic scan.

3.4 ADJUSTING

- .1 Adjust operating sash for smooth operation.

3.5 CLEANING

- .1 Remove protective material from prefinished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.6 PROTECTION

- .1 Protect finished Work from damage.
- .2 Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.”

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Division 1
- .2 Section 06 40 00 – Architectural Woodwork.
- .3 Section 08 11 14 – Metal Steel Doors and Frames.
- .4 Section 16 – Electrical wiring for magnetic strikes, hold open devices, electric releases and electric locks.

1.2 SECTION INCLUDES

- .1 For continuity and ready reference, this section includes hardware Installation and Inspection which in total will involve more than one contractor, as described following. The General Contractor will ensure in submitting his tender that specific roles and scope delineations are clear.
- .2 Hardware Supply: It is the intention of this contract that the **Supply is by a specialist hardware supplier as part of the Cash Allowance**, with the exception of the power door operators, which are included in the base contract price as specified.
- .3 Hardware Installation: It is the intention of this section that Installation is by the General Contractor if so qualified or qualified personnel appointed by the General Contractor for all systems and methods described herein. **Installation of all hardware is to be included in the base bid price.**
 - .1 Scope: Installation of door hardware for all interior and exterior steel doors, locksets to teachers closets and coordination of installation of automatic operators with Division 26.
- .4 Hardware Inspection: It is the intention of this section that Installation is by the General Contractor for all systems and methods described herein.
 - .1 Scope: inspection of installation of door hardware.

1.3 REFERENCES

- .1 CAN/CGSB-69.17-M86 – Bored and Pre-assembled Locks and Latches
- .2 CAN/CGSB-69.18-M90/ANSI/BHMA-A156.1-1981 – Butts & Hinges
- .3 CAN/CGSB-69.19-M93/ANSI/BHMA-A156-3-1989 – Exit Devices
- .4 CAN/CGSB-69.20-M90/ANSI/BHMA-A156-4-1986 – Door Controls (Closers)
- .5 CAN/CGSB-69.29-93/ANSI/BHMA-A156-13-1930 – Mortise Locks & Latches
- .6 CAN/CGSB-69.34-93/ANSI/BHMA-A156.18-1987 – Materials & Finishes

- .7 Canadian Steel Door & Frame Manufacturers Association (CSDFMA),
- .8 Canadian Metric Guide for Steel Doors & Frames (Modular Construction)
- .9 NFPA 80-1995 – Fire Doors and Fire Windows

1.4 REQUIREMENTS FOR REGULATORY AGENCIES

- .1 Hardware for doors in fire separations and exit doors shall be certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

1.5 SUBMITTALS

- .1 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Butt hinges
 - .2 Continuous hinges
 - .3 Door closers
 - .4 Exit devices
 - .5 Overhead stops
 - .6 Storeroom set with lever trim
 - .2 Identify each sample by a label indicating location for installation, applicable specification paragraph number, brand name and number, finish, and hardware package number.
 - .3 Samples will be retained by the Consultant during the initial review period, but not exceeding one month. Samples will be returned at that time and, if acceptable, they may be incorporated into the Work.
 - .4 Substitute new samples for those rejected by the Consultant.
 - .5 Do not supply door hardware to the site until all samples are approved by the Consultant.
- .2 Hardware List:
 - .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit six copies of a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant.
 - .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.
- .3 Template:

- .1 Within ten working days of being requested by the Consultant or the Contractor, submit templates for door and frame preparations and mounting of door hardware items.
- .2 Identify each template by label indicating applicable specification paragraph number, brand name and number, door number, and hardware package number.
- .3 Submit manufacturer's specifications, catalogue cuts, and other data required to identify individual components listed and to demonstrate compliance with specified requirements for items contained in the final door hardware list. Submission of manufacturer's full line brochures is not acceptable.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and Protection:
 - .1 Store finishing hardware in locked, clean and dry area.

1.7 WASTE DISPOSAL AND MANAGEMENT

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Dispose of recyclable packaging material in appropriate on-site bin for recycling.

1.8 MAINTENANCE DATA

- .1 Provide parts list, manufacturers' instructions, and operation and maintenance data for each type of door hardware for incorporation into maintenance manual specified in Section 017800 – Closeout Submittals.
- .2 Brief the Owner's maintenance staff regarding proper care, cleaning, and general maintenance of door hardware.

1.9 MAINTENANCE MATERIALS

- .1 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.
- .2 Supply four sets of other special parts or tools required for proper maintenance and adjustment of door hardware (excluding tools required for keying.)

1.10 WARRANTY

- .1 Submit a warranty for door hardware on a form approved by the Owner and in accordance with the General Conditions, but for a period of three (3) years unless specified otherwise. Where a manufacturer's standard warranty period exceeds three years it shall prevail.
- .2 The warranty for both fire exit devices and power door operators shall be for a period of five (5) years.

- .3 The warranty for door closers shall be for a period of ten (10) years.
- .4 Provide a lifetime warranty for all mortise hinges.
- .5 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.

Part 2 Products

2.1 HARDWARE ITEMS

- .1 Power Door Operator (BFP):
- .2 Assa Abloy (previously Besam) SW100 universal swing door operator, including 3 way keyed control switch, frame mounted, complete with two (2) 'wave' activated operators.
- .3 All other door hardware to be part of the project's Cash Allowance.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Furnish door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware. Advise door and frame manufacturers to be aware that strike heights as listed in the table below are required for this project.
- .2 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 ALL DOORS, FRAMES, AND FINISHING HARDWARE SHALL BE INSTALLED BASED ON DHI INSTALLATION GUIDE FOR DOORS AND HARDWARE (ANSI/DHI A115.1G-1994 – Approved 8/19/94)
- .2 Power door operators, complete with hook-up to power rough-in, low voltage control wiring, and exit device release, shall be installed by the manufacturers' recommended installer.
- .3 Power door operators to be installed by hardware supplier. Low voltage control wiring to push button locations, exit device release, and 4" x 4" back boxes to be completed by Division 26 (Electrical Contractor.)
- .4 CONSULTANTURAL HARDWARE CONSULTANT:
 - .1 The hardware supplier shall have in its employ an Architectural Hardware Consultant who is a current member of the American Society of Hardware

- Consultants, and who shall be made available for consultation during the course of construction at no additional cost to the Owner.
- .2 The Architectural Hardware Consultant must supervise hardware installation, provide assistance to the Hardware Installer, and carry out inspection and provide written certification of the finished door hardware installation.
 - .3 Allow for a minimum of three inspections during the course of hardware installation and one final inspection.
 - .4 Ten percent (10%) of this subtrade's contact will be considered as fair value for supervision and inspection with regard to progress certificates.
 - .5 Locate and mount hardware at standard location dimensions in accordance with CSDFMA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction), and as indicated in the following table:

HARDWARE MOUNTING HEIGHTS	
HARDWARE ITEM	DIMENSION ABOVE FINISHED FLOOR
LOCKSET or LATCHSET	950 mm to Centreline of Strike
DEADLOCK	1200 mm to Centreline of Strike
EXIT DEVICE	950 mm to Centreline of Strike
PUSH PLATE/DOOR PULLS	900 mm to Centreline of Strike

.5 HARDWARE MOUNTING HEIGHTS

- .1 The Hardware Installer shall carefully check manufacturer's installation instructions supplied with hardware products for conflicts with the above noted dimensions.
- .2 The Hardware Installer shall use manual or "Yankee" screw drivers to turn screws into pre-drilled pilot holes for installation of hinges on mineral core fire protection rated doors. Please note that other methods of installation may void the door manufacturer's warranty.
- .3 Refer to AD drawings for mounting heights. Center latch/levers in center of stiles, and off set panic bars on opposite side of door if required to achieve centered latches.
- .4 Locate door stops to contact doors 75mm from latch edge.
- .5 Install hardware and trim square and plumb to doors.
- .6 Install mullion stabilizers on all double doors with panic hardware.
- .7 Supply locksets to Section 064000 – Architectural Woodwork for 35mm and 45mm thick doors where such doors are a part of millwork units. Keying shall be in accordance with the building keying system for

3.3 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Ensure doors with closers close firmly and against wind and building air pressure, and can be opened readily as suitable for installation.

- .3 Inspection:
- .1 The Hardware Supplier shall have in his employ an Architectural Hardware Consultant who is a current member of the American Society of Hardware Consultants, and who shall be made available for consultation during the course of construction at no additional cost to the Board.
 - .2 In addition to this available consultant, a Hardware Inspector shall be engaged upon recommendation to the Board by the Consultants and costs for inspection paid for from Cash Allowances.
 - .3 The Consultant shall advise the Contractor that Hardware Inspector shall be assigned to supervise the hardware installation, provide assistance to the Hardware Installer, and carry out inspection and provide written certification of the finished door hardware installation. Costs for this inspection shall be paid from the Cash Allowance. The Contractor shall notify the Hardware Inspector at least 72 hours prior to commencing the installation and cooperate with the advice of the inspector.
 - .4 Upon completion of door hardware installation, the Architectural Hardware Inspector shall conduct an inspection of all door hardware as installed, accompanied by the Consultant, the Owner's representative, and the Contractor.
 - .5 If requested by the Consultant, the manufacturer's technical representative for each make of the hardware used in the Work shall be in attendance during the hardware inspection.
 - .6 During the inspection, the Architectural Hardware Inspector shall note all unsatisfactory installations and products and re-inspect these items after re-adjustment or replacement to ensure all hardware is in optimum working condition and specified function.
- .4 Upon completion of door hardware installation, the Hardware Supplier shall submit a written certificate that all hardware has been correctly supplied and installed in accordance with the drawings, specifications, schedules, and approved final door hardware list, for type, function, and location, and that door hardware has been checked and adjusted.
- .5 Clean hardware after installation following the hardware supplier's recommendations.
- .6 At project completion all items of door hardware shall be clean and free from disfigurement. The Contractor shall repair or replace hardware found to be defective.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 This hardware schedule has been prepared by:

Knell's Door & Hardware

2090 Shirley Drive

Kitchener, Ontario

N2B 0A3

Phone: (519) 578-1000 Fax: (519) 578-3262

CONSULTANT

Mike Wickens, B.Sc, DHT

PART 2 - FINISHING HARDWARE SCHEDULE

2.1 To be provided as part of the Cash Allowance.

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 11 – Final Cleaning.
- .3 Section 01 78 00 - Closeout Submittals
- .4 Section 08 11 14 - Steel Doors and Frames
- .5 Section 08 62 00 - Skylights
- .6 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.
- .7 Section 10 28 10 – Toilet, Bath and Laundry Accessories.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI).
 - .1 ANSI/ASTM E330-[02], Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C542-[94(1999)], Specification for Lock-Strip Gaskets.
 - .2 ASTM D790-[02], Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D1003-[00], Test Method for Haze and Luminous Transmittance of Plastics.
 - .4 ASTM D1929-[96(R2001)e1], Test Method for Determining Ignition Temperature of Plastics.
 - .5 ASTM D2240-[02b], Test Method for Rubber Property - Durometer Hardness.
 - .6 ASTM E84-[01], Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM F1233-[98], Test Method for Security Glazing Materials and Systems.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.2-[M91], Flat, Clear Sheet Glass.
 - .3 CAN/CGSB-12.3-[M91], Flat, Clear Float Glass.
 - .4 CAN/CGSB-12.4-[M91], Heat Absorbing Glass.
 - .5 CAN/CGSB-12.5-[M86], Mirrors, Silvered.
 - .6 CAN/CGSB-12.6-[M91], Transparent (One-Way) Mirrors.
 - .7 CAN/CGSB-12.8-[97], Insulating Glass Units.

- .8 CAN/CGSB-12.9-[M91], Spandrel Glass.
- .9 CAN/CGSB-12.10-[M76], Glass, Light and Heat Reflecting.
- .10 CAN/CGSB-12.11-[M90], Wired Safety Glass.
- .11 CAN/CGSB-12.12-[M90], Plastic Safety Glazing.
- .12 CAN/CGSB-12.13-[M91], Patterned Glass.
- .13 CAN/CGSB-12.1-M90 Tempered or Laminated Safety Glass
- .14 CAN/CGSB-12.3-M76 Glass, Polished Plate or Float, Flat, Clear
- .4 Canadian Standards Association (CSA International).
 - .1 CSA A440.2-[98], Energy Performance Evaluation of Windows and Sliding Glass Doors.
 - .2 CSA Certification Program for Windows and Doors [2000].
- .5 Environmental Choice Program (ECP).
 - .1 CCD-045-[95], Sealants and Caulking.
- .6 Flat Glass Manufacturers Association (FGMA).
 - .1 FGMA Glazing Manual - [1997].
- .7 Laminators Safety Glass Association (LSGA).
 - .1 LSGA Laminated Glass Design Guide [2000].

1.3 SAMPLES

- .1 Submit a 300 x 300 sample of all glass products in accordance with Section 01 33 00 - Submittal Procedures.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 013300 – Submittal Procedures. Co-ordinate location with Consultant.

1.5 WARRANTY

- .1 Contractor hereby warrants glass against defects and failure, including leakage, under normal conditions of use, in accordance with the Contract, but for ten (10) years total, as follows:
- .2 Supplier shall submit a written warranty from the insulated glass manufacturer to replace or repair any defects in materials or sealed units for a period of ten (10) years from the date of Substantial Completion.
- .3 Mirrors:
 - .1 Submit a warranty for mirrors, covering the repair or replacement of defective work in accordance with the Contract, but for five (5) years total.
 - .2 Warranty shall apply against defects in workmanship and materials and, against silver deterioration and loosening of fastenings.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site] for recycling.
- .3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- .4 Divert unused or damaged wood materials from landfill to [recycling] [reuse] [composting] facility approved by Consultant.
- .5 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.
- .6 Divert unused caulking material from landfill to official hazardous material collections site approved by Consultant.
- .7 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

Part 2 Products

2.1 MATERIALS

- .1 Acceptable Manufacturers:
 - .1 AFG Glass Inc
 - .2 Libby-Owens Ford
 - .3 PPG Industries
- .2 **Exterior Tempered Safety Glass:** All exterior glazing to skylight to be sealed insulated units conforming to CAN/CGSB-12.8. Exterior lite tempered clear glass, Solarban 70 Low Emissivity Coating on inner pane (2nd surface), argon filled air space, inner lite clear tempered glass.
 - .1 Skylight glazing to be insulated units comprised of two laminated safety glass layers meeting requirements of the Ontario Building Code for skylight use in commercial buildings. Insulated laminated glass units to consist of two layers of laminated safety glass, each comprised of 6mm tempered clear glass laminated to another 6mm tempered clear glass with a 0.060 polyvinyl butyral (P.V.B.) interlayer, insulated with a 13 mm hermetically sealed Argon filled air space between layers of laminated glass, with Solarban 70 Low Emissivity Coating on inner pane (2nd surface). Outer layer of glazing is to be complete with Bird Friendly pattern “frit” applied to meet dot sizes 5.5mm with horizontal spacing between dots of 4.75 cm on center and vertical spacing of 9.75cm on center.
- .3 Polished Plate or Float Glass: To CAN/CGSB-12.3 clear.
- .4 Interior Tempered Safety Glass: CAN/CGSB-12.1-M, Type 2, Class B, Category II, clear, minimum 6 mm thick.

- .1 Interior Vision Glass to non-fire rated locations to be tempered 6 mm tempered clear float glass complete with etched tempered glass designation visible, unless identified otherwise.
- .5 Fire Rated Glazing ('FR' 'FRG' or 'GW'): Fire rated glazing to be impact safety rated, intumescent laminated glazing to meet required fire resistance rating. Coordinate glazing thickness with screen frame manufacturer. Refer to drawings, window and door schedule for fire separation ratings. Intumescent laminated glazing to be supplied by:
 - .1 Fireswiss "Fireswiss Foam C44++" (for 3/4 hour rating) by GLASSOPOLIS
 - .2 Pyrostop "Pyrostop 45" (for 3/4 hour rating) by TECHNICAL GLASS PRODUCTS
 - .3 Firelite NT (for 3/4 hour rating)
- .6 Georgian Wired rated glazing: not to be used on this project.
- .7 Mirrors: Refer to Section 10 28 10 Washroom Accessories.
- .8 Setting blocks: neoprene, 80 durometer hardness, 102 mm x 6 mm width to suit glass to extend from the fixed stop to the opposite face of the glazing unit.
- .9 Spacer Blocks: neoprene, thickness to provide a minimum glass to face clearance of 3mm.
- .10 Glazing tape: preformed polyisobutylene-butyl glazing tape with integral shim strip, 10-15 durometer, hardness, paper release, black color. Acceptable materials: Tremco Polyshim II by Tremco Ltd. or approved alternate.
- .11 Gasket: black neoprene "U" cavity type with lock strip.
- .12 Sealant: one component silicone, Spectrem 2 by Tremco Ltd. Refer to Section 07900.
- .13 Display cases (if required): shelves to be 13mm tempered glass with polished rounded edges. Door to 6mm tempered glass. Coordinate sizes and provide to Section 06 40 00 for installation.

2.2 FABRICATION

- .1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:
- .2 Make field measurements before cutting and assembling materials.
- .3 Maintain minimum bite or lap of glass as recommended by the glazing unit manufacturer.
- .4 Each glass lite shall be labeled with the name of the product, weight and quality and year manufactured.
- .5 If requested, provide owner or consultant access to the plant or shop to review fabrication. Consultant or owner to provide 24 hour advance notice of visit.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

- .1 Verify that openings for glazing are correctly sized and within tolerance.
- .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION:

- .1 Inspect all glazing channels prior to application. All openings in joints and channels to be sealed shall be clean, dry and free of dust, oil, grease, loose mortar or any foreign material.
- .2 All surfaces to receive glazing tape shall be wiped dry with a clean rag dampened in Xylol, followed by a dry wipe.
- .3 Examine all sashes prior to glazing to determine if the openings are square and plumb. Any butt and miter joints which are open shall be sealed prior to glazing. Adjust all operating sashes and glaze in the closed position.
- .4 Compression Glazing:
 - .1 When butt joint is in a vertical direction, the glazier shall first run the tape on the head and sill members while going over the joint. If joints at the sash run horizontally, the tape must be applied first to the jambs so that it crosses over the joint.
 - .2 When an offset condition exists at each corner where a horizontal member passes behind vertical mullions, two different sized tapes shall be used to equalize the pressure seal. The thinner tape is to applied first on the glazing leg closest to the interior. The thicker tape shall be cut to the length between the two tapes and applied.
 - .3 Each section of tape shall butt the adjoining tape and be united with a tool to eliminate any openings. Lapping of the adjoining tapes at the corners is not permitted.
 - .4 Remove paper backing just prior to setting glass and apply a toe bead of sealant 150 mm long in each of the corners.

- .5 Position one setting block at the quarter point of each corner on the sill members or as recommended by IGMA guidelines.
- .6 Set the glass on the setting blocks and press firmly in place. Snap in the interior glazing stops.
- .7 Set the spacer blocks to prevent any “walking” of the lite.
- .5 Mirrors:
 - .1 Install mirrors by means of concealed vandalproof clips. If clips are used, install cushioning tape completing around perimeter of mirror back, set in concealed location within 25 mm of edge. Install fixed mirrors in washrooms at two different heights as indicated on drawings.
 - .2 Follow manufacturer’s installation recommendations.
- .6 Install any wired glass with the wire parallel to the opening.
- .7 Replace any loose glazing stops and tighten all screws.
- .8 Contractor shall include for needle point (cap beads) at all lower horizontal rail joints of all sash/glazing units at the discretion of and as may be requested by the Consultant or owner.

3.5 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking.
- .3 Remove glazing materials from finish surfaces.
- .4 Remove labels after work is complete.
- .5 Immediately upon job completion and when sealants have cured, remove any temporary protection and clean all exposed interior and exterior surfaces. Use proper cleaning materials only which will not harm the window components or any adjacent surfaces.
- .6 Ensure all temporary labels have been removed and fully cleaned.
- .7 Mirrors:
 - .1 Clean mirrors using non-abrasive soap or detergent and rinse with clean water. Leave in clean, polished condition for Owner occupancy.

3.6 INSPECTION

- .1 Where inspection is called for elsewhere in the specification, perform Window air and water leakage test to ensure installation meets performance requirements stated herein. Should test fail, take remedial measures and re-test a different location at not additional cost to the owner until the test passes.

END OF SECTION

1 General

1.1 **SECTION INCLUDES**

- .1 Labour, Products, equipment and services necessary for terrazzo restoration Work in accordance with the Contract Documents.

1.2 **REFERENCES**

- .1 CSA A23.1, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .2 CAN/CSA A3000, Cementitious Materials Compendium.
- .3 TTMAC, Terrazzo, Tile and Marble Association of Canada

1.3 **SUBMITTALS**

- .1 Product data:
 - .1 Submit duplicate copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
 - .1 Performance criteria, compliance with appropriate reference standard(s), characteristics, limitations, and trouble-shooting protocol.
 - .2 Product transportation, storage, handling and installation requirements.
- .2 Shop drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 indicating:
 - .1 Terrazzo layout.
 - .2 Perimeter conditions, junctions with dissimilar materials.
 - .3 Setting details.
- .3 Certificates: Submit manufacturer's certificates stating that materials supplied are in accordance with this specification.
- .4 Closeout submittals: Submit recommended maintenance instructions and listing of recommended maintenance Products for incorporation into Operations and Maintenance Manuals in accordance with Section 01 78 23.

1.4 **QUALITY ASSURANCE**

- .1 Installer qualifications: Perform Work of this Section by a company that has expertise and proven experience in the installation of terrazzo units of a similar size and nature.

1.5 SITE CONDITIONS

- .1 Do not install Work of this Section outside of the following environmental ranges without the Consultant's and Product manufacturer's written acceptance:
 - .1 Ambient air and surface temperature: 15⁰C to 45⁰C.
 - .2 Precipitation: None.
- .2 Install temporary protection and facilities to maintain the Product manufacturer's, and specified, environmental requirements for 7 Days before, during, and 7 Days after installation.

2 Products

2.1 MATERIALS

- .1 Cement: Portland cement to meet specified requirements of CAN/CSA A3000, Normal or High-Early strength. Use white portland cement in white matrix.
- .2 Sand: To meet specified requirements of CSA A23.1, sharp, screened, washed. Use white sand in white matrix.
- .3 Water: Potable, free from acids, alkalies, oil, or organic materials.
- .4 Divider Strips: To match existing material and size.
- .5 Topping:
 - .1 Marble Chips: To meet specified requirements of Terrazzo, Tile and Marble Association of Canada, match existing size gradation and colour.
 - .2 Colour pigments: Pure mineral, alkali-resistant, non-fading, colour to match existing.
- .6 Cleaner: To meet specified requirements of #1000 Series of Terrazzo, Tile and Marble Association of Canada.
- .7 Sealer: To meet specified requirements of #2000 Series of Terrazzo, Tile and Marble Association of Canada.
- .8 Floor Finish: To meet specified requirements of Type #3001 of Terrazzo, Tile and Marble Association of Canada.
- .9 Curing Agent: Non-staining, maximum moisture retention 0.015 grams, to meet specified requirements of Terrazzo, Tile and Marble Association of Canada.

2.2 MIXES

- .1 Underbed:
 - .1 One part cement to four parts sand by volume.

- .2 Add water to product stiff mix, but use no more than four gals/80 lb. bag of cement to make workable.

- .2 Topping:
 - .1 Marble chip aggregate and cement mixed dry with colour pigments to match existing. Grind a small area to determine the true colours of existing terrazzo and chip gradation.
 - .2 Water shall not exceed 18 L /bag of cement.
 - .3 Prepare topping by mechanical mixing with materials added in the following order: one-half of aggregate, total of cement, water, remaining aggregate.

3 Execution

3.1 EXAMINATION

- .1 Ensure that environmental conditions and backing surfaces have been provided according to specified requirements. Do not proceed with work until satisfied that installation will meet specified standard.

3.2 PREPARATION

- .1 Take extreme care that surfaces adjacent to terrazzo work are protected from staining by terrazzo materials, and that slurry is not tracked into other building areas any time during installation.
- .2 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.
- .3 Sweep backing surfaces clean of all loose materials, and remove the debris. Clean off contaminants which would cause a defective installation.
- .4 Locate and prepare for equipment or accessories recessed in finished terrazzo work.
- .5 Cut terrazzo at panel joints where repair/extension is required.

3.3 INSTALLATION

- .1 General:
 - .1 Installation shall match existing type. Profile of base shall match existing. Where bases are of different profiles, install new base of profile to match finished installation.
 - .2 When patching terrazzo, extend area to nearest divider strip in all directions.
- .2 Underbed for Bonded Installation:
 - .1 Wet backing surfaces with water, remove excess, and when surface water has dried, slush into soaked backing a neat portland cement grout.

- .2 Immediately following application of grout, place underbed, spread evenly, and screed to true levels to receive specified topping.
- .3 Divider Strips:
 - .1 Install divider strips in underbed while it is still semi-plastic.
 - .2 Locate divider strips accurately. Set them straight, aligned, to line up with existing and at correct level; make junctions tight; and firmly trowel them along edges into underbed to ensure anchorage.
 - .3 Set edging strips at junctions with other floor finishes to provide precisely for their thicknesses and finished levels after grinding. At openings set edging strips under doors.
 - .4 Extend divider strips at right angles across borders.
- .4 Placing of Topping:
 - .1 Let underbed cure for at least 24 hours.
 - .2 Wet top of underbed with water, remove excess, and when surface water had dried slush into soaked underbed a neat Portland cement grout of same colour cement and pigment as for matrix.
 - .3 Apply topping to slurry or underbed while it is still wet.

3.4 TOPPING

- .1 Standard Finish:
 - .1 Into wet topping surface of floors, sprinkle wet aggregate of same materials in same proportions as specified for topping.
 - .2 Apply so that finish surfaces match existing.
- .2 Surface Preparation:
 - .1 After finish aggregates are added, immediately roll floor topping with a heavy roller to compact and to remove excess water and cement. Pack bases.
 - .2 Hand trowel all terrazzo surfaces to expose divider strips level with topping.
- .3 Curing:
 - .1 Cure topping for a minimum of six days following placing.
 - .2 Cure to ensure that topping is kept damp until cement is hydrated.
 - .3 Use wet mats or sand, paper or plastic sheets, or liquid curing compound.

3.5 FINISHING

- .1 Grind terrazzo surfaces by machine. Hand rub places inaccessible to grinding machines.
- .2 Constantly flood surfaces with water during grinding.
- .3 For initial grinding, use 24 to 60 grit carborundum stones.
- .4 After initial grinding, wash surfaces clean, remove all residue from holes and voids, and thoroughly rinse with only water.

- .5 Trowel plastic grout, of same mix and colour as matrix, into holes and voids of wetted surface, and remove excess. When grout begins to set, work it into holes and voids with burlap or excelsior pads, and remove excess.
- .6 Cure grout for a minimum of 48 hours as specified above for curing.
- .7 Give final grinding with 120 grit stones and water.
- .8 Wash off surfaces thoroughly after grinding.
- .9 Provide carborundum strips on landings at stariwells as shown on drawings.

3.6 **SITE TOLERANCES**

- .1 Finish surfaces shall be level or straight within a tolerance of 1.6 mm between division strips.

3.7 **REPAIR**

- .1 Before Project completion, remove and replace defective, off-colour, and damaged work. Defective work shall include areas where distribution of surface aggregate is visually different from surrounding area. Removed areas shall be completely bounded by divider strips or edges. RegROUT and regrind surfaces left with open fissures and holes.

3.8 **CLEANING**

- .1 Scrub terrazzo surfaces with an abundance of clean water. Use machine scrubbers where possible for floors.
- .2 Rinse with clean water and allow to dry.
- .3 Remove dust with heavy-duty vacuum cleaner.
- .4 If further cleaning is required, use Terrazzo, Tile and Marble Association of Canada #1001 cleaner in accordance with their specifications.
- .5 Sealing:
 - .1 As soon as possible after final cleaning, apply a coat of sealer. Wipe off excess before it dries.
 - .2 Just before completion of Project, clean terrazzo, as specified above, and apply a second coat of sealer as before.
 - .3 Apply two coats of floor finish.

3.9 **PROTECTION**

- .1 Prevent all traffic and work on newly laid floors by barricading areas for at least 24 hours following installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 04 21 13 – Masonry
- .3 Section 09 22 16 – Non-structural Metal Framing.
- .4 Supply of access doors for mechanical and electrical devices in mechanical and electrical sections.

1.2 REFERENCES

- .1 Aluminum Association
 - .1 Designation for Aluminum Finishes-[1997].
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C36/C36M-[01], Specification for Gypsum Wallboard.
 - .2 ASTM C79/C79M-[01], Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board.
 - .3 ASTM C442/C442M-[01], Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board.
 - .4 ASTM C475-[01], Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .5 ASTM C514-[01], Specification for Nails for the Application of Gypsum Board.
 - .6 ASTM C557-[99], Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - .7 ASTM C630/C630M-[01], Specification for Water-Resistant Gypsum Backing Board.
 - .8 ASTM C840-[01], Specification for Application and Finishing of Gypsum Board.
 - .9 ASTM C931/C931M-[01], Specification for Exterior Gypsum Soffit Board.
 - .10 ASTM C954-[00], Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
 - .11 ASTM C960/C960M-[01], Specification for Pre-decorated Gypsum Board.
 - .12 ASTM C1002-[01], Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .13 ASTM C1047-[99], Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - .14 ASTM C1280-[99], Specification for Application of Gypsum Sheathing Board.
 - .15 ASTM C1177-[01], Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

- .16 ASTM C1178/C1178M-[01], Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- .3 Association of the Wall and Ceilings Industries International (AWEI)
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-71.25-[M88], Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
- .5 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-[1988(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 SITE ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site] for recycling.
- .3 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Consultant.
- .4 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.
- .5 Divert unused wood materials from landfill to [recycling] [composting] facility approved by Consultant.

- .6 Divert unused paint and caulking material from landfill to official hazardous material collections site approved by Consultant.
- .7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

- .1 Standard board: to ASTM C36/C36M, 16 mm or 19 mm thick or as indicated, tapered edges.
- .2 Standard board: to ASTM C36/C36M, X Rated, 16 mm or 19 mm thick or as indicated, tapered edges.
- .3 Water-resistant board: to ASTM C630/C630M, 13 mm water resistant, tapered edges (WRGB in Finish Schedule). Reinforced cement board may be used in lieu of water-resistant gypsum board.
- .4 Abuse resistant/Fire rated: to CSA A82.27-M1977 Fire-Rated Type X, 5/8" thick, "Abuse Resistant Fire Code" gypsum board panels, tapered edges, by CGC, Fibrerock interior AquaTuff panel. All gypsum board to have anti-microbial and anti-mould properties.
- .5 Moisture resistant sheathing: 13mm (1/2") DensShield as manufactured Georgia-Pacific.
- .6 All gypsum board to have Anti-Microbial and Anti Mold properties.
- .7 Nails: to ASTM C514.
- .8 Steel drill screws: to ASTM C1002.
- .9 Stud adhesive: to CAN/CGSB-71.25.
- .10 Laminating compound: as recommended by manufacturer, asbestos-free.
- .11 Concrete Anchors: Phillips Red Head TW-614 or equivalent. Do not use powder activated fasteners for ceiling support.
- .12 Tie Wire: #16 ga. galvanized soft annealed steel wire.
- .13 Caulking: Acoustical sealant.
- .14 38 mm thick mineral wool batts ULC labeled, if indicated on drawings.
- .15 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, 0.5 mm base thickness commercial sheet steel with G90 zinc finish, perforated flanges, and one piece length per location.

- .16 Sealants: in accordance with Section 07 92 10 - Joint Sealing.
- .17 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .18 Joint compound: to ASTM C475, asbestos-free.

2.2 ACOUSTIC INSULATION MATERIALS FOR ALL PARTITION WALLS

- .1 **Location: All interior Gypsum Board Partition walls:** Note that all walls extend to underside of Deck and shall be assembled with the following materials in addition to those specified above.
- .2 Acoustic insulation inside all GB partitions: AFB Acoustic Fire Bat by Roxul or equivalent product by Fibrex, or Quietzone by Owens Corning.
- .3 Steel deck closures: Emseal 25V Expanding Foam Sealant sized and shaped to fit flutes.
- .4 Acoustic Insulation: mineral fibre acoustical batt insulation, as specified under Section 07210. Thickness of 90% of wall assembly cavity depth; Acceptable products:
 - .1 Fibrex 'Sound Attenuation Fire Batt (SAFB)'
 - .2 Johns Manville 'Sound-SHIELD'.
 - .3 Roxul 'AFB'.
 - .4 Owens-Corning 'QuietZone'.
- .5 Acoustical sealant: CAN/CGSB-19.21-M87; non-skinning acoustic sealant, non-hardening type.
- .6 Fasteners: use mechanical fasteners to secure batts into position as recommended by manufacturer.

Part 3 Execution

3.1 ERECTION

- .1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
- .2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
- .3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .4 Install work level to tolerance of [1:1200].

3.2 APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical works are approved.
- .2 Apply single layer gypsum board to metal furring or framing using screw fasteners and laminating adhesive. Maximum spacing of screws 300 mm on centre.
 - .1 Single-Layer Application:
 - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.
 - .2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - .2 Double-Layer Application:
 - .1 Install gypsum board for base layer and exposed gypsum board for face layer.
 - .2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.
 - .3 Apply base layers at right angles to supports unless otherwise indicated.
 - .4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.
- .3 Apply water-resistant gypsum board or cement board at all locations where wall tiles or special coating are to be applied, and adjacent to slop sinks or janitors closets if not constructed of Concrete Block. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.
- .4 Apply gypsum board to concrete block surfaces, where indicated, using laminating adhesive.
- .5 Apply type X gypsum board where indicated, in accordance with U.L.C. requirements and with supplement to the National Building Code of Canada to obtain the required fire protection, fire rating and fire separation.
- .6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .7 Where indicated on drawings, staple blanket to wallboard in accordance with ULC design requirements. Blanket shall be continuous and tightly fitted between studs and at perimeter.
- .8 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .9 Install gypsum board with face side out.

- .10 Do not install damaged or damp boards.
- .11 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- .12 Where a floor or roof structural member interferes with an interior partition wall at which a smoke or fire separation is required, a gypsum board enclosure with a fire rating not less than required for the wall must be provided to continue the required, a gypsum board enclosure with a fire rating not less than required for the wall must be provided to continue the required separation to the floor or roof above (typical)

3.3 INSTALLATION

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure [at [150] mm on centre] [using contact adhesive for full length].
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. [Seal joints with sealant.]
- .4 Construct control joints of [preformed units] [two back-to-back casing beads] set in gypsum board facing and supported independently on both sides of joint.
- .5 Provide continuous polyethylene dust barrier behind and across control joints.
- .6 Locate control joints [where indicated] [at changes in substrate construction] [at approximate [10] m spacing on long corridor runs] [at approximate [15] m spacing on ceilings].
- .7 Install control joints straight and true.
- .8 Construct expansion joints [as detailed], at building expansion and construction joints. Provide continuous dust barrier.
- .9 Install expansion joint straight and true.
- .10 Install cornice cap where gypsum board partitions do not extend to ceiling.
- .11 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at [300] mm on centre.
- .12 Splice corners and intersections together and secure to each member with 3 screws.
- .13 Seal with acoustical sealant at ceilings, floors, wall intersections and all penetrations such as electrical outlets.
- .14 Install access doors to electrical and mechanical fixtures specified in respective sections.

- .1 Rigidly secure frames to furring or framing systems.
- .15 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
 - .1 Levels of finish:
 - .1 Level 0: No taping, finishing or accessories required.
 - .2 Level 1: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.
 - .3 Level 2: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.
 - .4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
 - .5 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
 - .6 Level 5: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
- .17 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .18 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- .19 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .20 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.
- .21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .22 Mix joint compound slightly thinner than for joint taping.
- .23 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

- .24 Allow skim coat to dry completely.
- .25 Remove ridges by light sanding or wiping with damp cloth.
- .26 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C645-[00], Specification for Nonstructural Steel Framing Members.
 - .2 ASTM C754-[00], Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.40-[97], Primer, Structural Steel, Oil Alkyd Type.
- .3 Environmental Choice Program (ECP).
 - .1 CCD-047a -[98], Paints - Surface Coatings.
 - .2 CCD-048-[98], Surface Coatings - Recycled Water-borne.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material in appropriate on-site bins for recycling.
- .3 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.
- .4 Divert unused gypsum materials from landfill to recycling facility approved by Consultant.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, roll formed from 0.59mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum lath and metal lath. Knock-out service holes at 150 mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 30 mm legs for floor track, 50 mm for ceiling track.
- .3 Metal channel stiffener: 38 mm size, 2 mm thick cold rolled galvanized steel.
- .4 Metal Accessories: CSA A82.30-1965 (R-1971).

- .5 “Unistrut” support channel framing, by Tyco Electrical and Metal Products.

Part 3 Execution

3.1 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.
- .2 Place studs vertically at 400 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- .3 Erect metal studding to tolerance of 1:1000.
- .4 Attach studs to bottom track using screws.
- .5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .6 Install steel frames and anchor frames securely to studs using minimum of three (3) anchors per jamb for jambs up to 2100 mm high and a minimum of four (4) anchors per jambs for jambs over 2100 mm high.
- .7 Provide two (2) studs at each side of openings wider than stud centre specified.
- .8 Install, cut to length, piece of runner horizontally over door frames and at top and bottom of rough opening in glazed partitions.
- .9 Provide 38 mm x 89 mm vertical and horizontal wood studs secured between metal studs for attachments of bathroom fixtures, accessories, cabinet work, and other fixtures, including grab bars, towel rails, attached to steel stud partitions.
- .10 Install steel stud or furring channel between studs for attaching electrical and other boxes.
- .11 Extend all partitions to underside of deck above for sound and fire separation.
- .12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

3.2 CEILING FURRING TO CANOPIES & CEILING PANELS

- .1 Provide to all interior and exterior canopies where shown to receive wood slat or plywood finishes.
- .2 Framing channel to be model P1000 (1-5/8”) ; 12 ga.
- .3 For exterior locations provide with 4 m dia. Holes at 500 o.c. for drainage and hot dip galvanize.

.4 Provide shop drawings for layouts.

.5 Refer to drawings for locations.

3.3 ACOUSTICAL SEALANT

.1 Apply acoustical sealant to all sills, headers, jambs and furring channels in contact with walls floors and ceiling deck as part of the acoustical insulation system for interior partitions. Refer to *Section 09 21 16 - Gypsum Board Assemblies*.

3.4 CEILING FURRING

.1 Install runners level to tolerance of 3 mm over 3.5 m. Provide runners at interruptions of continuity and change in direction.

.2 Frame with furring channels, perimeter of openings to accommodate access panels, light fixtures, diffusers, grilles, etc.

.3 Furr for bulkheads within or at termination or ceilings.

.4 Install furring channels at 400 mm o.c. maximum.

3.5 WALL FURRING

.1 Install steel furring, as indicated.

.2 Frame opening and around built-in equipment on four (4) sides with channels.

.3 Box-in beads, columns, pipes, and around exposed services.

3.6 FIRE RATED ASSEMBLIES

.1 If required, install Metal Stud System and Furring in accordance with appropriate ULC Design and with supplement to the National Building Code of Canada 1985.

3.7 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 07 92 10 - Joint Sealing.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108.1-[99], Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-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 Portland Cement Mortar (included in ANSI A108.1).
 - .4 CTI A118.5-[92], Specification for Chemical Resistant Furan Resin Mortars and Grounds for Tile Installation (included in ANSI A108.1).
 - .5 CTI A118.6-[92], Specification for Ceramic Tile Grounds (included in ANSI A108.1).
- .2 American Society for Testing and Materials (ASTM International) International
 - .1 ASTM C144-[99], Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C 207-[91(1997)], Specification for Hydrated Lime for Masonry Purposes.
 - .3 ASTM C847-[95(2000)], Specification for Metal Lath.
 - .4 ASTM C979-[99], 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], 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 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A3000-[98], Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98).
 - .2 CSA A123.3-[98], Asphalt Saturated Organic Roofing Felt.
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)

- .1 Tile Specification Guide 09300 [2000], Tile Installation Manual.
- .2 Tile Maintenance Guide [2000].

1.3 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 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 Portland cement mortar and grout.
 - .5 Divider strip.
 - .6 Elastomeric membrane and bond coat.
 - .7 Reinforcing tape.
 - .8 Levelling compound.
 - .9 Latex-Portland cement mortar and grout.
 - .10 Commercial Portland cement grout.
 - .11 Organic adhesive.
 - .12 Slip resistant tile.
 - .13 Waterproofing isolation membrane.
 - .14 Fasteners.

1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Base tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .3 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
- .4 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.
- .5 Stair Accessories: submit duplicate samples of each trim.
- .6 Adhere tile samples to [11] mm thick plywood and grout joints to represent project installation.
- .7 Prepare a 2 m x 3m mock-up sample on site to ensure demonstration of installation details and quality control. Include stair accessories in mock-up.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.
- .2 Store material so as to prevent damage or contamination.
- .3 Store materials in a dry area, protected from freezing, staining and damage.
- .4 Store cementitious materials on a dry surface.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.
- .3 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Consultant.
- .4 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.
- .5 Broken ceramic materials must be diverted from landfill to a local facility as approved by Consultant.

1.7 ENVIRONMENTAL CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 °C for 48 h before, during, and 48 h after, installation.
- .2 Do not install tiles at temperatures less than 12 °C or above 38 °C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 °C or above 25 °C.

1.8 EXTRA MATERIAL

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide minimum 5% of each type and colour of tile required for project for maintenance use. Store where directed.
- .3 Maintenance material to be of same production run as installed material.

1.9 EXTENDED WARRANTY

- .1 Submit a warranty for entire wall tile installation, covering materials and labour and the repair or replacement of defective work in accordance with the Contract, but for three (3) years total.

Part 2 Products

2.1 WALL TILE

- .1 Ceramic tile (Designation: CWT): to CAN/CGSB-75.1, Type 5, Class MR 4
 - .1 Size: 4" x 16", matte surface.
 - .2 Four colours to be selected from full colour line. Thin-set application.

- .3 Acceptable Materials: Urban Max, by Centura or similar by Olympia.
- .2 Locations: Washrooms and other locations noted on Room Finish Schedule and Interior Elevations.
- .3 Tile Edging: Purpose-made, anodized aluminum, polished chrome finish, metal edge strips as manufactured Schluter Systems at all exposed tile edging: Profile – JOLLY; thickness as required for tile and tile set.

2.2 TRIM SHAPES

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.
- .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.
- .5 Provide cove and bullnose shapes for where indicated and required to complete tile work.

2.3 MORTAR AND ADHESIVE MATERIALS

- .1 Manufacturer's of commercial mortar, grout and adhesive having Product considered acceptable for use:
 - .1 Mapei
 - .2 Laticrete
 - .3 Flextile
- .2 Walls: Mortarcrete Latex Mortar conforming to ANS1A118.4-1973, manufactured by L & M Ceramo Inc.
- .3 Floors:

- .1 Cement Mortar: Mixture of 1 part Portland cement, 4 parts dry sand and 1/10 hydraulic lime. Materials shall conform to the following:
- .2 Portland Cement: To CAN3-A, Type 10.
- .3 Hydrated Lime: To ASTM C-206 or 207, Type 5.
- .4 Sand: To CSA A82.56, passing 1.6 mm sieve.
- .5 Water: Potable, containing no contaminants which cause efflorescence.
- .6 Thin Set Mortar: field mixed, blended sand-Portland cement-latex mortar, “Kerabond/Keralastic by Mapei.”
 - .1 Acceptable Alternates: “Laticrete 4237 distributed by Ceratec Inc., or Flextile 52 thin set.
 - .2 Latex Additive: “Cemtex” by Master Builders, Laticrete 2022” distributed by Ceratec Inc.,

2.4 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 Portland Cement Grout, Dry-Set Grout, and Latex-Portland Cement Grout.
- .2 Chemical-Resistant Grout for Walls:
 - .1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
 - .2 Epoxy Grout: “Latapoxy SP-100” Stainless, chemical resistant epoxy grout by Laticrete International. Colour from manufacturer’s full range. Alternate: Kerapoxy by Mapei.
- .3 Floors:
 - .1 Polymer modified grout as manufactured by MAPEI.

2.5 ACCESSORIES

- .1 Stairs Nosings and Edge Trims:
 - .1 Stair nosing to be Schluter, TREP-S, Aluminum support with thermoplastic rubber insert (26mm), installed in conjunction with porcelain tile as per manufacturer’s recommendations. Thermoplastic rubber insert piece colour to be selected by consultant.
 - .2 SCHIENE edge protection by Schluter, anodized aluminum to installed at all exposed stair tile edges. Mitre joints to suite stair angle. Size as required for tile and mortar bed.
- .2 Prefabricated Movement Joints: purpose made Schluter, Dilex-KSN aluminum, sized as required for tile and mortar bed. Colour to be selected by consultant. To be installed directly above slab saw-cuts. Refer to floor pattern drawing for locations.

- .3 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.
- .4 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.
 - .2 Brass complete with anchors, both sides spaced at 150 mm on centre.
- .5 Cleavage plane: [polyethylene film to CGSB 51-34] [No. 15 asphalt saturated felt to CSA A123.3] .
- .6 Metal lath: to ASTM C847 finish, 10 mm rib at 2.17 kg/m².
- .7 Transition Strips: purpose made metal extrusion; stainless steel type.
- .8 Reducer Strips: purpose made metal extrusion; stainless steel type; maximum slope of 1:2.
- .9 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.
- .10 Sealant: in accordance with Section 07 92 10 - Joint Sealing.
- .11 Floor sealer and protective coating: [to CAN/CGSB-25.20, Type [1] [2]] [to tile and grout manufacturers recommendations].

2.6 MIXES

- .1 Portland Cement:
 - .1 Scratch coat: 1 part portland 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: portland cement and water mixed to creamy paste. Latex additive may be included.
 - .3 Mortar bed for floors: 1 part portland 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 portland 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 portland cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
 - .6 Bond or setting coat: 1 part portland 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.

- .4 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .5 Adjust water volumes to suit water content of sand.

2.7 PATCHING AND LEVELING COMPOUND

- .1 Portland cement base, acrylic polymer compound, manufactured specifically for resurfacing and levelling 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.

2.8 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and levelling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2000, "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 Install floor tiles as per pattern. Layout and install flash cove tile first, before floor tile, ensuring a flush edge on the horizontal surface by feathering to masonry walls as required to produce a straight line on the floor. Install floor tiles to pattern supplied by Architect at a later date. Contact consultant to review when approximately no more than 10 sq. m has been installed.
- .8 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .9 Make internal angles square, external angles rounded.
- .10 Make internal angles square, external angles chamfered at 45° with narrow tile strip.
- .11 Construct cove base, as described using all special pieces available for inside and outside corners.
- .12 For Floors: Use bull nose edged tiles at termination of wall tiles, except where tiles abut projecting surface or differing plane.
- .13 Seal grouted joints with sealer.
- .14 Keep building expansion joints free of mortar or grout.
- .15 For Walls: Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .16 Install divider strips at junction of tile flooring and dissimilar materials.
- .17 Allow minimum 24 h after installation of tiles, before grouting.
- .18 Clean installed tile surfaces after installation and grouting cured.

3.2 FLOOR TILE

- .1 Install in accordance with TTMAC to applicable thinset detail.

3.3 STAIR TILE ACCESSORIES

- .1 Install all accessories specified per manufacturer's instructions using whole lengths.
- .2 Provide sample installation for architect for review.

3.4 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.
- .3 Section 06 10 10/06101 - Rough Carpentry: Wood strapping.
- .4 Fabrication: to ASTM 365-78 and CAN/GSB-92.1-M77.
- .5 Installation: to ASTM C636-76, except where specified otherwise.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM E1264-[98], Classification for Acoustical Ceiling Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
 - .2 CAN/CGSB-92.1-[M89], Sound Absorptive Prefabricated Acoustical Units.
- .3 Canadian Standards Association (CSA)
 - .1 CSA B111-[74(R1998)], Wire Nails, Spikes and Staples.
- .4 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-[88(R2000)], Surface Burning Characteristics of Building Materials.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit two each 300 x 300 mm samples of each individual tile and grid type in accordance with Section 01340.

1.4 REGULATORY REQUIREMENTS

- .1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.5 DESIGN CRITERIA

- .1 Maximum deflection 1/360 of span to ASTM 365-78 deflection test.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan

1.7 ENVIRONMENTAL REQUIREMENTS

- .1 Permit wet work to dry before commencement of installation.
- .2 Maintain uniform minimum temperature of [15]⁰C and humidity of [20] - [40] % before and during installation.
- .3 Store materials in work area [48] hours prior to installation.

1.8 EXTRA MATERIALS

- .1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide acoustical units amounting to [2] % of gross ceiling area for each pattern and type required for project.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each type of acoustic unit, including colour and texture.
- .5 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

- .1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
- .2 Acoustic Ceiling Panels, Designation LAP: Acoustic Ceiling Panels, wet formed mineral fibre panels, by Armstrong World Industries Canada Inc., Mississauga. Colour: White; Types as noted below:
- .3 **Panel Types:**
 - .1 Lay-in Acoustic Panels (LAP):
600 x 1200 mm x 15.9 mm thick; 'Cortega', Square Lay-In, #769; Location: Refer to Room Finish Schedule.
 - .2 Clouds (CLD): Acoustical Clouds: 1" thick, Soundscapes Acoustical Clouds, circular shape, by Armstrong. Location: Library. Colour: Allow for three colours to be selected by Consultant from manufacturer's full range. Sizes: dia. 2440mm.

- .4 Acceptable alternates for LAP: similar fire-rated purpose-designed high humidity ceiling panels by CGC Interiors, BPB Canada Inc. and Certainteed.
- .5 Acceptable alternates for CLD 'Acoustical Clouds': similar purpose-designed acoustical panels such as 'Avanti' acoustical ceiling clouds by EzoBord, Sound Solutions and 'Nuvola' Acoustical Clouds by Decoustics or Sound Seal (dist. By Wallworks Acoustic Arch. Products 647 808-5450), Shapes by Sound Concepts or Conwed Skyway Cloud by Owens Corning.
- .5 **Suspension system Type 1:** 23.8 mm (15/16") "Prelude" exposed tee bar grid, including wall moulding, by Armstrong. Colour: white. Acceptable alternate: similar suspension system by CGC Interiors, Oakville and Chicago Metal Corp. Grid sizes to suit ceiling panel types as shown on drawings.
- .6 Hangers: 2.6 mm galvanized soft annealed steel wire.
- .7 Accessories: splices, clips, retainers, etc., to complement suspension system components.
- .8 Adhesive: low VOC type recommended by acoustic unit manufacturer.
- .9 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.

Part 3 Execution

3.1 EXAMINATION

- .1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 INSTALLATION

- .1 Install acoustical panels and tiles in ceiling suspension system.
- .2 Install acoustic units parallel to building lines with edge unit not less than 50% of unit width.
- .3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.
- .4 Support suspension system main runners at 1200 oc maximum with hangers from structure. Assembly shall support super-imposed loads. Maximum permissible deflection, 1/360 of span.
- .5 Attach cross member to main runner to provide rigid assembly.
- .6 Install suspension assembly to manufacturer's written instructions.

- .7 Install flush edge moulding at junction of acoustic unit ceiling and other materials around entire length of joint. Secure to construction. Butt joints neatly, square and true in alignment.
- .8 Set acoustic units in place.
- .9 Set all ceiling levels by the use of transit or laser level.
- .10 Ensure all installations are clean upon owner acceptance. Be responsible for monitoring damage and soiling after installation and before owner occupancy. Prior to owner takeover, replace all tiles with damage, blemishes or soiling whether caused by subcontractor handling or post installation above-ceiling adjustments, balancing, cabling, etc.
- .11 Provide for Owner twelve (12) complete, undamaged ceiling tiles of each type, sealed and boxed. Leave in location as directed by Architect.

3.3 INTERFACE WITH OTHER WORK

- .1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM F1303-[99], Specification for Sheet Vinyl Floor Covering with Backing.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-ISO 14040-[97], Environmental Management - Life Cycle Assessment - Principles and Framework (Adopted ISO 14040:1997, first edition).

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long base, nosing, feature strips, treads, edge strips.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain air temperature and structural base temperature at flooring installation area above 20° for 48 hours before, during and 48 hours after installation.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Do not dispose of unused sealant and adhesive materials into landfill. Divert materials to municipal hazardous materials depot approved by Consultant.
- .2 Divert unused metal and wiring materials from landfill to metal recycling facility approved by Consultant.
- .3 Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.7 QUALITY ASSURANCE

- .1 Supplier shall be an established firm experienced in the field.
- .2 Installer:
 - .1 Flooring contractor experienced in the field and approved by the manufacturer.

- .2 Flooring contractor shall have manual instructions and be trained by the manufacturer and distributor.
- .3 Manufacturer's recommendations for the correct preparation, finishing and testing sub floor surface.

1.8 EXTENDED WARRANTY

- .1 Submit a warranty for all the installation of all resilient sheet flooring, covering materials and labour and the repair or replacement of defective work in accordance with the General Conditions of the Contract, but for seven (7) years total.

Part 2 Products

2.1 MATERIALS

- .1 Resilient Sheet Flooring (SF1): Acceptable materials:
 - .1 Acceptable Materials:
 - .1 IQ Homogeneous Vinyl, 'Optima' by Tarkett.
 - .2 Mipolam Affinity by Gerflor.
 - .3 Palletone by PolyFlor.
 - .2 Locations: Refer to Room Finish Schedule.
 - .3 Allow for three (3) colours from manufacturer's full range.
- .2 Resilient Acoustic Sheet Flooring (SF2): Acceptable materials:
 - .1 Acceptable Materials:
 - .1 IQ Homogeneous Vinyl, 'Optima Acoustic' by Tarkett.
 - .2 Mipolam Affinity Acoustic by Gerflor.
 - .3 Harmony fx U4 Acoustic by Polyflor
 - .2 Locations: Sensory Rooms
 - .3 Allow for two (2) colours from manufacturer's full range.
- .3 Self Levelling Underlayment: "Ultraplan 1" by Mapei fast setting, polymer-modified; for over cured concrete, plywood, ceramic tile, old cutback adhesive, and old vinyl and vinyl composition flooring, feather edge to 1 1/2" (38 mm).for use to prepare floor at locations where existing flooring has been removed and subfloor is not level..
- .4 Filler and Cover Former:
 - .1 As recommended by manufacturer to suit subfloor on which its material is installed and to suit vertical wall/floor junctions.
- .5 Primers and Adhesives: As recommended by manufacturer of material to suit subfloor condition.
- .6 Cleaner: Neutral chemical compound that will not damage sheet or affect its colour.
- .7 Welding Rod: PVC welding rod, colour to match resilient sheet flooring.

- .8 Cap strip: sized to suit application, type recommended by flooring manufacturer, Altro Stainless Steel Cap, mechanically fastened to wall.
- .9 Resilient base (RR): rubber, top set coved, 3 mm thick, rubber, 100 mm high minimum 1200 mm long, including premoulded end stops and external corners. Acceptable materials: non-shrink Rubber Wall Base with toe as manufactured by Johnsonite, Roppe or approved alternates. Colours: Six (6) from full Johnsonite "Coloright" colour line.
- .10 Aluminum base (AB): Schluter Designbase-SL wall base profile. Aluminum Anodized Matte 60mm x length required. Location: Library Reception Desk (all sides).

Part 3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

- .1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.2 PREPARATION

- .1 Scope includes preparation of floor using self levelling coating and patching compound as required.
- .2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- .4 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
- .5 As required, seal concrete slab to resilient flooring manufacturer's printed instructions.

3.3 INSTALLATION

- .1 Install on a smooth, flat concrete finish, which will be achieved manually or mechanically.
- .2 Ensure concrete sub floor temperature to be maintained at a minimum of 70°F during installation and ensure the moisture content does not exceed 3 Lbs per 1000 Sq Ft per 24 hours or lower.
- .3 Paint game lines using approved game line paint primer and game line paint in strict accordance with the game line paint manufacturer's instructions.
- .4 Before proceeding with any work, inspect the sub floor surface and report, in writing, to the project manager and the General Contractor any visible defect on the surface, such as cracks, bumps, rough areas or variations in planarity.
- .5 This installation is to proceed on an existing concrete slab in addition to new concrete work as required for mechanical services. Ensure slab is adequately cured and free of

moisture or contaminants. If necessary, as part of the work of this section, scarify existing surfaces to prepare surface for adhesive, or to meet manufacturer's installation requirements. Fill joints, cracks, and holes in these surfaces and level surface irregularities with filler. Remove prime paint and wire brush steel base surfaces.

- .6 Check for any grease, oil, paint, duct or any combination remaining on the concrete sub floor.
- .7 Before proceeding with installation, clean concrete surface to remove any dirt or foreign materials, rinse thoroughly and allow eight (8) hours minimum to dry, if required, sanding is necessary in all installations.
- .8 Fill any areas not meeting $\pm 1/8''$ in 10' for level before installation. This will insure levelness and proper adhesion of material.
- .9 Lay each material in accordance with manufacturer's specifications.
- .10 Weld joints on flooring and internal and external angles of coves using welding rod in matching plain colours, and the standard hot-air-welding technique.
- .11 Install standard rubber base at resilient sheet flooring locations.
- .12 Flash into drain openings; do not cut on surface at edge of drain cover. Coordinate with Division 15 for installation with suitable drain type and cover. Bond flooring to drain flange under clamping ring using epoxy adhesive.
- .13 Extend resilient sheet under all cabinet work and casework to the wall line.

3.4 CLEANING

- .1 Remove excess adhesive from floor, base and wall surfaces without damage.
- .2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.5 PROTECTION

- .1 Protect new floors from time of final set of adhesive, with polyethelene or Kraft paper until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Do not wax.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 51 00 - Temporary Utilities.
- .3 Section 01 78 00 - Closeout Submittals.

1.2 REFERENCES

- .1 American Association of Textile Chemists and Colorists (AATCC)
 - .1 AATCC 16-[1998], Color Fastness to Light.
 - .2 AATCC 23-[1999], Color Fastness to Burn Gas Fumes.
 - .3 AATCC 118-[1997], Oil Repellency: Hydrocarbon Resistance Test.
 - .4 AATCC 129-[2001], Colour Fastness to Ozone in the Atmosphere Under High Humidities.
 - .5 AATCC 134-[2001], Electrostatic Propensity of Carpet.
 - .6 AATCC 171-[2000], Carpets: Cleaning of; Hot Water Extraction Method.
 - .7 AATCC 174-[1998], Antimicrobial Activity Assessment of Carpets.
 - .8 AATCC 175-[1998], Stain Resistance: Pile Floor Coverings.
 - .9 AATCC 189-[2001], Fluorine Content of Carpet Fibers.
- .2 American Society for Testing and Materials (ASTM International)
 - .1 ASTM D1055-[97], Specification for Flexible Cellular Materials - Latex Foam.
 - .2 ASTM D1335-[98], Tuft Bind of Pile Floor Coverings.
 - .3 ASTM D1667-[97], Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
 - .4 ASTM D3936-[00] Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
 - .5 ASTM D5252-[98a], Standard Practice for the Operation of the Hexapod Drum Tester.
 - .6 ASTM D5417-[99], Standard Practice for Operation of the Vettermann Drum Tester.
 - .7 ASTM E84-[01], Test Method for Surface Burning Characteristics of Bulding Materials.
 - .8 ASTM E648-[00], Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
 - .9 ASTM E662-[01], Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-4.2 No.27.6-[M91], Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.

- .2 CAN/CGSB-4.2 No.77.1-[94]/ISO 4919:1978, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
- .3 CGSB 4-GP-36M-[78], Carpet Underlay, Fiber Type.
- .4 CAN/CGSB-4.129-[93(R1997)], Carpets for Commercial Use.
- .5 CGSB 20-GP-23M-[78], Cushion, Carpet, Flexible Polymeric Material.
- .6 CAN/CGSB-25.20-[95], Surface Sealer Floors.
- .4 Carpet and Rug Institute (CRI)
 - .1 CRI-104-[96], Standard Installation of Commercial Carpet.
 - .2 IAQ Carpet Testing Program.
- .5 National Floor Covering Association (NFCA)
 - .1 Floor Covering Specification Manual [1998].
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-[88(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC-S102.2-[88(R2000)], Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.3 SUBMITTALS

- .1 Submit control submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit verification to demonstrate compliance with CAN/ULCS102 and CAN/ULCS102.2.
- .3 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute (CRI) and the Canadian Carpet Institute (CCI).
- .4 Submit report verifying that tuft bind meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.
- .5 Submit report outlining proposed dust control measures.
- .6 Submit carpet schedule using same room designations indicated on drawings.
- .7 Submit carpet manufacturer's installation instructions: Indicate special procedures and perimeter conditions requiring special attention.
- .8 Submit certification and description of carpet recycling process

1.4 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit product data sheet for each carpet, adhesive, carpet protection and subfloor patching compound.

- .3 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health Canada for carpet adhesive and seam adhesive. Indicate VOC content.
- .4 Submit data on specified products, describing physical and performance characteristics, sizes, patterns, colours, and methods of installation.

1.5 SHOP DRAWINGS

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

1.6 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate two (2) full carpet tile and base samples for each colour selected.

1.7 CLOSEOUT SUBMITTALS

- .1 Submit operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Submit maintenance data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.
- .3 Schedule of carpet reclamation activities indicating following:
 - .1 Detailed sequence of removal work.
 - .2 Inventory of items to be removed and reclaimed.
 - .3 Proposed packing and transportation measures.

1.8 QUALIFICATIONS

- .1 Installer Qualifications:
 - .1 Flooring contractor requirements.
 - .1 Specialty contractor normally engaged in this type of work, with prior experience in installation of these types of materials.
- .2 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturers written instructions.

1.9 REGULATORY REQUIREMENTS

- .1 Prequalification: tested to CAN/CGSB-4.2-No.27.6.
- .2 Indoor Air Quality: compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI-IAQ requirements for maximum total volatile chemicals released into air. Label each carpet product with CRI/CCI-IAQ label.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Label packaged materials. For carpet tile products indicate nominal dimensions of tile and indicate installation direction.
- .2 Packaging, labelling, packing and marking details.
- .3 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.
- .4 Store carpeting and accessories in location as directed by Consultant. Store carpet and adhesive at minimum temperature of 18°C and relative humidity of maximum 65% for minimum of 48 hours before installation.
- .5 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
- .6 Store materials in area of installation for minimum period of 48 hours prior to installation.
- .7 Modular carpet: store on pallet form as supplied by Manufacturer. Do not stack pallets.

1.11 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.12 ENVIRONMENTAL REQUIREMENTS

- .1 Moisture: Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Prepare moisture testing and provide report to Consultant
- .2 Temperature: Maintain ambient temperature of not less than 18°C from 48 hours before installation to at least 48 hours after completion of work.
- .3 Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.
- .4 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
- .5 Ventilation:
 - .1 Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.
 - .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.
 - .3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.
- .6 Test existing floor levelling compound for presence of asbestos contamination. Notify Consultant for additional instructions where asbestos is discovered.

- .7 Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

1.13 EXTRA MATERIALS

- .1 Provide extra materials of carpet, base, and adhesives in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 20 m² of each colour, pattern and type of carpeting.
- .3 Extra materials to be from same production run as installed materials.
- .4 Identify each package of carpet and each container of adhesive.
- .5 Deliver to Consultant and store where directed by Consultant.

Part 2 Products

2.1 MANUFACTURERS

- .1 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute IAQ requirements.

2.2 CARPET TILE (CPT) – Carpet Tiles

Product shall be suitable for direct glue-down installation as per CGSB-4-SP-156. The consultant may select any of the following styles from the manufacturers listed below.

(Note: Pre-glued products are NOT acceptable)

- .1 CARPET TILE (CPT 1 - field)
 - 1. Interface Cubics
 - 2. Interface The Standard
 - 3. Interface Ice Breaker
 - 4. Interface Verticals
 - 5. Interface Profile
 - 6. Interface Exposed
 - 7. Interface Aerial Collection
- .2 CARPET TILE (CPT 2 & CPT 3 -accent)
 - 1. Interface Urban Retreat Collection
 - 2. Interface Monochrome
 - 3. Interface Viva Colores
- .3 All carpet supplied for each installation shall be manufactured from yarn of the same dye lot. Carpet will be selected by the Project Manager or Board Designee from Manufacturer's stock colour and pattern range.

.4 **WARRANTY**

Carpet and installation shall carry a minimum Manufacturer's ten (10) year warranty.

.5 **ADHESIVES**

Use Manufacturer's recommended adhesive. Provide with bid submission all adhesive products MSDS. Failure to provide MSDS information may result in the rejection of the bid.

.6 **INSTALLATION**

All carpet to be installed as per Manufacturer's instructions (latest editions/amendments) and in accordance with good installation practices.

2.3 ACCESSORIES

.1 **Adhesive:**

.1 Multi-purpose adhesive type: recommended by carpet manufacturer for direct glue down installation.

.2 Pressure sensitive type: recommended by carpet manufacturer for direct glue down installation of modular carpet or speciality backed carpets.

.2 Carpet protection: non-staining heavy duty kraft paper.

.3 Concrete floor sealer: to CAN/CGSB-25.20, Type 1.

.4 Subfloor patching compound: Portland cement base filler, mix with latex and water to form a cementitious paste.

Part 3 Execution

3.1 SUB-FLOOR TREATMENT

.1 Concrete shall be inspected to determine special care required to make it a suitable foundation for carpet. Cracks 3 mm wide or protrusions over 0.8 mm will be filled and levelled with appropriate and compatible patching compound.

.2 Do not exceed manufacturer's recommendations for patch thickness.

.3 Large patch areas are to primed with a compatible primer.

.4 Concrete substrates shall be cured, clean and dry.

.5 Concrete substrates shall be free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that may interfere with the bonding of the adhesive.

.6 Wherever a powdery or porous concrete surface is encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for glue-down installation.

3.2 PREPARATION

- .1 Prepare floor surfaces in accordance with CRI 104 Standard for Installation of Commercial Carpet.
- .2 Pre-condition carpeting following manufacturer's printed instructions.

3.3 INSTALLATION

- .1 Install in accordance with manufacturer's published instructions and in accordance with Carpet and Rug Institute Standard for Installation of Commercial Carpet, CRI 104.
- .2 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.
- .3 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- .4 Install carpeting in pan type floor access covers.
- .5 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- .6 Install carpet smooth and free of bubbles, puckers, and other defects.

3.4 DIRECT GLUE DOWN CARPET

- .1 Apply adhesive and install carpeting in accordance with manufacturer's written instructions, by direct glue-down method.

3.5 BASE INSTALLATION

- .1 Install carpet base in accordance with manufacturers instructions.

3.6 PROTECTION OF FINISHED WORK

- .1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.
- .2 Prohibit traffic on carpet for a period of 24 hours until adhesive is cured.
- .3 Install carpet protection to satisfaction of Consultant.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.
- .3 Section 09 22 16 - Non-structural Metal Framing.
- .4 Section 06 10 10 - Rough Carpentry: Wood strapping.
- .5 Section 09 51 13 – Acoustic panel Ceiling.
- .6 Section 06 40 00 – Architectural Woodwork.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM C423-[01], Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB-92.1-[M89], Sound Absorptive Prefabricated Acoustical Units.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA B111-[1974(R1998)], Wire Nails, Spikes and Staples.
- .4 Underwriter Laboratories of Canada (ULC)
 - .1 CAN/ULC-S702-[97], Thermal Insulation, Mineral Fibre, for Buildings.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit one 300 x 300 sample of acoustic panel.

1.4 ENVIRONMENTAL REQUIREMENTS

- .1 Commence installation after building enclosed and dust generating activities are completed.
- .2 Permit wet work to dry prior to commencement of installation.
- .3 Maintain uniform minimum temperature of 15°C and relative humidity of 20- 40% prior to, during and after installation.

1.5 WASTE MANAGEMENT

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard, packaging material in appropriate on-site bins for recycling.

1.6 EXTRA MATERIALS

- .1 Provide acoustical units for maintenance use amounting to 2% of gross wall area for each pattern and type required for project.
- .2 Provide sufficient adhesive to install extra material provided.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each package of acoustical units including colour and type, and each container of adhesive.
- .5 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Acoustic Wall Panels:

- .1 Supply and install surface mounted panels for use in Library.
- .2 'EzoBord' Sheets – square edge (9mm & 12mm thick)
Acoustical construction products must:
 - .1 Not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act.
 - .2 Be accompanied by detailed instructions for proper handling and installation so as to minimize health concerns.
- .3 Composition: 100% pet (min. 50% recycled content).
- .4 Panels shall be square edged with mechanical butt joints. A Flame Spread rating shall not exceed 25 and NRC-0.80 in accordance with ASTM C423.
- .5 Finish: three colours to be selected by Consultant from Manufacturer's standard colour range in either 9mm or 12mm thickness.
- .6 Panel size: As indicated on drawings.
- .7 Mounting method: as recommended by manufacturer.
- .8 Screws: Non corrosive finish, type recommended by acoustic unit manufacturer.
- .9 Alternates approved during tender.

Part 3 Execution

3.1 EXAMINATION

- .1 Examine carefully surfaces to which panels will be attached and report defects to the Architect. Commencement of installation will signify complete acceptance of substrate.

3.2 INSTALLATION OF TECTUM PANELS

1. Fasten metal furring channels to wall at 600 mm O.C. and at perimeter to receive panels, insulation and wood trim. Refer to detail drawings.
2. Install acoustic insulation to suitable friction fit between channels.
3. Fasten Tectum panels, long dimension to the vertical, to furring using suitable self tapping screws at maximum 300 mm O.C.
4. Install wood surround trim. Refer to Section 06 40 00.

3.3 INSTALLATION OF PANELS

1. Fasten zee clips to wall-shim, as required, for level and even appearance.
2. Install insulated panels on clips. Provide vandal resistant fastening and metal trim.

3.4 CLEANING

- .1 Keep acoustic installation and all components clean. Remove blemishes immediately.

3.5 PROTECTION

- .1 Use cardboard to protect finished acoustical wall treatment from damage.
- .2 Remove prior to substantial completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 06 40 00 - Architectural Woodwork.
- .3 Section 05 12 23 – Structural Steel for Buildings.
- .4 Section 05 50 00 – Metal Fabrications.
- .5 Section 08 11 14 – Metal Doors and Frames.
- .6 Section 09 91 27 – Finish and Colour Notes.
- .7 Section 09 91 30 – Door and Room Finish Schedule.

1.2 REFERENCES

- .1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).
- .2 Ontario Painting Contractors Association (OPCA) Architectural Specification Manual - referenced as OPCA Manual, latest Edition. Paint formulations and methods referred to herein refer to this Manual. If contractor is unfamiliar with this reference standard, contact the OPCA at (416) 498-1897.

1.3 WARRANTY

- .1 At outset of the contract, contractor to register with the OPCA for the inspection service paid for from Cash Allowances.
- .2 Upon completion of the inspection program, contractor to furnish a 2 Year Guarantee. The Guarantee shall warrant that the work has been performed with respect to the standards and requirements incorporated in the OPCA specification manual-latest edition.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

- .1 Do not apply paint finish in areas where dust is being generated.
- .2 Conform to requirements of OPCA Manual.
- .3 Comply with the requirements of Section 01 35 30- Health and Safety.

1.5 JOB MOCK-UP

- .1 Complete a mock-up room to be reviewed and approved by Owner, Consultant, and OPCA Inspector for approval on application of block filler and finish paint coats.

1.6 SCHEDULING OF WORK

- .1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 72 hours in advance of proposed operations.
- .2 Obtain written authorization from Consultant for any changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.7 EXTRA MATERIALS

- .1 Submit one - four litre can of each type and colour of [primer] [stain] [finish coating]. Identify colour and paint type in relation to established colour schedule and finish system.
- .2 Deliver to Contractor and store where directed.

1.8 DELIVERY, HANDLING AND STORAGE

- .1 Labels shall clearly indicate:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
- .2 Remove damaged, opened and rejected materials from site.
- .3 Provide and maintain dry, temperature controlled, secure storage.
- .4 Observe manufacturer's recommendations for storage and handling.
- .5 Store materials and supplies away from heat generating devices.
- .6 Store materials and equipment in a well ventilated area with temperature range 7⁰C to 30⁰C.
- .7 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .8 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
- .9 Remove paint materials from storage only in quantities required for same day use.
- .10 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .11 Fire Safety Requirements:

- .1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.9 FINISHES AND COLOURS

- .1 Review the requirements outlined in Section 099127, Finish Schedule and Colour Notes. A separate colour schedule will be issued after contract award.
- .2 Allow for 10 colours total from all formulations for this project including room wall accent colours.

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.,) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .2 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
- .3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .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 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .5 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .6 Set aside and protect surplus and uncontaminated finish materials: galvanized touch up; wood stain, prefinished metal touch up paint. Deliver to or arrange collection by recycling organization for verifiable re-use or re-manufacturing.
- .7 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

Part 2 Products

2.1 MATERIALS

- .1 Acceptable Manufacturer's: Where OPCA code numbers are not referenced, use Products from one of the following manufacturers:
 - .1 Benjamin Moore & Co. Ltd.
 - .2 Canadian Industries Ltd.
 - .3 ICI (Glidden) Paints.
 - .4 Para Paints.
 - .5 Pratt & Lambert Inc.
 - .6 SICO Coatings.
 - .7 The Sherwin-Williams Company.
- .2 Manufacturers of intumescent coatings having Product considered acceptable for use:
 - .1 A/D Fire Protection Systems Inc.
 - .2 Carboline.
- .3 Paint materials for paint systems shall be products of a single manufacturer.
- .4 Acceptable products: Per Chapter 5 OPCA Manual and as listed.
- .5 Paint materials for each paint system to be products of a single manufacturer.
- .6 Use low-VOC and low-odour paints only.

Part 3 Execution

3.1 GENERAL

- .1 Prepare surfaces to receive paint per Chapter 3 OPCA Manual.

3.2 APPLICATION

- .1 Sand and dust between each coat to remove defects visible from distance up to 1.5 m.
- .2 Finish closets and alcoves as specified for adjoining rooms.
- .3 Apply each coat at the proper consistency. Each coat of finish should be fully dry and hard before applying the next coat, unless the manufacturer's instructions state otherwise.
- .4 Method of application to be as approved by Consultant. Apply paint by [brush] [roller] [air sprayer] [airless sprayer]. Conform to manufacturer's application instructions unless specified otherwise.
- .5 Brush and Roller Application:

- .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
- .2 Work paint into cracks, crevices and corners.
- .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
- .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant.
- .5 Remove runs, sags and brush marks from finished work and repaint.
- .6 Spray application:
 - .1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - .3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
 - .4 Brush out immediately all runs and sags.
 - .5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
- .7 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.
- .8 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .9 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .10 Sand and dust between coats to remove visible defects.
- .11 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .12 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .13 Finish closets and alcoves as specified for adjoining rooms.
- .14 Finish top, bottom, edges and cut-outs of doors after fitting as specified for door surfaces.

3.3 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Refer also to Finish Notes in Section 099127- Finish and Colour Notes.
- .2 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise. Coordinate with

mechanical trades applying banding and labeling after pipes have been painted. Do not paint white PVC covers on exposed mechanical water, drain and other lines

- .3 Paint gas piping standard yellow where visible on roof or in service spaces. Do not paint gas meter or gas equipment in wall niche yellow—colour to later selection by Architect.
- .4 Paint surfaces inside of ductwork and elsewhere behind grilles where visible using primer and one coat of matte black paint.
- .5 Paint both sides and edges of plywood backboards for equipment before installation.
- .6 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.4 PAINT SYSTEMS

- .1 System references listed are based on Chapters 4A and 4B of OPCA Manual and are OPCA Premium Grade, unless noted otherwise.

3.5 INTERIOR FINISHES

- .1 Wood, where applicable:
 - .1 Miscellaneous trim: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
 - .2 Casework and miscellaneous wood items:
 - .1 Exterior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
 - .2 Interior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
 - .3 Wood Benches and Upper Shelves: INT. 2-F, Stained Alkyd Satin Finish, Premium Grade.
- .2 Gypsum board: INT.4-B, Latex Eggshell Finish, Premium Grade.
- .3 Concrete Block: EP - All corridors, stairwells and vestibules - 100 percent zero VOC epoxy.
- .4 Concrete Block: INT.8-C -modified; Areas other than corridors, stairwell and vestibules - Latex Semi-Gloss Finish, Premium Grade. Modified system refers to all work where 2 full coats of block filler shall be applied.
- .5 Concrete Floors; refer to Section 03 35 05 Concrete Floor Hardeners
- .6 Miscellaneous metal:
 - .1 Primed: INT. 12-A, Alkyd Semi-Gloss Finish, Premium Grade
 - .2 Galvanized: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade
 - .3 INT. 12-G, Water based Epoxy finish, two coats on a rust inhibitive primer for all exposed steel railings, guards, etc..
- .7 Galvanized metal: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade
- .8 Hollow Metal Doors and Frames: Without exception, all wipecoated Galvanized Hollow Metal Doors, Frames and Screens, interior and exterior shall be field cleaned with

solvent, galvanized prime paint coated and then finished with INT. 13-A Premium Grade, Gloss Finish. Base coat primer shall be submitted for review in advance or door/frame painting shall be rejected by Consultant. For exterior hollow metal frames, if any, adjacent to aluminum windows, provide finish coat as an exterior premium grade metallic gloss finish to match anodized windows or Aluminum Composite panels. Colour to be confirmed by Architect during construction.

.9 Other Painting:

- .1 In the any rooms with exposed metal deck including mechanical rooms and storage rooms:
 - .1 Allow for single colour for deck and joists.
 - .2 Allow for complete painting of all hangers and equipment brackets including but not limited to, electrical and mechanical equipment, etc.
 - .3 painting deck/floor slab and structural steel is part of painting contract.

3.6 EXTERIOR PAINTING

- .1 Pavement markings: To CGSB 1-GP-74M, alkyd traffic paint.
 - .1 Sandblast existing line painting on asphalt to Owner's satisfaction, prior to application of new markings.
 - .2 Colour: to CGSB 1-GP-12C, white 513-301.
 - .3 Thinner: to CAN/CGSB-1.5
 - .4 All paint to confirm to OPSS #1712 and be supplied by one of the following suppliers.

White Paint Code	
Niagara Paint and Chemical Co. Ltd.	#87932
Ibis Products Ltd.	#40-2478
CIL	#7612-26992
Sherwin Williams	#C97WG129
Sico Paints	#3007649W
- .2 Miscellaneous metal:
 - .1 Primed: EXT. 11-A-Gloss, Premium Grade
 - .2 Galvanized: Touch up any welds, cuts or damage with 'Galvafroid' Paint by W.R. Meadows prior to prime and finish coats.; Finish System EXT. 12-A-Gloss, Premium Grade
- .3 Galvanized Structural Steel: Touch up any welds, cuts or damage with 'Galvafroid' Paint by W.R. Meadows prior to prime and finish coats.; Finish System: EXT. 12-A-Gloss, Premium Grade.
- .4 Steel - high heat: EXT. 15-A
- .5 Paint exterior vents and louvres located in masonry to match adjacent masonry in colour.

3.7 INSPECTIONS

- .1 Provide Architect with all formulations at outset of project.

- .2 Cooperate at all times with the paint inspection agency in the performance of their duties as required as part of the work of this Section.
- .3 Inspection costs to be paid from Cash Allowance.

END OF SECTION

Part 1 General

1.1 GENERAL FINISH NOTES

- .1 The Material and Colour Schedule will be issued by the Consultant after tender. It shall be read in conjunction with the Drawings, Specifications, Room Schedule and Door Schedule. Colour and material references named will be based on one manufacturer, as carried by the Contractor or, in the case that no specific manufacturer is carried, based on the Consultant's choice.
- .2 Approved alternative manufacturers will be acceptable only as indicated in the specifications. However, approved alternate products submitted must match the products named in the Specification to the Consultant's selection. Alternate products other than those named in the specifications will not be allowed unless previously approved by the Consultant.
- .3 Consult Consultant prior to painting any surface not included in the formulae as listed.
- .4 Final colour for exterior painted surfaces and prominent interior areas shall be approved on the job site by the Consultant.
- .5 Paint samples: Contractor to submit paint samples for all areas required to "Match Adjacent Finish".
- .6 All similar paint formulations are to be identical when dry. Variations in tone, texture or sheen shall not be accepted.
- .7 Submit two 300 mm x 300 mm paint samples of each colour required for approval by the Architect.
- .8 Exact locations of accent paint called for in the Material and Colour Schedule, to be issued after Contract award, not specifically identified on the drawings are to be verified on site with the Consultant.

1.2 EXTERIOR FINISH NOTES

- .1 All exposed metal (doors, frames, lintels, stairs, handrails, mechanical equipment, etc.) to be painted except for prefinished metal louvres, stainless steel, and aluminum. Mechanical equipment is to be painted whether delivered to the site prepainted or not (exhaust fans, goosenecks, exhaust stacks, supports, HVAC units, HRU units, etc.). Colours to match adjacent material-generally either to match brick or tan to match flashing or siding material. Do not paint exposed white PVC pipe covers on interior. Architect will advise on jobsite which other items mentioned above, if any, do not require painting.
- .2 All unfinished metal work provided by landscaping is to be painted by Section 099122-Painting.

1.3 INTERIOR FINISH NOTES

- .1 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (except stainless steel or anodized aluminum) to be painted to match the surfaces on which they occur unless noted otherwise on the colour schedule, prefinished in suitable colour or directed by the Consultant. If prefinished equipment is damaged, it shall be re-painted. Painting to be by formulations specified in Section 09 91 12- Painting.
- .2 All interior fitments, casework, millwork, etc. to be melamine unless otherwise noted. Refer to Sections for specific requirements regarding materials, construction, finishes and hardware. Note that drawer and cupboard interiors are to be considered as exposed surfaces and will therefore be finished.
- .3 Do not paint over nameplates, identification tags, etc.
- .4 Make good all existing surfaces and finishes that are damaged during construction.

END OF SECTION

PART 1 - GENERAL

1.1 General Notes

1. Find the **Room Finish Schedule** on the following page.
2. Refer to interior elevations, plans sections and reflected ceiling plans to coordinate finish notes and extents of materials.
3. Refer to various specifications sections for different types of materials including, but not limited to:
 - .1 flooring materials such as resilient tile
 - .2 ceiling materials such as Lay-In Acoustical panel (LAP)
 - .3 Acoustical wall treatment
4. Abbreviations Legend:

<u>Code</u>	<u>Reference</u>
AB	Aluminum Base
AP	Acoustic Panel
CPT	Carpet Tile
CWT	Ceramic Wall Tile
CB	Concrete Block
GWB	Gypsum Board
LAP	Lay-in Acoustic Panel
EX	Existing
EXIST	Existing
POR	Porcelain Tile
PL	Plastic Laminate
P	Paint
RR	Resilient Rubber
RSTR	Rubber Stair Tread & Riser
SF	Resilient Sheet Flooring
TERR	Terazzo
VCT	Vinyl Composite Tile

END OF SECTION

Hillside P.S. Office Renovation Room Finish Schedule

[illegible]

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site packaging materials at appropriate recycling facilities.
- .2 Dispose of recyclable packaging material in appropriate on-site bin for recycling.

Part 2 Products

2.1 MATERIALS

- .1 Tack Boards (TB) - As manufactured by Architectural School Products, Mississauga; natural coloured cork tackboard:
 - .1 **NATURAL CORK TACKBOARDS** 12.7mm (1/2") factory prelaminated consisting of 6mm (1/4") thick a.s.p. natural cork laminated to 6mm (1/4") particle board or masonite substrate under mechanical pressure in maximum panel sizes of 1219mm x 2438mm (4'0" x 8'0"). Bonding of materials by a waterproof adhesive that will not delaminate or rupture at the contact surfaces.
 - .2 All tackboards shall meet the minimum requirements of the applicable building code and/or Ontario Fire Marshall's office.
 - .3 Acceptable alternates: Global School Products Inc.
 - .4 Shop finish rear faces of tackboard units being installed in horizontal sliding trim to a matte black finish.
 - .5 Refer to Construction Drawings for locations & sizes required.

- .2 White Boards (WB) - “Vit-Rite: Rite on, Wipe off” model as manufactured by Architectural School Products, Mississauga.
 - .1 **WHITEBOARD – VITRITE**
by architectural school products Ltd., Mississauga, Ontario, consisting of a sandwich type construction composed of face panel, core and balancing rear sheet, in maximum panel sizes of 1219mm x 2438mm (4’0” x8’0”)
 - .2 Face Panel – 22 gauge high quality enamelling steel base with a porcelain enamel writing surface used to a ground coat of not less than 0.076mm (.003”) nor more than 0.127mm (.005”) after firing at temperatures between 700°C (1300°F) and 800°C (1500°F) in accordance with the Porcelain Enamel Institute Standards PEI S104 as regards to durability, smoothness of texture, colour continuity and a gloss factor of 6 – 8 as measured by 45° glossometer.
 - .3 Core – 11.1mm (7/16”) impregnated sound absorbing fibreboard laminated under heat and pressure to face panel and back sheet utilizing adhesives that ensure rupturing of the component materials before failure of joint contact surfaces.
 - .4 Back up balancing sheet – 28 gauge zinc coated stretcher leveled steel in one unjointed section. Overall thickness of Whiteboard lamination shall be 12.7mm (1/2”).
 - .5 Colour: White
 - .6 Acceptable alternates: ~~Global School Products Inc. (WRDSB does not use)~~
 - .7 Refer to Construction Drawings for locations & sizes required.
 - .8 Manufacturer’s Warranty: warrant White Boards for a period of 10 years against defects due to normal usage and wear.
- .3 White Board, Tack Board and Bulletin Board Fixed Trim: ASP Series 200 to match details and profiles shown on architectural drawings. Aluminum to be 6063-T5 alloy with 0.051 mm thick clear anodized satin finish, free from extruding draw marks and surface scratches; components as follows:
 - .1 Perimeter Trim: extruded aluminum trim for all tackboards and also vertical jambs of chalkboards; e.g. ASP No. 205.
 - .2 Divider Bar: extruded aluminum trim to adjacent chalkboard/tackboard panels and adjacent tackboard panels of elevations greater then 2,440 mm; e.g. ASP No. 207.
 - .3 Map Rail: extruded aluminum trim complete with integral tan cork insert, end stops and two combination roller map hooks for ever 1.83 linear metres of map rail; e.g. ASP No. 206.
 - .4 Marker Tray: extruded aluminum triangular box section for chalkboard elevation only complete with contour fitting end castings; 102 mm projection from finished wall; e.g. ASP No. 212.
 - .5 Marker Tray Over Millwork: extruded aluminum trims section for elevations mounted directly on or above millwork; 70 mm projection from finished wall; e.g. ASP No. 264.
 - .6 Display rail above each chalkboard, tackboard and whiteboard: one of the following products:
 - .1 “Kwikgrip” Display Rail by Architectural School Products Ltd. (Model 200).

- .2 "Grip-A-Strip" by Global.
- .7 Chalk rail below each chalkboard and markerboard: A.S.P. #212 (no cabinets below) and #264 (cabinets below).
- .8 Refer to Construction Drawings for locations & sizes required.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

- .1 Install where indicated on drawings and as per manufacturer's instructions.

3.3 DEMONSTRATION AND TRAINING

- .1 Provide demonstration of operation to the Owner and his representatives.
- .2 Provide training for operation, maintenance and repairs.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.
- .3 Clean aluminum with damp rag and approved non-abrasive cleaner.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 10 21 14 – Metal Toilet Compartments.
- .3 Section 10 28 10 – Plastic Toilet Compartments.
- .4 Section 08 80 50 – Glazing: Mirrors.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A167-[99], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM B456-[95], Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - .3 ASTM A653/A653M-[99], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM A924/A924M-[99], Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.81-[M90], Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
 - .2 CAN/CGSB-1.88-[92], Gloss Alkyd Enamel, Air Drying and Baking.
 - .3 CAN/CGSB-12.5-[M86], Mirrors, Silvered.
 - .4 CGSB 31-GP-107Ma-[90], Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-B651-[95], Barrier-Free Design.
 - .2 CAN/CSA-G164-[M92], Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures
- .2 Shop drawings of units for use by the handicapped shall be distinctly marked and cross-referenced to the corresponding article in the specifications.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 MATERIALS

- .1 Ferrous Steel: Sheet, cold-rolled furniture steel, double annealed, mill stretched and leveled, and fully pickled. Otherwise, steel shall be hot-rolled or cold-rolled of alloy to suit needs of fabrication, use, and appearance.
- .2 Galvanized Steel: For sheet, Z275 zinc coating designation in accordance with ASTM Specification A525. For irregular sections, hot dip galvanized to comply with CSA G164.
- .3 Stainless steel sheet metal: to ASTM A167, Type 304, with No. 4 finish.
- .4 Anchors and Fastenings: Where exposed, use stainless steel and otherwise to match metal anchored. Where non-exposed, use the same as that specified for exposed, or use galvanized steel. Anchors and fastenings shall be of the type appropriate for the substrate to which accessory unit is secured.

2.2 COMPONENTS

- .1 Fixed Grab Bars (GB): 32 mm outside diameter; 1.2 mm thick stainless steel; pended non-slip finish; round or oval concealed flange attachments, as described below:
 - .1 Straight Profile: e.g. Frost Model 1001-DP-24.
 - .2 L-Shaped Profile: e.g. Frost Model 1003-DP-30x30.
 - .3 All bars to have concealed mounting hardware
 - .4 Quantity: refer to drawings
 - .5 All bars to withstand horizontal and vertical pull of 2.2 Kn
 - .6 Location: Refer to drawings for locations and quantities.
- .2 Sanitary Napkin Disposal (SN): Model 620, by Frost
 - .1 Quantity: 1 per washroom
 - .2 Location: Refer to drawings for locations and quantities.
- .3 Convenience Shelves (CS): Model B295x16 by Bobrick
 - .1 Quantity: refer to drawings
 - .2 Location: Staff Washroom and Washrooms where noted, refer to drawings.
- .4 Safety Release Coat Hook (BH):
 - .1 Refer to drawings for locations.
 - .2 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)
 - .3 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.
 - .4 Colours:
 - .1 Allow for one (1) colour from Manufacturers standard line

- .5 Acceptable Materials: “HenkelHook” as manufactured/distributed by Henkel Diversified Inc, London ON, tel (519) 641-5872 or “Model 1150 – Safety Coat Hook” with stainless steel base as manufactured/distributed by Frost.
- .6 Locations: Washrooms
- .5 Mirrors
 - .1 Fixed Mirrors (designation Type M):
 - .1 Best quality, 6 mm thick float glass, with concealed tamperproof clip fasteners.
 - .2 24 ga., Type 302 or 304 No 4 finish stainless steel frames on all edges and galvanized iron backing with concealed mounts.
 - .3 Sizes: each unit 610 mm x 915 mm.
 - .4 Locations: as shown on Drawings.
 - .5 Acceptable Materials: Frost ‘Stock series’ model 941TG Tempered Glass; 24” x 36” each.
 - .6 Acceptable alternate: B-2908 Series, Bobrick Washroom Equipment Co.
- .6 Toilet Paper Dispenser (TD):
 - .1 To be provided by Owner and installed by Contractor.
- .7 Paper Towel Dispenser (PTD):
 - .1 To be provided by Owner and installed by Contractor.
- .8 Soap Dispenser (SD):
 - .1 To be provided by Owner and installed by Contractor.
- .9 Acceptable Alternates to those items listed above as manufactured by Bradley Corp. & Supplied by Wentworth Assoc. Ltd., Frost Products Ltd., Watrous (ASI) or Bobrick Washroom Equipment Co. and Saferail meeting or exceeding these specifications.

2.3 FABRICATION

- .1 Construction: Fabricate with materials, component sizes, metal gauges, reinforcing, anchors and fasteners of adequate strength to withstand intended use.
- .2 Where specified as frameless, provide stainless steel accessories with one-piece fronts having 90 degree formed returns at their edges and openings.
- .3 Where accessory fronts are framed, frame edges, both inside and outside, with 90 degree formed returns continuously welded and ground smooth at the corners. Doors shall also have 90 degree formed returns as specified.
- .4 Unless otherwise specified, hinges shall be semi-concealed stainless steel piano hinges extending full-length of hinged element. Provide hinged elements with concealed, mechanically-retained rubber bumpers for silent closing, and shall close flush with faces of fronts or frames.
- .5 Ensure that work will remain free of warping, buckling, opening of joints and seams, distortion and permanent deformation.

- .6 No exposed fixings permitted. Cut edges and openings square and smooth. Chamfer corners of edges and cut-outs 1.6 mm.
- .7 Assembly: Accurately cut, machine and fit joints, corners, copes and mitres so that junctions between components fit together tightly and in true planes.
- .8 Fasten work with concealed methods, unless otherwise indicated on Drawings.
- .9 Weld all connections where possible, bolt where not possible and cut off bolts flush with nuts. Countersunk bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastening.
- .10 Welded joints shall be tight, flush, and in true planes with base metals. Make welds continuous at joints where entry of water into voids of members or assemblies is possible.
- .11 Provide for differential movements within assemblies and at junctions of assemblies with surrounding work.
- .12 Welds in exposed locations shall be ground and polished smooth.
- .13 Finish Work: Provide holes and connections for related work installed under other Sections of this specification, if applicable.
- .14 Cleanly and smoothly finish exposed edges of materials, including holes.

Part 3 Execution

3.1 INSPECTION OF SECTION

- .1 Take site measurements to ensure that work is fabricated to fit surrounding construction around obstructions and projects in place, or as shown on drawings, and to suit service locations.

3.2 INSTALLATION

- .1 Install all accessories in accordance with manufacturers' instructions at their recommended mounting heights unless noted otherwise on drawings.
- .2 Securely fasten accessories plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding work. Install in locations shown and specified herein. Mounting heights as shown or in accordance with the OBC in the case of barrier-free accessories.
- .3 Work shall include anchor bolts, bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeve brackets, clips, and other items necessary for secure installation, as required by loading and by Jurisdictional Authorities.
- .4 Attach work at wood by screws through countersunk holes in metal.
- .5 Attach work to masonry with lead plugs and non-corrosive fastenings, to support load with a safety factor of 3. Perform all drilling necessary to install the work.

- .6 Insulate between dissimilar metals or between metals and masonry or concrete with bituminous paint, to prevent electrolysis.
- .7 Coordinate installation with the work of other trades adjacent to accessories to achieve the reveals or other edge conditions shown, where their front faces are flush with the finished wall surfaces.
- .8 Owner to supply and install remainder of washroom accessories not specified here (toilet paper dispensers, etc.). Cooperate with Owner as required.

3.3 CLEANING UP AND ADJUSTMENT

- .1 Upon completion of the work, or when directed, remove all traces of protective coatings or paper.
- .2 Test mechanisms, hinges, locks and latches, and where necessary, adjust and lubricate and ensure that accessories are in perfect working order.

END OF SECTION

Part 1 General

1.2 RELATED WORK

- .1 Section 08 11 14 - Steel Doors and Frames

1.3 SUBMITTALS

- .1 Product data:
 - .1 Submit duplicate copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
 - .1 Performance criteria, compliance with appropriate reference standard(s), characteristics, limitations, and finishes.
 - .2 Product transportation, storage, handling and installation requirements.
 - .2 Shop drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00.
 - .2 Provide layout, details of track and operating hardware, installation details.
 - .3 Samples: Submit 600 mm x 600 mm duplicate samples of Dual Sun Shade material and colour.
 - .4 Closeout submittals:
 - .1 Submit following for each Product for incorporation into Operations and Maintenance Manuals in accordance with Section 01 78 00:
 - .1 Functional description detailing operation and control of components.
 - .2 Performance criteria and maintenance data.
 - .3 Operating instructions and precautions.
 - .4 Safety precautions.
 - .2 Submit maintenance data, wrenches or specialty tools, cleaning and maintenance instructions

1.5 QUALITY ASSURANCE

- .1 Shades and track shall be installed by a qualified specialist with expertise and experience in this type of work.

Part 2 Products

2.1 MATERIALS

- .1 **Manual Roller Shade Window Covering (RS):**
 - .1 Manually controlled, extruded aluminum hanger and closure.
 - .2 Specifications are based on 300 Series Solarblock 1% open, advanced polyester sun control fabric. Colour to be selected later by Consultant.
 - .3 Locations: noted on drawings with 'RS'. (Interior sidelites and Exterior Windows)
 - .4 Recess into windows and curtainwall where possible.

- .5 Manufactured by Solarfective Products Ltd., Mechoshade Systems Inc., as, Silent Gliss Model 4110 by Architectural Products, Mecho/5 Model or 200 Vic roller shades.
- .6 All shades systems specified in this section shall be provided by one manufacturer who shall take full responsibility for the total project.

2.2 Solarfective Shading blackout fabric:

- .1 Shade cloths shall be woven of .018 opaque, vinyl coated polyester yarn consisting of approx. 79% vinyl and 21% 500 denier polyester core yarn. The fabric shall be tensioned in the finishing range prior to heat setting to keep the warp ends straight and minimize or eliminate weave distortion to keep the fabric flat. The fabric shall be dimensional stable. Colour will be selected from standard range. It shall be tear resistant meeting NFPA 701.
- .2 Meet or exceed the following statistics:

Openness Factor		1%+0.0%-0.5%
Weight per sq.yd.		21 oz.
Warp ends per inch		42
Fill ends per inch		31
Stretch % (271lb.wt.):	warp	2%
	fill	3%
Set %	warp	1.5%
	fill	1.5%
Abrasion Resistance	YARN	none
(500 Tarber Cycles)	RAPTURE	none
	WEAR	TRACE
U.V. Deterioration	Fade	none
(200 Sun Fade Hours)		
Tensile Retention		96%

2.2 FABRICATION

- .1 Fabricate shades in accordance with reviewed shop drawings and manufacturer's written instructions.

Part 3 Execution

3.1 INSTALLATION

- .1 Securely install shades and track adding brackets as required but in no case less than four brackets.
- .2 After installation fabric shall hang flat, without buckling or distortion. The edge when trimmed, shall hang straight without ravelling. An unguided roller shade cloth shall roll true and straight, without shifting sideways more than 3mm in either direction due to warp distortion, or weave design.

3.4 CLEAN UP

- .1 At conclusion of work remove all debris, dirt; clean surfaces like glass, floor, stools, heating units if soiled. Test each re-installed drape, each sunshade numerous times and make adjustments to assure trouble-free installation and operation.
- .2 Brief maintenance staff regarding proper care, cleaning, lubricating, adjusting, etc.

END OF SECTION

Division 26 Common Requirements for Electrical

26 00 11	Electrical Specification Index
	Common Contract Requirements for Electrical
26 01 16	Electrical Contract General Requirements
26 01 17	Demolition and Renovation
	Common Work Results for Electrical
26 05 19	Wires and Cables
26 05 20	Splitters, Junction, and Pull Boxes
26 05 21	Outlet Boxes, Conduit Boxes and Fittings
26 05 22	Wire and Box Connectors – 0 –1000 V
26 05 33	Conduits, Conduit Fastenings and Conduit Fittings
26 05 73	Short Circuit/Coordination Study
26 05 75	Auxiliary Systems
26 05 76	Electric Heating Systems
	Panelboards
26 24 16	Panelboards
26 24 17	Moulded Case Circuit Breakers
	Low-Voltage Distribution Equipment
26 27 26	Wiring Devices
	Low-Voltage Circuit Protective Devices
26 28 16	Disconnect Switches
	Low-Voltage Controllers
26 29 13	Starters and Contactors
	Lighting
26 51 13	Lighting Equipment
26 51 16	Digital Occupancy & Daylight Control Systems

Division 28 Electronic Safety and Security

	Fire Detection and Alarm
28 31 25	Fire Alarm System (Addressable)

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 This Section covers items common to Electrical Division 26, as well as Division 27 and Division 28.**
- .2 This section supplements requirements of Division 1.
- .3 Furnish labour, materials, and equipment necessary for completion of work as described in contract documents.

1.2 INTENT

- .1 Mention herein or indication on Drawings of articles, materials, operations, or methods requires: supply of each item mentioned or indicated, of quality, or subject to qualifications noted; installation according to conditions stated; and, performance of each operation prescribed with furnishing of necessary labour, equipment, and incidentals for electrical work.
- .2 Where used, words "Section" and "Division" shall also include other Subcontractors engaged on site to perform work to make building and site complete in all respects.
- .3 Where used, word "supply" shall mean furnishing to site in location required or directed complete with accessory parts.
- .4 Where used, word "install" shall mean secured in place and connected up for operation as noted or directed.
- .5 Where used, word "provide" shall mean supply and install as each is described above.

1.3 TENDERS

- .1 State in Tender, names of all Subcontractors proposed for work under this Division.

1.4 LIABILITY INSURANCE

- .1 This contractor must maintain and produce at the request of the consultant proof of proper insurance to fully protect the owner, the consultant and the contractor from any and all claims due to accidents, misfortunes, acts of God, etc.

1.5 ELECTRICAL SAFETY AUTHORITY

- .1 The contractor is to determine general inspection fees with Electrical Safety Authority and include as part of tender.

1.6 DRAWINGS

- .1 Electrical Drawings do not show structural and related details. Take information involving accurate measurement of building from building drawings, or at building. Make, without additional charge, any necessary changes or additions to runs of conduits and ducts to accommodate structural conditions. Location of conduits and other equipment may be altered by the consultant without extra charge provided change is made before installation and does not necessitate major additional material.

- .2 As work progresses and before installing fixtures and other fittings and equipment which may interfere with interior treatment and use of building, provide detail drawings or obtain directions for exact location of such equipment and fitments.
- .3 Electrical drawings are diagrammatic. Where required work is not shown or only shown diagrammatically, install same at maximum height in space to conserve head room (minimum 2200 mm (88") clear) and interfere as little as possible with free use of space through which they can pass. Conceal wiring, conduits and ducts in furred spaces, ceilings and walls unless specifically shown otherwise. Install work close to structure so furring will be small as practical.
- .4 Before commencing work, check and verify all sizes, locations, grades, elevations, levels and dimensions to ensure proper and correct installation. Verify existing/municipal services.
- .5 Locate all electrical equipment in such a manner as to facilitate easy and safe access to and maintenance and replacement of any part.
- .6 In every place where there is indicated space reserved for future or other equipment, leave such space clear, and install services so that necessary installation and connections can be made for any such apparatus. Obtain instructions whenever necessary for this purpose.
- .7 Relocate equipment and/or material installed but not co-ordinated with work of other Sections as directed, without extra charge.
- .8 Where drawings are done in metric and product not available in metric, the corresponding imperial trade size shall be utilized.

1.7 INTERFERENCE AND CO-ORDINATION DRAWINGS

- .1 Prepare interference and equipment placing drawings to ensure that all components will be properly accommodated within the constructed spaces provided.
- .2 Prepare drawings to indicate co-ordination and methods of installation of a system with other systems where their relationship is critical. Ensure that all details of equipment apparatus, and connections are co-ordinated.
- .3 Ensure that clearances required by jurisdictional authorities and clearances for proper maintenance are indicated on drawings.
- .4 Upon consultant's request submit copies of interference drawings to the consultant.
- .5 Due to the nature of the building and the complexity of the building systems provide the following:
 - .1 Interference drawings, showing coordination of architectural, structural, mechanical, and electrical systems for the consultant's review prior to fabrication.
 - .2 Detailed equipment room drawings clearly showing all distribution equipment.
 - .3 Detailed layout drawings clearly showing conduit/feeder runs 78mm diameter or larger, including hangers or tray.
- .6 Provide CAD drawings (minimum file version AutoCAD 2013) in addition to hard copies.

1.8 QUALITY ASSURANCE

- .1 The installations of the division must conform to the latest edition of the Electrical Safety Code as well as its supplemental bulletins and instructions. Provide materials and labour necessary to comply with rules, regulations, and ordinances.
- .2 Complete underground systems in accordance with CSA C22.3 No. 7-94 except where specified otherwise.
- .3 Abbreviations for electrical terms: to CSA Z85-1983.
- .4 In case of differences between building codes, provincial laws, local ordinances, utility company regulations, and Contract Documents, the most stringent shall govern. Promptly notify consultant in writing of such differences.

1.9 ALTERNATES AND SUBSTITUTIONS

- .1 Throughout these sections are lists of "Alternate Equipment" manufacturers acceptable to consultant if their product meets characteristics of specified described equipment.
- .2 Each bidder may elect to use "Alternate Equipment" from lists of Alternates where listed. Include for any additional costs to suit Alternated used. Prices are not required in Tender for Alternates listed except where specifically noted as "Separate Price". Complete the Supplementary Tender Form.
- .3 When two or more suppliers/manufacturers are named in the Bid Documents, only one supplier/manufacturer of the products named will be acceptable; however, it is the responsibility of this Division to ensure "Alternate Equipment" fits space allocated and gives performance specified. If an "Alternate Equipment" unit is proposed and does not fit space allotted nor equal specified product in consultant's opinion, supply of specified described equipment will be required without change in Contract amount. Only manufacturers listed will be accepted for their product listing. All other manufacturers shall be quoted as substitution stating conditions and credit amount.
- .4 If item of material specified is unobtainable, state in Tender proposed substitute and amount added or deducted for its use. Extra monies will not be paid for substitutions after Contract has been awarded.

1.10 EXAMINATION

- .1 Site Reviews
 - .1 Examine premises to understand conditions, which may affect performance of work of this Division before submitting proposals for this work.
 - .2 No subsequent allowance for time or money will be considered for any consequence related to failure to examine site conditions.
- .2 Drawings:
 - .1 Electrical Drawings show general arrangement of fixtures, power devices, equipment, etc. Follow as closely as actual building construction and work of other trades will permit.

- .2 Consider Architectural, Mechanical, and Structural Drawings part of this work insofar as these drawings furnish information relating to design and construction of building. These drawings take precedence over Electrical Drawings.
- .3 Because of small scale of Drawings, it is not possible to indicate all offsets, fittings, and accessories, which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves, and accessories required to meet conditions.
- .3 Ensure that items to be furnished fit space available. Make necessary field measurements to ascertain space requirements including those for connections and furnish and install equipment of size and shape so final installation shall suit true intent and meaning of Contract Documents. If approval is received by Addendum or Change Order to use other than originally specified items, be responsible for specified capacities and for ensuring that items to be furnished will fit space available.

1.11 SEQUENCING AND SCHEDULING

- .1 It is understood that while Drawings are to be followed as closely as circumstances permit, this Division will be held responsible for installation of systems according to the true intent and meaning of Contract Documents. Anything not clear or in conflict will be explained by making application to consultant. Should conditions arise where certain changes would be advisable, secure consultant's approval of these changes before proceeding with work.
- .2 Coordinate work of various trades in installing interrelated work. Before installation of electrical items, make proper provision to avoid interferences in a manner approved by consultant. Changes required in work specified in these sections caused by neglect to do so shall be made at no cost to owner.
- .3 Arrange fixtures, conduit, ducts, and equipment to permit ready access to junction boxes, starters, motors, control components, and to clear openings of doors and access panels.
- .4 Furnish and install inserts and supports required by these sections unless otherwise noted. Furnish sleeves, inserts, supports, and equipment that are an integral part of other Divisions of the Work to Sections involved in sufficient time to be built into construction as the Work proceeds. Locate these items and see that they are properly installed. Expense resulting from improper location or installation of items above shall be borne by the electrical trade.
- .5 Adjust locations of ducts, conduits, equipment, fixtures, etc, to accommodate work from interferences anticipated and encountered. Determine exact route and location of each conduit and duct prior to installation.
 - .1 Make offsets, transitions, and changes in direction of ducts, and electrical raceways as required to maintain proper head room and pitch of sloping lines whether or not indicated on Drawings.
 - .2 Supply and install pull boxes, etc, as required to effect these offsets, transitions, and changes in direction.

1.12 REQUEST FOR INFORMATION (RFI) PROCEDURES

- .1 RFIs shall be submitted to the consultant minimum two (2) weeks prior to answer being required. Failure to submit and RFI in a timely manner will forfeit delay claims and schedule extension requests by the contractor.
- .2 All RFIs will be submitted with the following information:
 - .1 RFI number
 - .2 Name of project
 - .3 Date of initiation
 - .4 Date response required by (minimum two (2) weeks)
 - .5 Subject
 - .6 Submitter's name
 - .7 Drawing/specification reference
 - .8 Photograph of the issue (if applicable)
 - .9 Description of the issue
 - .10 Contractor's proposed resolution

1.13 DRAW BREAKDOWN

- .1 This contractor **MUST** submit a breakdown of the tender price into classifications to the satisfaction of the consultant, with the aggregate of the breakdown totaling the total contract amount. **Each item must be broken out into material and labour costs.** Progress claims, when submitted are to be itemized against each item of the draw breakdown. This shall be done in table form showing contract amount, amount this draw, total to date, % complete and balance.
- .2 Breakdown shall be as follows:
 - .1 Permits and fees
 - .2 Mobilization (maximum 1%)
 - .3 Demolition
 - .4 Panelboards and miscellaneous distribution equipment
 - .5 Feeder conduits
 - .6 Branch conduits
 - .7 Feeder cables
 - .8 Branch wiring
 - .9 Lighting fixtures (interior)
 - .10 Emergency lighting
 - .11 Fire alarm system devices and verification
 - .12 Voice/Data system
 - .13 Electric heating
 - .14 Wiring for mechanical equipment
 - .15 Commissioning (minimum 3%)

- .16 Electrical contractor closeout requirements (minimum of 3% but not less than \$2,000.00)
- .3 The breakdown must be approved by the consultant prior to submission of the first draw.
- .4 Breakdowns not complying to the above will not be approved.
- .5 Breakdown must indicate total contract amount.
- .6 **Mobilization amount may only be drawn when all required shop drawings have been reviewed by the consultant.**

1.14 **SHOP DRAWINGS AND PRODUCT DATA**

- .1 General
 - .1 Furnish complete catalog data for manufactured items of equipment to be used in the work to consultant for review within 14 days after award of Contract.
 - .2 Upon receipt of reviewed shop drawing, product is to be ordered immediately.
 - .3 Provide a complete list of shop drawings to be submitted prior to first submission.
 - .4 Before submitting to the consultant, review all shop drawings to verify that the products illustrated therein conform to the Contract Documents. By this review, the contractor agrees that it has determined and verified all field dimensions, field construction criteria, materials, catalogue numbers, and similar data and that it has checked and coordinated each shop drawing with the requirements of the work and of the Contract Documents. The contractor's review of each shop drawings shall be indicated by stamp, date and signature of a qualified and responsible person possessing by the appropriate authorization.
 - .5 If material or equipment is not as specified or submittal is not complete, it will be rejected by consultant.
 - .6 Additional shop drawings required by the contractor for maintenance manuals, site copies etc., shall be photocopies of the "reviewed" shop drawings. All costs to provide additional copies of shop drawings shall be borne by the contractor.
 - .7 **Submit all shop drawings for the project as a package. Partial submittals will not be accepted.**
 - .8 Catalog data or shop drawings for equipment, which are noted as being reviewed by consultant or his engineer shall not supersede Contract Documents.
 - .9 Review comments of consultant shall not relieve this Division from responsibility for deviations from Contract Documents unless consultant's attention has been called to such deviations in writing at time of submission, nor shall they relieve this Division from responsibility for errors in items submitted.
 - .10 Check work described by catalog data with Contract Documents for deviations and errors.
 - .11 Shop drawings and product data shall show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances. e.g. access door swing spaces.

- .12 Shop drawings and product data shall be accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Manufacturer test data where requested.
 - .3 Manufacturer to certify as to current model production.
 - .4 Certification of compliance to applicable codes.
- .13 State sizes, capacities, brand names, motor HP, accessories, materials, gauges, dimensions, and other pertinent information. List on catalog covers page numbers of submitted items. Underline applicable data.
- .14 **If a shop drawing is returned "reviewed as noted" this contractor must provide written indication that the comments have been complied with.**
- .15 A partial list of shop drawings includes:
 - .1 Panelboards
 - .2 Fire alarm system devices
 - .3 Luminaires and drivers
 - .4 Emergency battery units, exit signs, and fixtures
 - .5 Electrical heaters
 - .6 Starters, contactors and control devices
 - .7 Firestopping materials
 - .8 Surface raceways
 - .9 Hand dryers
 - .10 Wiring devices
 - .11 Lighting controls
 - .12 Co-ordination study
- .2 Submissions shall be submitted electronically as per the following directions:
 - .1 Electronic Submissions:
 - .1 Electronically submitted shop drawings shall be prepared as follows:
 - .1 Use latest software to generate PDF files of submission sheets.
 - .2 Scanned legible PDF sheets are acceptable. Image files are not acceptable.
 - .3 PDF format shall be of sufficient resolution to clearly show the finest detail.
 - .4 PDF page size shall be standardized for printing to letter size (8.5"x11"), portrait with no additional formatting required by the consultant. Submissions requiring larger detail sheets shall not exceed 11"x17".
 - .5 Submissions shall contain multiple files according to section names as they appear in Specification.
 - .6 File names shall include consultant project number and description of shop drawing section submitted.

- .7 Each submission shall contain an index sheet listing the products submitted, indexed in the same order as they appear in the Specification. Include associated PDF file name for each section.
- .8 On the shop drawing use an “electronic mark” to indicate what is being provided.
- .9 **Each file shall bear an electronic representation of the “company stamp” of the contractor. If not stamped the file submission will not be reviewed.**
- .2 Email submissions shall include subject line to clearly identify the consultants’ project number and the description of the shop drawings submitted.
- .3 Electronic attachments via email shall not exceed 10MB. For submissions larger than 10MB, multiple email messages shall be used. Denote related email messages by indicating “1 of 2” and “2 of 2” in email subject line for the case of two messages.
- .4 Electronic attachments via web links (URL) shall directly reference PDF files. Provide necessary access credentials within link or as username/password clearly identified within body of email message.
- .5 On site provide one copy of the “reviewed” shop drawings in a binder as noted above.
- .6 Contractor to print copies of “reviewed” shop drawings and compile into maintenance manuals in accordance with requirements detailed in this section.

1.15 CARE, OPERATION AND START-UP

- .1 Instruct consultant and operating personnel in the operation, care and maintenance of equipment.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.16 VOLTAGE RATINGS

- .1 Operating voltages: to CAN3-C235-83.
- .2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.17 PERMITS, FEES AND INSPECTION

- .1 A submission has been made (if required by this scope of project) by the consultant to the Electrical Safety Authority for review of this project. The payment of the required review costs will be co-ordinated by the consultant. A copy of the Electrical Safety Authority review report will be forwarded to the successful contractor for information and action.
- .2 The contractor is required to include in his tender all required inspection costs by the Electrical Safety Authority. Permit application is the responsibility of the contractor.
- .3 Reproduce drawings and specifications required by Electrical Safety Authority at no cost.
- .4 Notify consultant of changes required by Electrical Safety Authority prior to making changes.
- .5 Furnish Certificates of Acceptance to consultant from Electrical Safety Authority and other authorities having jurisdiction upon completion of work.
- .6 This contractor must furnish any certificates required to indicate that the work completed conforms with laws and regulations of authorities having jurisdiction.

1.18 ADDITIONAL INSTALLED EQUIPMENT

- .1 The electrical contractor is to review all specification sections forming part of the electrical bid documents and include additional equipment or components, as well as all associated installation costs and testing costs as noted, in the electrical bid price.

1.19 MATERIALS AND EQUIPMENT

- .1 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Safety Authority.
- .2 Factory assemble control panels and component assemblies.

1.20 ELECTRIC MOTORS, EQUIPMENT, AND CONTROLS

- .1 Supplier and installer responsibility is indicated in the Equipment Wiring Schedule on electrical drawings.
- .2 Control wiring and conduit is specified in the Electrical specifications except for conduit, wiring and connections below 50 V, which are related to control systems specified in the Mechanical specifications.

1.21 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
 - .1 Paint outdoor electrical equipment "equipment green" finish.
 - .2 Paint indoor switchgear and distribution enclosures light grey.
- .2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

- .3 Clean and prime exposed non-galvanized hangers, racks, fastenings, and conduits etc. to prevent rusting.

1.22 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates as follows:
.2 Nameplates:

- .1 Lamicoid 3 mm (1/8") thick plastic engraving sheet, black face, white core, mechanically attached with self tapping screws.

NAMEPLATE SIZES

Size 1	9 mm x 50 mm (3/8" x 2")	1 line	3 mm (1/8") high letters
Size 2	12 mm x 70 mm (1/2" x 2 1/2")	1 line	5 mm (3/16") high letters
Size 3	12 mm x 70 mm (1/2" x 2 1/2")	2 lines	3 mm (1/8") high letters
Size 4	20 mm x 90 mm (3/4" x 3 1/2")	1 line	9 mm (3/8") high letters
Size 5	20 mm x 90 mm (3/4" x 3 1/2")	2 lines	5 mm (3/16") high letters
Size 6	25 mm x 100 mm (1" x 4")	1 line	12 mm (1/2") high letters
Size 7	25 mm x 100 mm (1" x 4")	2 lines	6 mm (1/4") high letters

- .3 Wording on nameplates labels to be approved by consultant prior to manufacture.
.4 Allow for average of twenty-five (25) letters per nameplate.
.5 Identification to be English.
.6 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.
.7 Nameplates for disconnects, starters and contactors must indicate equipment being controlled and voltage.
.8 Nameplates for transformers must indicate transformer label as indicated and capacity, primary, and secondary voltages.

1.23 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
.2 Maintain phase sequence and colour coding throughout.
.3 Colour code: to CSA C22.1.
.4 Use colour coded wires in communication cables, matched throughout system.

1.24 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m (45') intervals.

- .3 Colour bands must be 25 mm (1") wide.

	<u>Prime</u>
up to 208 V	yellow
209 to 600 V	white
Voice system	green
Data System	orange
Security	brown
Public address	black
Cable TV	blue
Fire alarm	red

- .4 This contractor must paint all system junction boxes and covers in conformance with the above schedule.

1.25 PROTECTION OF OPENINGS

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

1.26 WIRING TERMINATIONS

- .1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

1.27 MANUFACTURERS AND CSA LABELS

- .1 All labels must be visible and legible after equipment is installed.

1.28 WARNING SIGNS

- .1 To meet requirements of Electrical Safety Authority and consultant.
.2 Provide porcelain enamel signs, with a minimum size of 175 mm x 250 mm (7" x 10").

1.29 LOCATION OF OUTLETS

- .1 Do not install outlets back-to-back in wall; allow minimum 150 mm (6") horizontal clearance between boxes.
.2 Change location of outlets at no extra cost or credit, providing distance does not exceed 3 m (10'), and information is given before installation.
.3 Locate light switches on latch side of doors. Locate disconnect devices in mechanical and elevator machine rooms on latch side of door.

1.30 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise. Coordinate with block coursing (if applicable).
.2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

- .3 Install electrical equipment at following heights unless indicated otherwise.
 - .1 Local switches: 1100 mm (43.3").
 - .2 Wall receptacles:
 - .1 General: 400 mm (16").
 - .2 Above top of continuous baseboard heater: 200 mm (8").
 - .3 Above top of counters or counter splash backs: 100 mm (4").
 - .4 In mechanical rooms: 1200 mm (48").
 - .3 Panelboards: as required by Code or 1400 mm (56").
 - .4 Voice/Data outlets: At height of adjacent outlet or at 400 mm (16").
 - .5 Fire alarm stations: 1200 mm (3' - 11").
 - .6 Fire alarm visual and signal devices: 2250 mm (88 ½").
 - .7 Television outlets: 400 mm (16").
 - .8 Thermostat: 1200 mm (3'-11").
 - .9 Clocks: 2100 mm (84").
 - .10 Heaters: 200 mm (8" AFF) to bottom of heater.
 - .11 Emergency call switches and/or pushbuttons: 900 mm (36").

1.31 LOAD BALANCE

- .1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.
- .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
- .3 Submit, at completion of work, report listing phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load. State hour and date on which each load was measured, and voltage at time of test.

1.32 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete. Sleeves through concrete shall be schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm (2") beyond either side.
- .2 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

1.33 FIELD QUALITY CONTROL

- .1 Conduct and pay for following tests:
 - .1 Power distribution system including phasing, voltage, grounding, and load balancing.
 - .2 Circuits originating from branch distribution panels.
 - .3 Lighting and its control.

- .4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
- .5 Systems: fire alarm system, communications, security.
- .2 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.
- .3 Insulation resistance testing.
 - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
 - .3 Check resistance to ground before energizing.
- .4 Carry out tests in presence of consultant.
- .5 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- .6 Submit test results for consultant's review.

1.34 CO-ORDINATION OF PROTECTIVE DEVICES

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings as indicated on drawings or as determined from co-ordination study.
- .2 Electrical connections to all equipment requiring connection to the electrical distribution system as part of this electrical tender have been specified according to the anticipated equipment manufacturer electrical requirements and the applicable sections of the OESC. This contractor must coordinate electrical connections to all equipment specified to be connected as part of this electrical tender.
- .3 Prior to submitting electrical distribution shop drawings to the consultant, review all shop drawings for all equipment specified for connection to the electrical distribution system to verify that the product electrical connection requirements listed by the manufacturer conform to the equipment electrical connections specified on the electrical design drawings and specifications. Make necessary revisions to breaker ratings associated with the review of all product shop drawings and identify such changes as part of the electrical distribution equipment shop drawing submission.
- .4 Prior to making final equipment connections, this electrical contractor shall examine equipment nameplates at the project site to confirm voltage and phase requirements, minimum circuit ampacity and maximum overcurrent protection values, and bring to the attention of the consultant in writing any connection requirements which may vary from the designed connections or approved electrical distribution shop drawings. No subsequent allowance for time or money for changes to breaker or wire and conduit sizes will be considered for any consequence related to failure to examine site conditions.

1.35 GUARANTEE AND WARRANTY

- .1 At ready for takeover of this project this Contractor must provide a written guarantee indicating that any defects, not due to ordinary wear and tear or improper use which occur within **the first TWO years** from the date of ready for takeover will be corrected at the contractors expense.
- .2 **If the electrical sub-contractor's office is 50 kilometers (30 miles) or more from the project site, the sub-contractor is to provide a service/warranty work agreement for warranty period with a local electrical sub-contractor approved by consultant. Include copy of service/warranty agreement in warranty section of operation and maintenance manual.**
- .3 Warranty period shall start from date of ready for takeover completion.
- .4 Refer to individual specification sections for information on any special manufacturer's equipment warranties.

1.36 SYSTEM START UP

- .1 Provide consultant with written notice verifying all equipment operation and installation is complete prior to scheduled start-up period.
- .2 Start up shall be in presence of the following: owner or representative, contractor, and manufacturer's representative. Each person shall witness and sign off each piece of equipment. Consultant's attendance will be determined by consultant.
- .3 Arrange with all parties and provide 72 hours notice for start up procedure.
- .4 Simulate system start up and shut down and verify operation of each piece of equipment.
- .5 These tests are to demonstrate that the systems and equipment installed are operational as specified.
- .6 The contractor must describe during the start up session the required maintenance for each piece of equipment according to the manufacturer.
- .7 The contractor must provide all necessary tools (including a digital multimeter) to successfully complete the start up procedure.

1.37 OPERATION AND MAINTENANCE MANUAL

- .1 Provide operation and maintenance data for incorporation into manual as specified in other Sections of this Division.
- .2 Operation and maintenance manual to be approved by, and final copies deposited with, consultant before final inspection.
 - .1 Submit 1 copy of Operation and Maintenance Manual to consultant for approval. Submission of individual data will not be accepted unless so directed by consultant. Submission can be done electronically in pdf format or as a hardcopy.
 - .1 Electronic submission/pdf file is required to be bookmarked. Any submission received without bookmarking will be immediately returned as unacceptable.

- .2 Hardcopy submission shall be in a three-ring binder (minimum 50 mm (2") ring) and labelled as 'Operation and Maintenance Manual' with project name and location. Dividers are to be used for binder organization.
- .2 Make changes as required and re-submit as directed by consultant.
- .3 Each manual must include (in "tabbed" sections) the following:
 - .1 Index
 - .2 List of General, Mechanical, Electrical Contractors and all associated sub-contractor names, addresses and contact numbers.
 - .3 List of suppliers and equipment wholesalers local to the project.
 - .4 Letter of contractor's warranty and guarantee for all parts, equipment and workmanship.
 - .5 WRDSB Project Asset and Warranty Card for all assets replaced, newly installed, and removed.
 - .6 List of manufacturers, spare parts list and source.
 - .7 Copy of typewritten schedules for all new and renovated panels.
 - .8 Copy of all substantial performance final certificates.
 - .9 Copy of electrical shop drawings which have been stamped and reviewed by consultant.
 - .10 Electrical As-built drawings including contractor company's as built stamp.
 - .11 Coordination study shop drawings
 - .12 Any special warranties on equipment required (i.e. LED lighting, digital lighting control).
 - .13 Certificate of completion from all associated sub-contractors.
 - .14 System commissioning certificate and report.
- .4 Final Submittals:
 - .1 Upon acceptance of Operation and Maintenance Manual by the consultant provide the following:
 - .1 Provide one (1) copy of final operation maintenance manuals, as well as a PDF file of the entire approved manual on a USB stick. Only one USB stick is to be provided containing both the approved manual and as-built drawings.

1.38 AS-BUILT DRAWINGS

- .1 Site records:
 - .1 Contractor shall provide 2 sets of reproducible electrical drawings. Provide sets of white prints as required for each phase of the work. Mark thereon all changes as work progresses and as changes occur. This shall include field and contract changes to electrical systems.
 - .2 On a weekly basis, transfer information to reproducibles, revising reproducibles to show all work as actually installed.
 - .3 Use different colour waterproof ink for each service.

- .4 Make available for reference purposes and inspection at all times.
- .2 As-built drawings:
 - .1 Identify each drawing in lower right hand corner in letters at least 3 mm (1/8") high as follows: - "AS-BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW ELECTRICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (date).
 - .2 Submit hard copy to consultant for approval. When returned, make corrections (if any) as directed.
 - .3 Once approved, submit completed reproducible paper as-built drawings as well as a scanned pdf file copy on USB stick with Operating and Maintenance Manuals.

1.39 DEMONSTRATION AND OPERATING AND MAINTENANCE INSTRUCTIONS

- .1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2 Manufacturers or their representatives are to provide demonstrations and instructions.
- .3 Use operation and maintenance manual, As-built drawings, audio visual aids, etc. as part of instruction materials.
- .4 Instruction duration time requirements as specified in appropriate sections.
- .5 Where deemed necessary, consultants may record these demonstrations on video tape for future reference.

1.40 OCCUPANCY REQUIREMENTS

- .1 The contractor shall provide the following documentation to the consultant's satisfaction prior to receiving occupancy. Failure to provide the proper documentation will result in the occupancy not being granted. List of required documentation:
 - .1 Final Certificates (required prior to consultant's release of conformance letter).
 - .1 Electrical Safety Authority.
 - .2 Emergency Lighting.
 - .3 Fire Alarm Verification Certificate.

1.41 READY FOR TAKEOVER

- .1 Complete the following to the satisfaction of the consultant prior to request for ready for takeover.
 - .1 As-built Drawings.
 - .2 Maintenance Manuals.
 - .3 System Start up.
 - .4 Instructions to Owners.
 - .5 Coordination Study.
 - .6 Lighting Control System.
 - .7 **Outlet cover circuit labels.**

1.42 TRIAL USAGE

- .1 Consultant or owner may use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.

1.43 REVISION TO CONTRACT

- .1 Provide the following for each item in a given change notice:
 - .1 Itemized list of material with associated costs.
 - .2 Labour rate and itemized list of labour for each item.
 - .3 Copy of manufacturers/suppliers invoice if requested.

1.44 EQUIPMENT SUPPORTS

- .1 Equipment supports supplied by equipment manufacturer: shall be installed by the electrical contractor.
- .2 Equipment supports not supplied by equipment manufacturer: fabricate from structural grade steel meeting requirements of - Structural Steel Section. Submit structural calculations with shop drawings if necessary.
- .3 Mount base mounted equipment on chamfered edge housekeeping pads, minimum of 100 mm (4") high and 150 mm (6") larger than equipment dimensions all around. This installation of this pad shall be the responsibility of the electrical contractor.
- .4 This contractor shall be responsible for providing all anchor bolts and associated formed concrete bases for lighting standards as detailed.

1.45 SLEEVES

- .1 Pipe sleeves: at points where pipes pass through masonry, concrete, or fire rated assemblies and as indicated.
- .2 Schedule 40 steel pipe.
- .3 Sleeves with annular fin continuously welded at midpoint:
 - .1 Through foundation walls.
 - .2 Where sleeve extends above finished floor.
- .4 Sizes: minimum 6 mm (1/4") clearance all around, between sleeve and conduit.
- .5 Terminate sleeves flush with surface of concrete and masonry walls, concrete floors on grade and 25 mm (1") above other floors.
- .6 Through foundation walls PVC sleeves are acceptable.
- .7 Fill voids around pipes:
 - .1 Caulk between sleeve and pipe in foundation walls and below grade floors with waterproof fire retardant non-hardening mastic.
 - .2 Where sleeves pass through walls or floors, provide space for firestopping. Where pipes/ducts pass through fire rated walls, floors and partitions, maintain fire rating integrity.
 - .3 Fill future-use sleeves with easily removable filler.

1.46 FIRESTOPPING

- .1 Firestopping material and installation within annular space between conduits, ducts, and adjacent fire separation.
- .2 Provide materials and systems capable of maintaining effective barrier against flame, smoke, and gases.
- .3 Comply with the requirements of CAN4-S115-M35, and do not exceed opening sized for which they have been tested.
- .4 Systems to have an F or FT rating (as applicable) not less than the fire protection rating required for closures in a fire separation.
- .5 Provide "firewrap" blanket around services penetrating firewalls. Extent of blanket must correspond to ULC recommendations. In general wrap individual conduits with approved firewrap materials on each side of firewall. Refer to architectural drawings for FT ratings. Provide 1 and/or 2 layers of firewrap with transverse and longitudinal seams overlapped and/or butted (second layer offset from first layer). Cut edges are to be sealed with aluminum foil tape. Provide 50 mm stainless steel banding at 200 mm intervals. Install firewrap to manufacturers' recommendations for proper FT rating. Acceptable manufacturers are 3M Firemaster ductwrap or approved equal.
- .6 The firestopping materials are not to shrink, slump or sag and be free of asbestos, halogens and volatile solvents.
- .7 Firestopping materials are to consist of a component sealant applied with a conventional caulking gun and trowel.
- .8 Firestop materials are to be capable of receiving finish materials in those areas, which are exposed and scheduled to receive finishes.
- .9 Firestopping shall be inspected and approved by local authority prior to concealment or enclosure.
- .10 Install material and components in accordance with ULC certification, manufacturers instructions and local authority.
- .11 **Submit product literature and installation material on firestopping in shop drawing and product data manual.**
- .12 Acceptable manufacturers:
 - .1 Rectorseal Corporation (Metacaulk)
 - .2 Proset Systems
 - .3 3M
 - .4 Hilti
 - .5 STI Firestop

Note: Fire stop material must conform to requirements of local authorities having jurisdiction. Contractor to confirm prior to application and ensure material used is compatible with that used by other trades on site.

- .13 Ensure firestop manufacturer representative performs on site inspections and certifies installation. Submit inspection reports/certification at time of ready for takeover.

1.47 PAINTING

- .1 Refer to Section Interior Painting and specified elsewhere.
- .2 Apply at least one coat of corrosion resistant primer paint to ferrous supports and site fabricated work.
- .3 Prime and touch up marred finished paintwork to match original.
- .4 Restore to new condition, or replace equipment at discretion of consultant, finishes which have been damaged too extensively to be merely primed and touched up.

1.48 ACCESS DOORS

- .1 Supply access doors to concealed electrical equipment for operating, inspecting, adjusting and servicing.
- .2 Flush mounted 600 mm x 600 mm (24" x 24") for body entry and 300 mm x 300 mm (12" x 12") for hand entry unless otherwise noted. Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.
- .3 Material:
 - .1 Special areas such as tiled or marble surfaces: use stainless steel with brushed satin or polished finish as directed by consultant.
 - .2 Remaining areas: use prime coated steel.
 - .3 Fire rated areas: provide ULC listed access doors
- .4 Installation:
 - .1 Locate so that concealed items are accessible.
 - .2 Locate so that hand or body entry (as applicable) is achieved.
 - .3 Installation is specified in applicable sections.
- .5 Acceptable materials:
 - .1 Le Hage
 - .2 Zurn
 - .3 Acudor
 - .4 Nailor Industries Inc.

1.49 DELIVERY STORAGE & HANDLING

- .1 Follow Manufacturer's directions in delivery, storage, and protection, of equipment and materials. Contractor to include all costs associated with delivery storage and handling in tender price.
- .2 Deliver equipment and material to site and tightly cover and protect against dirt, water, and chemical or mechanical injury, but have readily accessible for inspection. Store items subject to moisture damage (such as controls) in dry, heated space.

1.50 REPAIR, CUTTING, CORING AND RESTORATION

- .1 Be responsible for required digging, cutting, and patching incident to work of this Division and make required repairs afterwards to satisfaction of consultant. Cut carefully to minimize necessity for repairs to existing work. Do not cut beams, columns, or trusses.
- .2 Patch and repair walls, floors, ceilings, and roofs with materials of same quality and appearance as adjacent surfaces unless otherwise shown. Surface finishes shall exactly match existing finishes of same materials.
- .3 Each Section of this Division shall bear expense of cutting, patching, repairing, and replacing of work of other Sections required because of its fault, error, tardiness, or because of damage done by it.
- .4 Cutting, patching, repairing, and replacing pavements, sidewalks, roads, and curbs to permit installation of work of this Division is responsibility of Section installing work.
- .5 Slots, cores and openings through floors, walls, ceilings, and roofs shall be provided by this contractor but performed by a trade specializing in this type of work. This Division shall see that they are properly located and do any cutting and patching caused by its neglect to do so.

1.51 EXISTING SYSTEMS

- .1 Connections into existing systems to be made at time approved by consultant. Request written approval of time when connections can be made.
- .2 Be responsible for damage to existing plant by this work.

1.52 CLEANING

- .1 Clean interior and exterior of all electrical equipment provided including light fixture lenses.
- .2 In preparation for final acceptance, clean and refurbish all equipment and leave in operating condition.

1.53 DISCONNECTION AND REMOVAL

- .1 Disconnect and/or remove equipment as indicated.
- .2 Cap and conceal all redundant and obsolete connections.
- .3 Provide a list of equipment to be removed to the owner, for his acceptance of same. Remove all equipment from site, which the owner does not retain.
- .4 Store equipment to be retained by owner on site where directed by consultant.

1.54 OWNER SUPPLIED EQUIPMENT

- .1 Connect to equipment supplied by the owner and make operable.
- .2 Design drawings are diagrammatic and do not necessarily indicate all specific final connection requirements. For the purposes of bidding, electrical trade shall include but not be limited to provision of a junction box to connect equipment wiring tail, provision of suitable disconnecting means, and flexible connection directly to equipment.

1.55 ENCLOSURES

- .1 This contractor must ensure that all electrical equipment mounted in sprinklered areas is provided with an enclosure in conformance with the Electrical Safety Code.

1.56 ELECTRICAL SYSTEMS COMMISSIONING

- .1 This electrical contractor shall work with the building commissioning agent to perform commissioning of all electrical systems.

1.57 EXISTING CONCRETE SLAB X-RAY/SCANNING

- .1 This contractor shall retain the services of a qualified company to provide and X-ray and/or scan of the existing buried services in walls and/or floors prior to starting any work in the affected area.
- .2 Failure to locate existing piping, conduit, rebar etc., shall not relieve this contractor of repair of same prior to installing his service.
- .3 This contractor shall be responsible for all repairs and/or replacement of existing services caused by cutting the existing concrete slabs and/or walls.

1.58 PHASING OF WORK

This work for this project shall be constructed in phases. Refer to the architectural drawings for phasing information and details. Misinterpretation of the drawings with respect to the extent of the phasing of the work shall not relieve the contractor of the work required to complete the entire contract.

ND OF SECTION

Part 1 General

1.1 GENERAL PROVISIONS

- .1 Conform to the General Provisions of Division 1 and Electrical General Requirements Section.
- .2 This project is one of a retrofit nature in part, and which will require extensive demolition.
- .3 Allow for all remedial work in areas indicated on the drawings and as generally defined in the relevant sections of the specifications.

1.2 SCOPE OF WORK

- .1 The scope of work is essentially the selected disconnection and/or removal of services and/or equipment, devices etc. as indicated or required to complete the work.
- .2 The reference drawings indicate some of the services which shall remain and some may have to be retained through construction and a phased changeover to help construction i.e. electrical service, phone service, winter heat, and temporary construction services i.e. washroom facility. This co-ordination remains the responsibility of the contractors.

Part 2 Products

2.1 GENERAL

- .1 This Division is to liaise with the Owners or Consultant for equipment being removed that may be suitable for reuse to that specified or handed over to the owner.
- .2 This Division to take full responsibility for any special tools or equipment required to disassemble or remove material from building.

Part 3 Execution

3.1 GENERAL

- .1 The general requirements are indicated on the drawings and on the outline specification in Division 1.
- .2 The general execution of the demolition is to be carried out in a clean and efficient manner.
- .3 Demolition of existing ceiling, walls etc., to facilitate removal of existing services or equipment or installation of new to be kept to a minimum and then restored to match existing.
- .4 All openings or holes created by removal of existing electrical systems which are not being reused are to be patched with the same material surrounding surfaces.

- .5 All new holes and openings to facilitate electrical systems are to be patched to match surrounding surfaces.
- .6 Protect all existing furnishings materials and equipment. Any damage occurring as a result of the work of this Division shall be repaired or replaced at the expense of this Division.
- .7 Where work involves breaking into or connecting to existing services, carry out work at times directed by the Owners in an expedient manner with minimum disruption to the facility and systems downtime.
- .8 Where unknown services are encountered immediately advise Consultant and confirm findings in writing.
- .9 Where the location of any services has been shown on the plans, such information is not guaranteed. It is this Division's responsibility to verify locations, etc., immediately after moving on site. Should for any reason the information obtained necessitates changes in procedure or design, advise the Consultant at once. If verification of existing conditions is not done at the outset and any problems arise, the responsibility for same is entirely this Division's.
- .10 Disconnect and/or remove equipment, devices, cabling, services, etc. as indicated.
- .11 Remove all redundant and obsolete systems, connections, and wiring.
- .12 Provide a list of equipment to be removed to the owner, for their acceptance of same. Remove all equipment from site that the owner does not retain.
- .13 Maintain equipment to be retained by owner on site where directed by consultant.
- .14 Demolition of all parts of the work must be completed within the confines of the work area and in such a way as the dust produced and risk to injury of will not adversely affect the building users.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 CSA C22.2 No.0.3-92, Test Methods for Electrical Wires and Cables.
- .2 CAN/CSA-C22.2 No.131-M89(R1994), Type TECK 90 Cable.

1.2 PRODUCT DATA

- .1 Submit product data in accordance with Electrical General Requirements Section.

Part 2 Products

2.1 BUILDING WIRES

- .1 Conductors: stranded for 10 AWG and larger.
- .2 Minimum size: 12 AWG.
- .3 Copper conductors: size as indicated, with 600 V insulation of chemically cross-linked thermosetting polyethylene material 90°C (194°F) rated T90 for indoor above grade installations and RW90 for below grade installations.

2.2 ARMoured CABLES

- .1 Conductors: insulated, copper minimum size as indicated above.
- .2 Type: AC90 (minimum size 12 AWG).
- .3 Armour: interlocking type fabricated from aluminum strip.
- .4 Connectors must be suitable for installed environment and approved for use with armoured cable.

Part 3 Execution

3.1 INSTALLATION OF BUILDING WIRES

- .1 Install wiring from source to load through raceways as specified.
- .2 Provide separate neutral conductors for all lighting circuits and circuits originating from surge protected panels. Size raceways accordingly.

3.2 INSTALLATION OF ARMOURED CABLES

- .1 Group cables wherever possible.
- .2 Terminate cables in accordance with Wire and Box Connectors - 0 - 1000 V Section.
- .3 These cables are to be installed in concealed locations only. These concealed locations are considered to be stud walls and “drops” to stud walls, lighting fixtures, and ceiling mounted devices.
- .4 **These “drops” shall not be permitted to exceed 2.4 m (8'-0"). To limit these “drops” to lengths noted above provide additional branch wiring in conduit.**

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data for cabinets in accordance with Electrical General Requirements Section.

Part 2 Products

2.1 MATERIALS

- .1 Splitters must conform to CSA C22.2 No. 76 (latest edition).
- .2 Junction and pull boxes must conform to CSA C22.2 No. 40 (latest edition)

2.2 SPLITTERS

- .1 Sheet metal enclosure, welded corners and formed hinged cover suitable for locking in closed position.
- .2 Main and branch lugs to match required size and number of incoming and outgoing conductors as indicated.
- .3 At least three spare terminals on each set of lugs in splitters less than 400 A.
- .4 Splitter length must match arrangement of equipment unless indicated otherwise.

2.3 JUNCTION AND PULL BOXES

- .1 Welded steel construction with screw-on flat covers for surface mounting.
- .2 Covers with 25 mm (1") minimum extension all around, for flush-mounted pull and junction boxes.

Part 3 Execution

3.1 SPLITTER INSTALLATION

- .1 Install splitters and mount plumb, true and square to the building lines on 21 mm (3/4") painted plywood backboards.

3.2 JUNCTION AND PULL BOXES INSTALLATION

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Install junction and pull boxes so as not to exceed 30 m (100') of conduit run between pull boxes and in conformance with the Electrical Safety Code.

3.3 IDENTIFICATION

- .1 Provide equipment identification in accordance with General Electrical Requirements Section.
- .2 Install size 2 identification labels indicating system name, voltage and phase.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Outlet boxes, conduit boxes, and fittings must conform to CSA C22.2 No. 18 (latest edition).

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES GENERAL

- .1 Size boxes in accordance with CSA C22.1.
- .2 102 mm (4") square or larger outlet boxes as required for special devices.
- .3 Gang boxes where wiring devices are grouped.
- .4 Blank cover plates for boxes without wiring devices.
- .5 347 V outlet boxes for 347 V switching devices.
- .6 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 SHEET STEEL OUTLET BOXES

- .1 Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 mm x 50 mm x 64 mm (3" x 2" x 2½") or as indicated. 102 mm (4") square outlet boxes when more than one conduit enters one side with extension and plaster rings as required. Iberville 1104 Series.
- .2 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit **in utility rooms**, minimum size 102 mm x 57 mm x 38 mm (4" x 2¼" x 1½"). Iberville 1110 Series.
- .3 102 mm (4") square or octagonal outlet boxes for lighting fixture outlets.
- .4 102 mm (4") square outlet boxes with extension and plaster rings for flush mounting devices in finished tile walls.

2.3 MASONRY BOXES

- .1 Electro-galvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.

2.4 CONCRETE BOXES

- .1 Electro-galvanized sheet steel concrete type boxes for flush mount in concrete with matching extension and plaster rings as required.

2.5 FLOOR BOXES

- .1 Flush floor boxes where indicated shall be complete with the following features:
 - .1 Four (4) independent wiring compartments.
 - .2 Flexible activation cover.

- .3 Fully adjustable.
- .4 Sixteen (16) Kos 12.7 mm ($\frac{1}{2}$ ") – 32 mm ($1\frac{1}{4}$ ").
- .5 Stamped steel construction (concrete-tight).
- .2 Manufacturers:
 - .1 Wiremold Cat# RFB4-DTB-2-2T-RAKM11- flush floor box complete with two duplex receptacle brackets, 2 dual RJ brackets, and recessed activation with carpet trim plate.
Approved alternates:
 - .1 Hubbell Cat. #LCFBSS complete with LCFB XX (colour by architect), flush cover and internal faceplate to suit devices noted on the drawings.
 - .2 Wellmark Electric Inc. Cat. #400B-1-YY-XX-CRL.

2.6 CONDUIT BOXES

- .1 Cast FS or FD feraloy boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacle **in areas (other than utility rooms) where surface conduit is used.**

2.7 FITTINGS- GENERAL

- .1 Bushing and connectors with nylon insulated throats.
- .2 Knock-out fillers to prevent entry of debris.
- .3 Conduit outlet bodies for conduit up to 32 mm (1- 1/4") and pull boxes for larger conduits.
- .4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution

3.1 INSTALLATION

- .1 Support boxes independently of connecting conduits.
- .2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.
- .3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm (1/4") of opening.
- .4 Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Reducing washers are not allowed.
- .5 Outlets if unwired are to be provided with blank coverplates to suit related sections of this specification.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 CSA C22.2 No.65-1956(R1965) Wire Connectors.

Part 2 Products

2.1 MATERIALS

- .1 Pressure type wire connectors: with current carrying parts of copper sized to fit copper conductors as indicated.
- .2 Fixture type splicing connectors: with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Clamps or connectors for armoured cable, mineral insulated cable, and flexible conduit, as required.

Part 3 Execution

3.1 INSTALLATION

- .1 Remove insulation carefully from ends of conductors and:
 - .1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.
 - .2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.
 - .3 Install fixture type connectors and tighten. Replace insulating cap.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA C22.2 No.18-92, Outlet Boxes, Conduit Boxes, and Fittings.
 - .2 CSA C22.2 No.45-M1981(R1992), Rigid Metal Conduit.
 - .3 CSA C22.2 No.56-1977(R1977), Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No.83-M1985(R1992), Electrical Metallic Tubing.
 - .5 CSA C22.2 No.211.2-M1984(R1992), Rigid PVC (Unplasticized) Conduit.
 - .6 CAN/CSA C22.2 No.227.3-M91, Flexible Nonmetallic Tubing.

Part 2 Products

2.1 CONDUITS

- .1 Epoxy coated conduit: to CSA C22.2 No.45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- .2 Electrical metallic tubing (EMT) with couplings: to CSA C22.2 No.83.
- .3 Rigid PVC conduit: to CSA C22.2 No.211.2.
- .4 Flexible metal conduit: to CSA C22.2 No.56, aluminum and liquid-tight flexible metal.
- .5 Flexible PVC conduit: to CAN/CSA C22.2 No.227.3, ENT.

2.2 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface conduits 53 mm (2") and smaller. Two hole steel straps for conduits larger than 53 mm (2").
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 1.5 m (5'0") oc.
- .4 Threaded rods, 6 mm (1/4") diameter, to support suspended channels.

2.3 CONDUIT FITTINGS

- .1 EMT fittings shall be set screw style (zinc alloy).
- .2 Flexible metal conduit fittings shall be screw-in type.
- .3 Liquid type flexible metal conduit fittings shall be sealtite type.
- .4 PVC fittings shall be PVC type complete with PVC adaptors at all boxes.
- .5 Coating: same as conduit.
- .6 Factory "ells" where 90° bends are required for 27 mm (1") and larger conduits.

- .7 Where bushings are noted to be provided they must be "screwed" type fastened to a conduit connector. Push-fit or glued in place bushings will NOT be accepted.

2.4 FISH CORD

- .1 Nylon twine.

Part 3 Execution

3.1 INSTALLATION

- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .2 Conceal conduits except in mechanical/ electrical service rooms and in unfinished areas. Where devices are to be installed on existing walls in finished area, which cannot be "fished", install feeds in a surface metal raceway equal to Wiremold V700 series. Co-ordinate surface installations with consultant prior to rough-in.
- .3 **Use electrical metallic tubing (EMT) for all branch circuits unless specified otherwise.**
- .4 Use rigid aluminum threaded conduit where specified and up to 2.1 m (7'0") above finish floor where exposed to mechanical injury.
- .5 Use rigid PVC conduit underground and in kitchen areas.
- .6 Use flexible metal conduit for connection to motors in dry areas, connection to recessed fixtures without a prewired outlet box, connection to surface or recessed fixtures, work in movable metal partitions.
- .7 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations and for connections to kitchen equipment.
- .8 Conduits terminating at electrical equipment in sprinklered areas are to be provided with insulated compression style connectors equal to Thomas & Betts Cat. #TC8XXSC or approved equal.
- .9 **Minimum conduit size for branch circuits shall be 21 mm (3/4").** Single drops from ceiling mounted junction boxes down to a light switch or duplex receptacle may be reduced to 16 mm (1/2").
- .10 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .11 Mechanically bend steel conduit over 27 mm (1") diameter.
- .12 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .13 Install fish cord in empty conduits.
- .14 Run 2- 27 mm (1") spare conduits up to accessible ceiling space from each flush panel. Terminate these conduits in 152 mm x 152 mm x 102 mm (6" x 6" x 4") junction boxes in ceiling space.
- .15 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .16 Dry conduits out before installing wire.

3.2 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Locate conduits behind infrared or gas fired heaters with 1.5 m (5') clearance.
- .3 Run conduits in flanged portion of structural steel.
- .4 Group conduits wherever possible on suspended or surface channels.
- .5 Do not pass conduits through structural members except as indicated.
- .6 Do not locate conduits less than 75 mm (3") parallel to steam or hot water lines with minimum of 25 mm (1") at crossovers.
- .7 Do not fasten surface conduit to roof deck. Provide standoffs or supports as manufactured by Caddy or use unistrut trapeze fastened to structure.**

3.3 CONCEALED CONDUITS

- .1 Do not install horizontal runs in masonry walls.
- .2 Do not install conduits in terrazzo or concrete toppings.

3.4 CONDUITS IN CAST-IN-PLACE SLABS ON GRADE

- .1 Run conduits 27 mm (1") and larger 300 mm (12") below slab (measured from top of slab to bottom of conduit) and encased in 78 mm (3") sand envelope.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

- .1 This analysis is to be performed by an independent, third party firm.**
- .2 The studies must be submitted to the Consultant prior to receiving final approval of the distribution equipment shop drawings and/or prior to release of equipment for manufacturing. If formal completion of the studies may cause delay in equipment manufacturing, approval from the Consultant may be obtained for a preliminary submittal of sufficient study data to ensure that the selection of device ratings and characteristics will be satisfactory.**
- .3 The studies shall include all portions of the electrical distribution system from the normal power source or sources down to and including the smallest adjustable trip circuit breaker in the distribution system, **as well as mechanical unit equipment.** Normal system connections and those, which result in maximum fault conditions, shall be adequately covered in the study.**
- .4 The firm should be currently involved in high- and low-voltage power system evaluation. The study must be performed, stamped and signed by a registered professional engineer in the Province of Ontario. Credentials of the individual(s) performing the study and background of the firm shall be submitted to the Consultant for approval prior to start of the work. A minimum of five (5) years experience in power system analysis is required for the individual in charge of the project.**
- .5 The firm performing the study should demonstrate capability and experience to provide assistance during start up as required.**

1.2 DATA COLLECTION FOR THE STUDY

- .1 The Contractor shall provide the required data for preparation of the studies. The Consultant performing the system studies shall furnish the Contractor with a listing of the required data immediately after award of the contract.**
- .2 The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to release of the equipment for manufacturing.**
- .3 Data collected for the study, including correspondence with local utility, shall be included with study report.**

Part 2 Products

2.1 SHORT CIRCUIT AND PROTECTIVE DEVICE EVALUATION AND COORDINATION STUDY

- .1 The short-circuit study shall be performed with the aid of a digital computer program and shall be in accordance with the latest applicable IEEE and ANSI standards.
- .2 In the short-circuit study, provide calculation methods and assumptions, the base per unit quantities selected, one-line diagrams, source impedance data including power company system characteristics, typical calculations, tabulations of calculation quantities and results, conclusions, and recommendations. Calculate short-circuit interrupting and momentary (when applicable) duties for an assumed 3-phase bolted fault at each supply switchgear lineup, unit substation primary and secondary terminals, low-voltage switchgear lineup, switchboard, motor control center, distribution panelboard, pertinent branch circuit panelboard, and other significant overcurrent protective device locations throughout the system. Provide a ground fault current study for the same system areas, including the associated zero sequence impedance data. Include in tabulations fault impedance, X to R ratios, asymmetry factors, motor fault contribution, short circuit kVA, and symmetrical and asymmetrical fault currents.
- .3 In the protective device coordination study, provide time-current curves graphically indicating the coordination proposed for the system, centered on conventional, full-size, log-log forms. Include with each curve sheet a complete title and one-line diagram with legend identifying the specific portion of the system covered by that particular curve sheet. Include a detailed description of each protective device identifying its type, function, manufacturer, and time-current characteristics. Tabulate recommended device tap, time dial, pickup, instantaneous, and time delay settings.
- .4 Include on the curve sheets power company relay and fuse characteristics, medium-voltage equipment protective relay and fuse characteristics, low-voltage equipment circuit breaker trip device characteristics, pertinent transformer characteristics, pertinent motor and generator characteristics, and characteristics of other system load protective devices. In addition, include all devices down to the largest branch circuit and largest feeder circuit breaker in each motor control center, and main breaker in branch panelboards. Include all adjustable settings for ground fault protective devices. Include manufacturing tolerance and damage bands in plotted fuse characteristics. Show transformer full load currents, transformer magnetizing inrush, ANSI transformer withstand parameters, and significant symmetrical fault currents. Terminate device characteristic curves at a point reflecting the maximum symmetrical fault current to which the device is exposed.
- .5 Select each primary protective device required for a delta-wye connected transformer so that its characteristic or operating band is within the transformer characteristics, including a point equal to 58 percent of the ANSI withstand point to provide secondary line-to-ground fault protection. Separate transformer primary protective device characteristic curves from associated secondary device characteristics by a 16 percent current margin to provide proper coordination and protection in the event of secondary line-to-line faults. Separate medium-voltage relay characteristic curves from curves for other devices by at least a 0.4-second time margin.
- .6 Include complete fault calculations as specified herein based on contract documents.

- .7 Submit qualifications of individual(s) who will perform the work for approval prior to commencement of the studies. Provide studies in conjunction with equipment submittals to verify equipment ratings required. Submit the study to Consultant for review prior to delivery of the study to the Owner. Make all additions or changes as required by the reviewer.
- .8 Utilize equipment load data for the study obtained by the Contractor from contract documents, including contract addendum's issued prior to bid openings.
- .9 Include fault contribution of all motors in the study. Notify the Consultant in writing of circuit protective devices not properly rated for fault conditions.
- .10 When emergency generator is provided, include phase and ground coordination of the generator protective devices. Show the generator decrement curve and damage curve along with the operating characteristic of the protective devices. Contractor shall obtain the information from the generator manufacturer and include the generator actual impedance value, time constants and current boost data in the study. Do not use typical values for the generator.
- .11 Evaluate proper operation of the ground relays in 4-wire distributions with more than one main service circuit breaker, or when generators are provided, and discuss the neutral grounds and ground fault current flows during a neutral to ground fault.
- .12 For motor control circuits, show the MCC full-load current plus symmetrical and asymmetrical of the largest motor starting current and time to ensure protective devices will not trip during major or group start operation.
- .13 **Evaluate proper rating of applicable mechanical unit equipment based on available fault at unit connection. Mechanical unit equipment in study shall include packaged assemblies identified as, but not limited to, AHUs, MUAs, DOAS, Chillers, and Cooling Towers.**

2.2 STUDY REPORT

- .1 The results of the power system study shall be summarized in a final report. Submit report in accordance with Electrical General Requirements Section as a shop drawing.
- .2 The report shall include the following sections:
 - .1 Descriptions, purpose, basis, and scope of the study.
 - .2 Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short-circuit duties, and commentary regarding same.
 - .3 **Tabulations of mechanical unit equipment ratings as identified on equipment shop drawings versus calculated short-circuit, and commentary regarding same. Short-circuit calculations for mechanical equipment shall be based on unit MCA with conductor sizes as identified on electrical design drawings, and not based on equipment MOCP.**
 - .4 Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip settings, fuse selection, and commentary regarding same.
 - .5 Fault current calculations including a definition of terms and guide for interpretation of computer printout.

Part 3 Execution

3.1 POWER COMPANY APPROVAL

- .1 Copies of the final report must be submitted to the power company for their review and approval. Approved copies of the report shall be submitted to the Consultant.

3.2 FIELD SETTINGS

- .1 The Contractor shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The settings shall be in accordance with the approved short-circuit study, protective device evaluation study, and protective device coordination study.
- .2 Necessary field settings of devices and adjustments and minor modifications to equipment to accomplish conformance with the approved short-circuit and protective device coordination study shall be carried out by the Contractor at no additional cost to the Owner.
- .3 At the completion of the project, configure settings and install equipment labels. On company letterhead, the contractor is to prepare a certification letter indicating at minimum:
 - .1 project
 - .2 date
 - .3 device designation
 - .4 certification of correct settings
 - .5 certification of correct device labels
 - .6 digital image of each breaker indicating final settings and placement of labels

3.3 SERIES RATING LABELS

- .1 Provide Iamcooid labels where recommended by study. **Labels for series rating with panelboards or equipment shall be indicated on feeder breaker as "SERIES RATING BREAKER" and at the panelboard or equipment as "SERIES RATING EQUIPMENT". Refer to section 26 24 16.**

3.4 ACCEPTABLE TESTING FIRMS

- .1 MVA Engineering (519) 668-4698
- .2 GT Wood Company Ltd. (905) 272-1696
- .3 Brosz & Associates (905) 472-6660
- .4 K-Tek Electro-services Ltd. (905) 640-2002

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS

- .1 Submit shop drawings for each system in Conformance with The Electrical General Requirements Section.

1.2 PRODUCT/MAINTENANCE DATA

- .1 Submit product/maintenance data for each system for inclusion in maintenance manual conforming to The General Electrical Requirements Section.

1.3 SCOPE

- .1 The scope of this Section will include the following systems.
 - .1 Surface mounted raceway.
 - .2 Hand dryers.
 - .3 Auxiliary systems rough-in.
 - .4 Security and access control rough-in.
 - .5 Telecommunication network system rough-in.
 - .6 Public address system rough-in.
 - .7 Line voltage power packs and low voltage occupancy sensors.

Part 2 Products

2.1 SURFACE MOUNTED RACEWAY

- .1 The two compartment surface raceway shall be complete with the following features:
 - .1 Surface non-metallic raceway is to be utilized in dry interior locations only.
 - .2 The surface non-metallic raceway system specified herein for branch circuit wiring and/or data network, voice, video and other low-voltage wiring shall be the 5400 System as manufactured by the Wiremold Company.
 - .3 The raceway and all system components must be UL Listed and exhibit non-flammable self-extinguishing characteristics tested to comparable specifications of UL94V-0. The raceway base and cover shall be manufactured by rigid compound, available in ivory or white colours (Architect Selection).
 - .4 The raceway shall be a two-piece design with a base and a snap-on cover. Total width shall be 133 mm (5¼") by 44.5 mm (1¾") deep with an approximate thickness of 2.4 mm (1/12"). The base and cover shall be available in 2.4 m (8') lengths. The raceway shall be available with two multiple wiring channels formed by integral barriers in the base.
 - .5 The cover shall span the entire width of the base concealing all of the wiring channels.

- .6 A full complement of fittings must be available including, but not limited to flat, internal and external elbows, tees entrance fittings, cover clips and end caps. They shall be manufactured of a rigid PVC compound. The fittings shall have a matte texture, in ivory or white colours to match the base and cover. They shall overlap the cover and base to hide uneven cuts. All fittings shall be supplied with a base where applicable to eliminate mitring. A transition fitting shall be available to adapt to other Wiremold series raceways.
- .7 Device brackets shall be available for mounting standard devices in-line with the raceway. Faceplates shall match and fit flush in the device plate. They shall be manufactured of rigid PVC compound. They shall be ivory or white colours to match raceway base cover (Architect selection). Contractor is to provide devices as noted.
- .8 The raceway manufacturer will provide a complete line of connectivity outlets and modular inserts for UTP (including Category 5e and 6), STP (150 ohm) Fibre Optic, Coaxial and other cabling types with face plates and bezels to facilitate mounting. The electrical contractor is to provide adapter plates for faceplates to be provided by the voice/data sub-contractor. The recommended plate is a Deco adapter 3-port plate style, confirm with voice/data sub-contractor.
- .2 Acceptable alternate manufacturers include:
 - .1 Hubbell Base Trak
 - .2 Panduit Pan-Way

2.2 HAND DRYERS

- .1 Hand dryers where noted on the drawings are to be supplied and installed by this Division with the following features:
 - .1 Surface mounting.
 - .2 Fixed nozzle.
 - .3 White finish with automatic activation.
Final finish selection by owner/architect.
Rating of 1450 W at 120 – 230V universal.
 - .4 Cat. # Comac Cat. #C-100220004 School Edition (no equals), no LED, brushed SS finish

2.3 AUXILIARY SYSTEMS ROUGH-IN

- .1 Outlets where noted shall be single gang boxes unless specified otherwise.
- .2 Outlets if unwired are to be provided with blank coverplates to suit related sections of this specification.
- .3 Coordinate final outlet locations, quantities, etc. with respective system vendor and owner's representative.

2.4 SECURITY AND ACCESS CONTROL ROUGH-IN

- .1 Provide conduit from device and outlet locations to cable management systems as noted on drawings.
- .2 Outlets if unwired are to be provided with blank coverplates to suit related sections of this specification.
- .3 Provide grounding of equipment as noted on drawings.
- .4 Security and access control systems installation shall be by Owner's approved vendor.

2.5 TELECOMMUNICATION NETWORK SYSTEM ROUGH-IN

- .1 Outlets where noted shall be single gang flush mounted in wall or surface raceways.
- .2 Outlets if unwired are to be provided with blank coverplates to suit related sections of this specification.
- .3 Provide a #6 insulated green ground conductor from main service ground to voice equipment backboard located on drawings.
- .4 Telecommunication Network installation shall be by Owner's approved vendor.

2.6 PUBLIC ADDRESS SYSTEM ROUGH-IN

- .1 Provide conduit from device and outlet locations to cable management systems as noted on drawings.
- .2 Outlets if unwired are to be provided with blank coverplates to suit related sections of this specification.
- .3 Provide grounding of equipment as noted on drawings.
- .4 Public address system installation shall be by Owner's approved vendor.

2.7 LINE VOLTAGE POWER PACKS AND LOW VOLTAGE OCCUPANCY SENSORS

- .1 Line voltage power packs and occupancy sensors shall be one manufacturer throughout the project.
- .2 Line Voltage Power packs shall be provided to match the room lighting load, control requirements, and lighting voltage. Power packs shall have the following features:
 - .1 Mount to standard junction box.
 - .2 Simple replacement. It shall be capable to replace the unit without requiring any configuration or set-up.
 - .3 Plenum rated
 - .4 120VAC or 347V, 60HZ operation.
 - .5 Acceptable materials:
 - .1 Sensorswitch Cat. #PP20 Series
 - .2 Legrand Cat. #BZ-250 Series
 - .3 Greengate Cat. #SP15 Series

- .3 Low voltage / analog occupancy sensors shall be complete with the following features:
 - .1 Coverage pattern to suit room ceiling height.
 - .2 Suitable to detect minor and medium motion patterns within rooms less than 2000 sq. ft.
 - .3 Mount to standard junction box.
 - .4 Simple replacement. It shall be capable to replace the unit without requiring any configuration or set-up.
 - .5 Relays shall not be integrated within the occupancy sensor. Relays shall be provided within separate power pack.
 - .6 Acceptable materials
 - .1 Sensorswitch Cat. #CM-PDT Series
 - .2 Legrand Cat. #CI-205
 - .3 Greengate Cat. #OAC-DT-2000

Part 3 Execution

3.1 SURFACE MOUNTED RACEWAY

- .1 Raceway is to be supplied and installed complete with all necessary fittings, hardware and device brackets for configuration as noted in the drawings for a complete functional installation.
- .2 Install conduit system, wiring and devices as indicated.
- .3 Ensure raceway is installed as per manufacturer recommendations.
- .4 Where the raceway ends at a wall install end cap.

3.2 HAND DRYERS

- .1 Install and connect hand dryers in conformance with manufacturer's recommendations.
- .2 Hand dryers are to be mounted at a height to suit age of expected users. Unless otherwise noted confirm height with manufacturer, owner, Architect, and/or consultant prior to rough-in.
- .3 Once installed this contractor is to caulk the joint between dryer and wall surface with a bead of clear silicone.

3.3 AUXILIARY SYSTEMS ROUGH-IN

- .1 Provide backboard for each system use as noted complete with ground buss connection as specified.
- .2 Outlets are to be installed complete with minimum 21 mm (3/4") conduit to accessible ceiling space or as otherwise detailed.
- .3 Conduits terminated into ceiling spaces must be within 3m (10') of zone conduits when noted.
- .4 Provide insulated bushings on all conduits terminated in ceiling space.

- .5 Ensure specified zone or riser conduits are installed back to equipment backboard.

3.4 SECURITY AND ACCESS CONTROL ROUGH-IN

- .1 Outlets are to be provided for devices with conduit as detailed on drawings.
- .2 Conduits terminated into ceiling spaces must be within 1m of cable management of tray.

3.5 TELECOMMUNICATION NETWORK SYSTEM ROUGH-IN

- .1 Install incoming service ducts and terminate as noted.
- .2 Provide backboard as noted complete with ground connection to main service ground.
- .3 Conduits terminated into ceiling spaces must be within 3m (10') of zone conduits (if applicable).
- .4 Ensure specified zone conduits are installed back to service backboard.
- .5 Outlets are to be installed complete with 25 mm (1") conduit to corridor ceiling space or nearest zone conduit (if applicable).
- .6 Provide insulated bushings on all conduits terminated in ceiling space.
- .7 A 25mm (1") conduit is to be installed from elevator machine room to voice service backboard.

3.6 PUBLIC ADDRESS SYSTEM ROUGH-IN

- .1 Conduits terminated into ceiling spaces must be within 1m (10') of cable management tray.
- .2 Outlets are to be installed complete with 25 mm (1") conduit to corridor ceiling space or nearest cable management tray.
- .3 Provide insulated bushings on all conduits terminated in ceiling space.
- .4 Electrical contractor shall obtain speaker back boxes from School Board vender for installation into ceiling tiles, block walls, etc.

3.7 LINE VOLTAGE POWER PACKS AND LOW VOLTAGE OCCUPANCY SENSORS

- .1 Install power packs in accessible maintenance areas.
- .2 Provide access doors if power packs are installed above drywall ceilings.
- .3 Install sensors in gym where noted on plan at mid height of wall.
- .4 Sensors installed in areas of high abuse shall be complete with wire guards.
- .5 It shall be the contractor's responsibility to locate and aim sensors in the correct location required for complete and proper coverage within the range of coverage as per the manufacturer's recommendations. The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only the rooms which are to be provided with sensors. The contractor shall provide additional sensors if required to properly and completely cover the respective rooms.

- .6 It is the contractor's responsibility to arrange a pre-installation meeting with the manufacturer's factory authorized representative, at the facility, to verify placement to sensors and installation criteria.
- .7 The contractor shall also provide the on-site training necessary to familiarize the owner's personnel with the operation, use, adjustment and problem solving diagnosis of the occupancy sensing devices systems.
- .8 Upon completion of the installation, the system shall be completely commissioned by the manufacturer's factory authorized technician who will verify all adjustments and sensor placement to ensure a trouble-free occupancy-based lighting control. Submit commissioning report with closeout documents.
- .9 **All lighting controls shall be provided with functional testing and documentation conforming to Ashrae 90.1, latest adoption. This cost shall be included in the Tender Price.**

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Heaters must conform to CSA 22.2 No.46 (latest edition).

1.2 PRODUCT DATA

- .1 Submit product data in accordance with the Electrical General Requirements Section.
- .2 Product data to include:
 - .1 Suspension of heating element.
 - .2 Physical size.
 - .3 Thermostat control if integral.
 - .4 Finish.
 - .5 kW rating, voltage, phase.
 - .6 Cabinet thickness.
 - .7 Cabinet surface temperature.
 - .8 Mounting methods.
 - .9 Auxiliary controls.
 - .10 Replacement data for motor element, thermostat, and switch.

1.3 OPERATION AND MAINTENANCE DATA

- .1 Provide operation and maintenance data for all heating system components for incorporation into manual as specified in the Electrical General Requirements Section.

Part 2 Products

2.1 BASEBOARD CONVECTORS

- .1 Heaters shall be standard wattage density with connection box at one end. Element through-type fitted with aluminum convector vanes and resistor wire enclosed in mineral insulation in copper coated steel sheath.
- .2 Element locked to cabinet and supported at additional points throughout length to allow for linear expansion with non-metallic supports.
- .3 Cabinets shall be bottom inlet/outlet front panel 1.6 mm (3/32") thick, finished in baked enamel, (colour to suit architect). Integral air diffusion reflector with wireway at bottom.
- .4 Blank cabinet sections where specified shall be complete with wireway in all sections including splice plates, to match heater cabinets in all respects for continuous baseboard effect as indicated.
- .5 Controls shall be (as indicated) either wall mounted remote thermostats or integral 2 pole thermostats to control load of heater specified.

2.2 UNIT HEATERS

- .1 Unit heater shall be horizontal discharge complete with adjustable louvers finished to match cabinet.
- .2 Fan type unit heaters must be provided with built-in high-heat limit protection.
- .3 Fan motor must be permanently lubricated ball bearing type with resilient mount. Built-in fan motor thermal overload protection.
- .4 Hangers shall be as indicated on drawings.
- .5 Elements shall be mineral insulated copper coated steel sheath with aluminum brazed fins.
- .6 Cabinet shall be steel fitted with brackets for rod or wall mounting. Phosphatized and finished with baked enamel finish to suit architect.
- .7 Controls shall be (as indicated) either wall mounted remote thermostats or integral 2 pole thermostats to control load of heater specified. Integral magnetic contactors (if specified) are to be provided to suit load.

2.3 CABINET CONVECTOR HEATERS

- .1 Wall mounted cabinet shall be front inlet/front outlet 1.6 mm (3/32") thick front steel panel. Phosphatized and finished with baked enamel. Finish colour to suit architect. Pre-drilled back for securing to wall.
- .2 Elements shall be mineral insulated with copper sheath and pressed-on fins, secured and free-floating for expansion.
- .3 Controls shall be (as indicated) either wall mounted remote thermostats or integral 2 pole thermostats to control load of heater specified.

2.4 FORCED AIR WALL HEATERS

- .1 Forced air wall heaters, wall or ceiling mounted as noted complete with T-bar mounting frame. Heater shall be commercial type as follows:
 - .1 Enclosure:
 - .1 Steel: 18 gauge.
 - .2 Knockouts for 19 mm (3/4") diameter conduit left, right, bottom and rear.
 - .3 Grill and frame finished to suit architect.
 - .2 Elements and Fan:
 - .1 Mineral insulated.
 - .2 Motor: totally enclosed, shaded pole, impedance protected motor.
- .2 Controls:
 - .1 Built-in tamperproof controls. 'On-Off-Fan Only' selector switch and temperature control knob.

2.5 THERMOSTATS

- .1 Line voltage thermostats in finished areas as indicated shall be complete with the following features:
 - .1 Full load rating of maximum 18 A at 208 V
 - .2 Temperature range: 10°C to 27°C (50°F to 80.6°F)
 - .3 Temperature range shall be marked on face of thermostat in 5 degree increments.

2.6 APPROVED MANUFACTURERS

- .1 Approved manufacturers shall be:
 - .1 Ouellet
 - .2 Stelpro
 - .3 Westcan

Part 3 Execution

3.1 INSTALLATION

- .1 Install baseboard convactor heaters, blank sections, and controls. When wireway is used, remove knock-outs and insert insulating bushing between each unit. Install grounding wire to maintain ground integrity between heating, blank, and auxiliary sections.
- .2 Suspend unit heaters from ceiling or mount on wall as indicated.
- .3 Install cabinet convectors as indicated.
- .4 Install force flow heaters as indicated.

3.2 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Electrical General Requirements Section.
- .2 Ensure that heaters and controls operate correctly.
- .3 On fan powered units:
 - .1 Test cut-out protection when air movement is obstructed.
 - .2 Test fan delay switch to assure dissipation of heat after element shut down.
 - .3 Test unit cut-off when fan motor overload protection has operated.

END OF SECTION

Part 1 General

1.1 PRODUCT DATA

- .1 Submit product data in accordance with Electrical General Requirements Section.
- .2 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

Part 2 Products

2.1 PANELBOARDS

- .1 Panel boards must conform to CSA C22.2 No. 29 (latest edition).
- .2 Panelboards: product of one manufacturer.
- .3 Install circuit breakers in panelboards before shipment.
- .4 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand. **Series rating is acceptable – submit information with shop drawings. Provide lamicoid label on feeder breaker. Lamicoid label to state “Series Rating Breaker.” Lamicoid label to be size 2.**
- .5 Bus and breakers must be rated as indicated.
- .6 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.
- .7 Panelboard mains, number of circuits, and number and size of branch circuit breakers as indicated.
- .8 Two keys for each panelboard and key panelboards alike.
- .9 Aluminum bus with neutral of same ampere rating as mains.
- .10 Mains must be suitable for bolt-on breakers. Provide main (if applicable) and branch breakers as bolt-on style.
- .11 Trim with concealed front bolts and hinges.
- .12 Trim and door finish must be baked grey enamel.
- .13 All panels regardless of voltage and amperage must be provided with a lockable door.
- .14 Power distribution circuit breaker panelboards (400 AMP or larger) must be one of the following:
 - .1 Eaton CAT# POW-R-Line-C PRL-3A or PRL-4A
 - .2 Schneider Electric CAT# I-Line Series (Bolt-On)
 - .3 Siemens CAT# P2 Series (up to 600A mains and maximum 100A-3P branch breakers)

- .4 Siemens CAT# S5 Series (up to 1200A mains with branch breakers above 100A-3P)

2.2 BREAKERS

- .1 Breakers: to Moulded Case Circuit Breakers Section.
- .2 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.
- .3 Main breaker (as specified) must be separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.
- .4 Lock-on devices for fire alarm, stairway, exit and night light circuits.

2.3 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Electrical General Requirements Section.
- .2 Nameplate for each panelboard size 4 engraved description as indicated. In finished areas install label on inside of panel, and in service areas install label on exterior of panel.
- .3 Nameplate for each circuit in distribution panelboards size 2 engraved "name of load" as indicated.
- .4 Complete circuit directory with typewritten legend showing location of each circuit.
Include a copy of the directories in the maintenance manuals.

Part 3 Execution

3.1 INSTALLATION

- .1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.
- .2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard. Plywood shall be 21mm (3/4") fire rated or painted with intumescent fire block paint having a minimum of 1h rating, unless noted otherwise.
- .3 Mount panelboards to height specified in Electrical General Requirements Section or as indicated.
- .4 Connect loads to circuits.
- .5 Connect neutral conductors to common neutral bus.
- .6 Install series rating lamicoids adjacent to all breakers utilized to achieve series ratings.

END OF SECTION

Part 1 General

1.1 PRODUCT DATA

- .1 Submit product data in accordance with Electrical General Requirements Section.

Part 2 Products

2.1 BREAKERS GENERAL

- .1 Moulded case circuit breakers must conform to CSA C22.1 No.5.1-M91 (latest edition.)
- .2 Bolt-on moulded case circuit breaker quick-make, quick-break type, for manual and automatic operation.
- .3 Common-trip breakers: with single handle for multi-pole applications.
- .4 Unless otherwise indicated moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.
- .5 Moulded case circuit breakers 250 Amps and above are to operate by means of a solid-state trip unit with associated current monitors and self-powered shunt trip to provide inverse time current trip under overload condition, and long time, short time, instantaneous tripping for phase and ground fault short circuit protection (if indicated or applicable by the Electrical Safety Code versus the breaker amperage). Unless otherwise specified, complete system selective co-ordination shall be provided by the individually adjustable time/current curve shaping elements as following:
 - .1 Breakers shall have fixed rating plug determining breaker continuous current rating.
 - .2 All breakers shall have adjustable long delay pickup and time, L.
 - .3 All breakers shall have individual adjustments for short delay pickup and time, S; including I2t settings in time adjustment.
 - .4 Breakers shall have adjustable instantaneous pickup, I; that if required by co-ordination study can be turned off, (I).
 - .5 If required by Electrical Safety Code breakers shall have individually adjustable ground fault current pick-up and time, G; including I2t settings in time adjustment.
 - .6 Unless otherwise specified, for the low voltage systems provide an electronic trip unit as specified above for the following moulded case circuit breakers:
 - .1 Mains or ties in main switchboard: LS trip unit with fixed instantaneous over-ride exceeding maximum value of fault at the point of installation.
 - .2 Transformer feeder for the units 225kVA and above: LSI or LS trip unit with fixed instantaneous over-ride, where instantaneous trip setting or instantaneous over-ride allows for transformer inrush of 12xFLA at 0.1s and exceeds maximum value of fault at the transformer secondary.

- .3 Feeders exceeding 250A trip setting: LS trip unit with fixed instantaneous over-ride exceeding maximum value of fault at downstream panelboard.
- .4 Branch circuits or feeders for MCCs with fusible combination starters: LSI trip unit where instantaneous trip setting allows for maximum size downstream fuse total clearing time.

Part 3 Execution

3.1 INSTALLATION

- .1 Install circuit breakers as indicated complete with all necessary mounting hardware and filler panels if necessary.
- .2 Provide lamicoid labels for series rating breakers. Lamcoid label to state "Series Rating Breaker." Lamcoid to be size 2.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings and product data in accordance with Electrical General Requirements Section.

Part 2 Products

2.1 RECEPTACLES

- .1 Receptacles, plugs, and other similar wiring devices must conform to CSA 22.2 No 42 (latest edition).
- .2 Duplex receptacles, CSA type 5-15 R, 125 V, 15 A, U ground, with following features (20A where noted):
 - .1 Urea molded housing (Colour by architect).
 - .2 Suitable for No. 10 AWG for back and side wiring.
 - .3 Break-off links for use as split receptacles.
 - .4 Eight back wired entrances, four side wiring screws.
 - .5 Triple wipe contacts and rivetted grounding contacts.
- .3 Other receptacles with ampacity and voltage as indicated.
- .4 Receptacles of one manufacturer throughout project.
- .5 Acceptable materials:
 - .1 Tamper resistant
 - .1 Tamper resistant ground fault protected receptacle: Hubbell Cat. #GFTR15
 - .2 Tamper resistant ground fault protected T-slot receptacle: Hubbell Cat. #GFTR20
 - .3 Tamper resistant duplex receptacle complete with dual USB ports: Hubbell Cat. #USB15XXX
 - .4 Automatically Controlled Tamper Resistant Receptacles (Green): Hubbell Cat. #BR15C2GNTR
- .6 Acceptable alternate manufacturers include:
 - .1 Pass & Seymour
 - .2 Leviton

2.2 COVER PLATES

- .1 Cover plates from one manufacturer throughout project.
- .2 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.

- .3 Stainless steel, brushed, 1 mm (1/32") thick cover plates for wiring devices mounted in flush-mounted outlet box.
- .4 Sheet metal cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.
- .5 Provide p-touch labels on cover plates for all receptacles. Labels shall include source panel and branch circuit, including switch leg indicator as applicable for automatically controlled receptacles.

Part 3 Execution

3.1 INSTALLATION

- .1 Receptacles:
 - .1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.
 - .2 Mount receptacles at height specified in Electrical General Requirements Section or as indicated.
 - .3 Where split receptacle has one portion switched mount vertically and switch upper portion.
- .2 Occupancy sensors:
 - .1 Occupancy sensors shall be set to 5 minutes "delay to off" unless otherwise noted.
- .3 Occupancy sensors and dimmers:
 - .1 Switches with occupancy sensors and dimmers shall be programmed as follows:
 - .1 5 minutes "delay to off" unless otherwise noted.
 - .2 "Auto on" to 50% dimming level.
- .4 Cover plates:
 - .1 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.
 - .2 Install suitable common cover plates where wiring devices are grouped.
 - .3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.
- .5 Dimmer:
 - .1 Dimming Switches
 - .1 Mount devices at height as specified in Electrical General Requirements Section.
 - .2 Install in upright position as per manufacturer's installation instructions.
 - .3 Provide class II 0-10V control wiring from 0-10V dimming switch to each fixture driver in 21mmC.

END OF SECTION

Part 1 General

1.1 PRODUCT DATA

- .1 Submit product data in accordance with Electrical General Requirements Section.

Part 2 Products

2.1 DISCONNECT SWITCHES

- .1 Enclosed manual air break switches must conform to CSA C22.1 No.4 (latest edition).
- .2 Fuseholder assemblies must conform to CSA C22.2 No.39 (latest edition).
- .3 Fusible, and/or non-fusible, horsepower rated disconnect switches, size as indicated.
- .4 Provision for padlocking in off switch position by three locks.
- .5 Mechanically interlocked door to prevent opening when handle in ON position.
- .6 Fuses: size as indicated, to Fuses - Low Voltage Section.
- .7 Fuseholders: relocatable and suitable without adaptors, for type and size of fuse indicated.
- .8 Quick-make, quick-break action.
- .9 ON-OFF switch position indication on switch enclosure cover.
- .10 Disconnects feeding elevator controllers must be equipped with two auxiliary contacts approved by the elevator supplier.
- .11 Service entrance rated with fault bracing, fusing and barrier as required.

2.2 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Electrical General Requirements Section.
- .2 Indicate name of load controlled on size 4 nameplate.

2.3 ACCEPTABLE MANUFACTURERS

<u>Manufacturer</u>	<u>General Purpose</u>	<u>Weather Proof</u>
Eaton	IHD Series	3HD Series
Schneider Electric	Type A Series	Type R Series
Siemens	ID Series	NFR/FR Series

Part 3 Execution

3.1 INSTALLATION

- .1 Install disconnect switches complete with fuses if applicable.
- .2 Connect auxiliary contacts to elevator controller using conduit, wire and route approved by the elevator supplier.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings in accordance with Electrical General Requirements Section.
- .2 Indicate:
 - .1 Mounting method and dimensions.
 - .2 Starter/contactor size and type.
 - .3 Layout of identified internal and front panel components.
 - .4 Enclosure types.
 - .5 Wiring diagram for each type of starter.
 - .6 Interconnection diagrams.

1.2 OPERATION AND MAINTENANCE DATA

- .1 Provide operation and maintenance data for incorporation into manual specified in Electrical General Requirements Section.
- .2 Include operation and maintenance data for each type and style of starter/contactor.

1.3 MAINTENANCE MATERIALS

- .1 Provide maintenance materials in accordance with Electrical General Requirements Section.
- .2 Provide listed spare parts for each different size and type of starter:
 - .1 1 operating coil.
 - .2 3 fuses.
 - .3 10% indicating lamp bulbs used.

Part 2 Products

2.1 MATERIALS

- .1 Starters: must conform to CSAC22.2 No. 14 (latest edition) and EEMAC E14-1.
- .2 Control transformers must conform to CSAC22.2 No. 66 (latest edition).
- .3 Auto-transformers must conform to CSAC22.2 No 47 (latest edition).
- .4 Contactors must conform to CSA C22.2 No. 14 (latest edition).
- .5 Half size starters will not be accepted. NEMA and IEC rated starters are acceptable.

2.2 MANUAL MOTOR STARTERS

- .1 Single and Three phase manual motor starters of size, type, rating, and enclosure type as indicated, with components as follows:
 - .1 Switching mechanism, quick make and break.

- .2 One or Three overload heaters, manual reset, trip indicating handle.
- .3 Toggle switch: standard duty labeled "on"/"off".
- .4 Indicating light: standard duty type and red colour.
- .5 Locking tab to permit padlocking in "ON" or "OFF" position.

2.3 FULL VOLTAGE MAGNETIC STARTERS

- .1 Magnetic and combination magnetic starters of size, type, rating and enclosure type as indicated with components as follows:
 - .1 Contactor solenoid operated, rapid action type.
 - .2 Motor overload protective device in each phase, manually reset from outside enclosure.
 - .3 Wiring and schematic diagram inside starter enclosure in visible location.
 - .4 Identify each wire and terminal for external connections, within starter, with permanent number marking identical to diagram.
- .2 Combination type starters to include fused disconnect switch with operating lever on outside of enclosure to control disconnect, and provision for:
 - .1 Locking in "OFF" position with up to 3 padlocks.
 - .2 Independent locking of enclosure door.
 - .3 Provision for preventing switching to "ON" position while enclosure door open.
- .3 Accessories:
 - .1 Pushbuttons Selector switches standard duty labeled as indicated.
 - .2 Indicating lights: standard duty type and color as indicated.
 - .3 1-N/O and 1-N/C spare auxiliary contacts unless otherwise indicated.
 - .4 1 red pilot light for "stop" or "off" and 1 green light for "start" or "on".

2.4 CONTROL TRANSFORMER

- .1 Single phase, dry type, control transformer with primary voltage as indicated and secondary voltage to suit remote control device, complete with secondary fuse, installed in with starter as indicated.
- .2 Size control transformer for control circuit load plus 20% spare capacity.

2.5 CONTACTORS

- .1 Electrically held and controlled by pilot devices as indicated and rated for type of load controlled.
- .2 Complete with 2 normally open and 2 normally closed auxiliary contacts unless indicated otherwise.
- .3 Mount in CSA Enclosure 1 unless otherwise indicated.
- .4 Include following options in cover:
 - .1 Red indicating lamp.
 - .2 Hand - Off - Auto selector switch.

- .5 Control transformer: mounted in contactor enclosure.
- .6 Contactors must be definite purpose.

2.6 FINISHES

- .1 Apply finishes to enclosure in accordance with Electrical General Requirements Section.

2.7 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Electrical General Requirements Section.
- .2 Manual starter designation label: black plate, white letters, size 1, engraved as indicated.
- .3 Magnetic starter designation label: black plate, white letters, size 2, engraved as indicated.
- .4 Contactor designation label:
 black plate, white letters, size 4, indicating name of load controlled.

2.8 ACCEPTABLE MANUFACTURERS

- .1 The acceptable manufacturers are as follows:
 - .1 Allen Bradley
 - .2 Eaton
 - .3 Siemens
 - .4 Group Schneider
 - .5 Klockner Moeller

Part 3 Execution

3.1 INSTALLATION

- .1 Install starters, connect power and control as indicated.
- .2 Ensure correct fuses and overload devices elements installed.

3.2 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Electrical General Requirements Section.
- .2 Operate switches, contactors to verify correct functioning.
- .3 Perform starting and stopping sequences of contactors and relays.
- .4 Check that sequence controls, interlocking with other separate related starters, equipment, control devices, operate as indicated.
- .5 Install contactors and connect auxiliary control devices.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE)
 - .1 ANSI/IEEE C62.41- 1991, Recommended Practices for Surge Voltages in Low-Voltage AC Power Circuits.
- .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM F1137- 88 (1993), Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.
- .3 United States of America, Federal Communications Commission (FCC)
 - .1 FCC (CFR47) EM and RF Interference Suppression.
- .4 IESNA LM-79-08, IES Electrical Method for the Electrical and Photometric Measurements of Solid State Lighting Products.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings in accordance with Electrical General Requirements Section for all light fixtures supplied under this contract.
- .2 Submit complete photometric data prepared by independent testing laboratory for luminaires where specified, for review by Consultant.
- .3 Photometric data to include: VCP Table spacing criterion.

1.3 SCOPE

- .1 This contractor is responsible to supply and install all lighting fixtures as scheduled and/or indicated including lamp and those accessories required for a complete lighting system. This contractor must coordinate lighting installations with all other Divisions of this project.
- .2 All fixtures must be CSA approved or approved at this contractor's expense by the Special Inspection Division of the Electrical Safety Authority.

1.4 GUARANTEE

- .1 Guarantees for materials replacement shall be as follows from date of ready for takeover.
 - .1 LED lamps: 3 months
 - .2 LED fixtures, and driver: 5 years.
- .2 The labour required to replace these ballasts, lamps or drivers must be included in the above guarantee, however only for the extent of the contract guarantee and warranty period as noted in Electrical General Requirements.

1.5 EXISTING FIXTURE BALLAST REMOVAL AND DESTRUCTION

- .1 Scope
 - .1 This Contractor is responsible for contracting with an approved company for the dismantling, disposal and removal of all existing fluorescent ballasts and lamps from this project. This process must include but is not limited to the following:
 - .1 Removal of existing ballasts from fixtures by this contractor.
 - .2 This contractor is to compare the ballast number to the PCB ballast identification booklet provided by the disposal company.
 - .3 If the ballast is not contaminated it is to be disposed of by normal means.
 - .4 If the ballast is contaminated provide:
 - .1 Approved interm on site storage area.
 - .2 Approved interm on site storage containers.
 - .3 Any and all necessary on site inspections.
 - .4 All necessary approval certificates (include copies in maintenance manuals).
 - .5 Full dismantling, complete destruction and disposal of all ballasts components.
- .2 Approved Disposal Companies
 - .1 PCB Containment Technology Inc.
75 Wanless Court
Ayr, Ontario
NOB 1E0
Phone: (519) 740-1333
Fax: (519) 740-2320
- .3 Payment Procedures
 - .1 Cost of complete services of this sub-contractor shall be paid for by this Section. Refer to Allowances and Fees Section for allowance to be carried for this work.

Part 2 Products

2.1 FIXTURE CONSTRUCTION

- .1 Fixtures must be constructed of 20 gauge (minimum) cold rolled steel. All metal edges require smooth finish.
- .2 Light leaks must be prevented by providing gasketting, stops, and barriers.
- .3 Fixtures must be finished in high reflective baked white enamel. This surface must have a reflectance of not less than 85%.
- .4 **All fixtures operating on 347 Volts must be provided with an integral disconnecting means.**

2.2 FIXTURE LENS

- .1 Unless otherwise noted fixture lenses shall be as follows:
 - .1 Lens thickness: 3.2 mm (1/8")
 - .2 Material: injection moulded clear prismatic virgin acrylic
 - .3 Frame: hinged, latched, steel.

2.3 LED FIXTURES

- .1 Fixture LED's must be tested in conformance with IESNA LM80 standard.
- .2 LED's must be selected using a binning algorithm to ensure colour and lumen output of a given fixture are consistent, as well as meet or surpass ANSI C78.377 specification for the rated lifetime of the fixture. Colour accuracy between products must be within a 2-step MacAdam ellipse.
- .3 Luminaires must be tested to IESNA LM79 by an independent approved laboratory.
- .4 Luminaires must be tested prior to shipping.
- .5 Luminaires must be ULC certified and approved for use in Canada.
- .6 Fixtures must maintain a minimum of 90% of their initial light output for 60,000 hours. Submit test results upon request.
- .7 Lumen values indicated for fixtures in the project documents are to be considered as "absolute" or "delivered" values.
- .8 Other than for specialty fixtures, and unless otherwise indicated, the maximum driver current is to be 750 mA.

2.4 STANDARD EXIT LIGHTING UNITS

- .1 Exit lighting units must conform to CSA C860, CSA 22.2 No. 141 (latest edition).
- .2 Housing: extruded aluminum housing, white finish.
- .3 Face and back plates: extruded aluminum.
- .4 Lamps: 2W LED.
- .5 Operation: 25 year.
- .6 Units are to be provided with three (3) pictogram legends indicating "left from here", "straight from here", and "right from here".
- .7 Face plate to remain captive for relamping.

2.5 SELF-POWERED COMBINATION EXIT/EMERGENCY LIGHTING UNITS

- .1 Exit lighting units must conform to CSA C860, CSA 22.2 No. 141 (latest edition).
- .2 Housing: extruded aluminum housing. White Finish.
- .3 Face and back plates: extruded aluminum.
- .4 Lamps 2W LED (EXIT).
- .5 Operation: 25 year life.

- .6 Units are to be provided with three (3) pictogram legends indicating “left from here”, “straight from here”, and “right from here”.
- .7 Face plate to remain captive for relamping.
- .8 Supply voltage: as noted on drawings.
- .9 Output voltage: 12 V DC.
- .10 Battery: sealed maintenance free 10 year life.

Note: Battery must be capable of supplying the wattage indicated for a minimum of 30 minutes.
- .11 Charger: solid state, voltage/current regulated, inverse temperature compensated, short circuit protected, with regulated output of plus or minus 0.01 V for plus or minus 10% V input variation.
- .12 Solid state transfer circuit.
- .13 Signal lights: “AC Power On” condition and “charging” condition.
- .14 Lamp heads: integral on unit, 345° horizontal and 180° vertical adjustment. Lamp type: minimum 4 watt LED.
- .15 Mounting: suitable for universal mounting directly on junction box and complete with knockouts for conduit. Removable or hinged front panel for easy access to batteries.
- .16 Cabinet: finish: white.
- .17 Auxiliary equipment:
 - .1 Test switch.

2.6 EMERGENCY LIGHTING UNITS

- .1 Emergency lighting units must conform to CSA C22.2 No 141 (latest edition).
- .2 Supply voltage: as noted on drawings.
- .3 Output voltage: 12 V DC.
- .4 Battery: sealed, maintenance free, 10 year life.

Note: Battery units must be capable of supplying the wattage indicated for a minimum of 30 minutes.
- .5 Charger: solid state, multi rate, voltage/current regulated, inverse temperature compensated, short circuit protected with regulated output of plus or minus 0.01 V for plus or minus 10% input variations.
- .6 Solid state transfer circuit.
- .7 Low voltage disconnect: solid state, modular, operates at 80% battery output voltage.
- .8 Signal lights: “AC Power ON” condition and “charging” condition.
- .9 Lamp heads: integral on unit, 345° horizontal and 180° vertical adjustment. Lamp type: minimum 4 watt LED.

- .10 Cabinet suitable for direct of shelf mounting to wall and complete with knockouts for conduit. Removable or hinged front panel for easy access to batteries.
- .11 Auxiliary equipment:
 - .1 Test switch.
 - .2 Ac input and DC output terminal blocks inside cabinet.
 - .3 Shelf.
 - .4 Cord and plug connection for AC. **(Not applicable on 347 V units).**

2.7 ACCEPTABLE LIGHTING MANUFACTURERS

- .1 Refer to the light fixture schedule as indicated on drawings.

Part 3 Execution

3.1 INSTALLATION

- .1 Locate and install luminaires as indicated. Luminaires are not to be supported from the roof deck. Provide additional unistrut support channel and/or support from structure. Co-ordinate with consultant on site.
- .2 Ball align hangers must be provided for rod suspended fixtures.
- .3 Fixtures surface mounted to suspended ceilings must be secured through ceiling assembly to cross member supports. These supports are to be steel channels or angles independently secured **to structure** using # 12 "jack" chain. Each chain must be secured so no fixture weight is added to the ceiling assembly.
- .4 Plaster frames/flange kits must be provided by this Division for fixtures recessed in plaster and/or drywall ceilings.
- .5 Where specified, fixtures to be chain hung shall be hung using "jack" chain with a capacity to suit the fixture weight. Branch circuit wiring feeding these fixtures shall be AC90 cable "ty-wrapped" at 900mm (36") intervals along length of drop. Final appearance must be neat and professional.
- .6 Install exit lighting units with illuminated faces and chevrons/arrows indicating path(s) of exit as indicated. Unless otherwise noted install exit fixtures at 2400 mm (8' 0") above finished floor.
- .7 Install emergency lighting units and associated remote mounted fixtures as indicated.
- .8 Install emergency lighting units and remote fixtures at 300mm (12") below finished ceiling, unless indicated otherwise.
- .9 Provide a 15 A 120 V duplex receptacle (connected to circuit indicated) adjacent to unit. **Not applicable on 347 V units. This receptacle connection is to be no lower than 8' 0" (2400 mm) AFF.**

- .10 **Special installation: Secure fixtures to structure to conform to the Electrical Safety Code using “jack chain” NOT ceiling suspension wire. Where coreslab is used, suspension point must be independent of the one used for suspension of the ceiling assembly. As an alternate to jack chain the contractor may use a pre-manufactured aircraft cable suspension and fastening system as manufactured by Gripple (Gripple Cat. #HF02-10F2). Provide minimum 2 per fixture.**
- .11 All battery units are to be provided with a visible lamicoid label indicating the unit number as per drawings.

3.2 WIRING

- .1 Connect luminaires to lighting circuits as indicated.
- .2 Connect exit fixtures to exit lighting circuits and unit equipment (if applicable).
- .3 Connect unit equipment to circuits as indicated.
- .4 All wiring of remote emergency fixtures shall be minimum #10 T90 for each circuit and run in conduit. Wiring must be sized in conformance with manufacturer’s recommendations for distances required.

3.3 LUMINAIRE ALIGNMENT

- .1 Align luminaires mounted in continuous rows to form straight uninterrupted line.
- .2 Align luminaires mounted individually parallel or perpendicular to building grid lines.

3.4 DELIVERIES

- .1 Fixtures are to be completely assembled at the manufacturer’s plant and delivered to the project site in original unitized containers. Ensure that a dry, protected and secure space is available for proper storage before scheduling delivery of fixtures.

3.5 TESTING/CERTIFICATION

- .1 At the completion of the project and in the presence of the consultant, test all exit and emergency fixtures. On company letterhead, the contractor is to prepare a chart indicating:
 - .1 Project
 - .2 Date
 - .3 Equipment type
 - .4 Certification of correct connection
 - .5 Certification of correct operation
 - .6 Duration of test in minutes (minimum 30)
 - .7 Actual period of testing (time of day)
- .2 **Provide “Integrated Testing” of this life safety system in conformance with the noted specification section. Include all associated costs in tender.**

3.6 ADDITIONAL INSTALLED EXIT SIGNS

- .1 The electrical contractor is to include in their bid the cost to add two (2) additional standard exit lighting units to be installed and tested in locations as directed by the consultant. Note: This installation and test will be occurring after the initial testing/certification testing is complete.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE).
- .2 Underwriter Laboratories of Canada (ULC).
- .3 International Electrotechnical Commission.
- .4 International Organization for Standardization (ISO).
- .5 National Electrical Manufacturers Association (NEMA).

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings in accordance with Section 26 01 16.
- .2 Submit composite wiring diagrams and control schedule for each room control circuit type as proposed to be installed. Include load type, sequence of operation, sensor parameters, time delays, sensitivities and daylighting set points.
- .3 Catalog cut sheets with performance specifications demonstrating compliance with specified requirements.

1.3 SCOPE

- .1 This contractor is responsible to supply and install all equipment and control wiring as specified for the digital occupancy and daylight control systems. This contractor must coordinate these control systems with the lighting fixtures being supplied for the project to ensure intended function as specified.
- .2 Control Intent: Control Intent includes, but is not limited to:
 - .1 Defaults and initial calibration settings for such items as time delay, sensitivity, fade rates, etc.
 - .2 Initial sensor and switching zones.
- .3 All equipment must be CSA approved or approved at this contractor's expense by the Special Inspection Division of the Electrical Safety Authority.
- .4 Reference section 26 51 13 for Lighting information.
- .5 Reference section 26 05 75 for line voltage occupancy sensors and switches (hard wired analog).

1.4 SYSTEM DESCRIPTION AND OPERATION

- .1 The Digital Lighting Control (room level) as defined under this section covers the following equipment:
 - .1 Digital Room Controllers – Self-configuring, digitally addressable one, two or three relay controllers.

- .2 Digital Occupancy Sensors – Self-configuring, digitally addressable and calibrated occupancy sensors with LCD display and two-way active infrared (IR) communications.
- .3 Digital Switches – Self-configuring, digitally addressable pushbutton switches, dimmers, and scene switches with two-way active infrared (IR) communications.
- .4 Digital Photosensors – Single-zone closed loop sensors with two-way active infrared (IR) communications can provide switching or dimming control for daylight harvesting.
- .5 Configuration Tools – Handheld remote for room configuration provides two-way infrared (IR) communications to digital devices and allows complete configuration and reconfiguration of the device / room from an accessible location.

1.5 LIGHTING CONTROL APPLICATIONS

- .1 Provide a minimum application of intended lighting control functions as detailed on design drawings and specified herein. Control functions shall include the following:
 - .1 Space Control Requirements – Provide occupancy/vacancy sensors with Manual-ON functionality in all spaces except toilet rooms, storerooms, or other applications where hands-free operation is desirable and Automatic-ON occupancy sensors are more appropriate. For spaces with multiple occupants, or where line-of-sight may be obscured, provide ceiling- or corner-mounted sensors.
 - .2 Bi-Level Lighting – Provide single zone, multi-level controls in any enclosed office, conference room, meeting room, and training room in all enclosed spaces except where variable dimming or multi-zone switching is used.
 - .3 Daylit Areas – All luminaires closest to the daylight source, and zoned separately from other fixtures in the space, shall be controlled separately from luminaires outside of daylit zones. Multiple-leveled switched daylight harvesting controls may be utilized for areas marked on drawings.

1.6 WARRANTY

- .1 Provide a five-year complete manufacturer's warranty on all products to be free of manufacturers' defects.
- .2 The labour required to replace these products must be included in the above warranty, however only for the extent of the contract guarantee and warranty period as noted in Electrical General Requirements.

1.7 QUALITY ASSURANCE

- .1 Manufacturer: Minimum 10-years experience in manufacture of lighting controls.

Part 2 Products

2.1 MANUFACTURERS

- .1 Basis of design product: WattStopper Digital Lighting Management (DLM). Acceptable alternates are subject to compliance and prior approval with specified requirements of this section, as one of the following:
 - .1 Cooper Controls (Greengate).
 - .2 Acuity Controls (nlight).
- .2 Substitutions:
 - .1 All proposed substitutions (clearly delineated as such) must be submitted in writing for approval by the design professional a minimum of 7 working days prior to the bid date and must be made available to all bidders.
 - .2 By using pre-approved substitutions, the contractor accepts responsibility and associated costs for all required modifications to circuitry, devices, and wiring.

2.2 DIGITAL WALL OR CEILING MOUNTED OCCUPANCY SENSOR SYSTEM

- .1 Wall or ceiling mounted (to suit installation) passive infrared (PIR), ultrasonic or dual technology digital (passive infrared and ultrasonic) occupancy sensor. Furnish the Company's system which accommodates the square-foot coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors and accessories which suit the lighting and electrical system parameters.
- .2 Digital Occupancy Sensors shall provide calibration and electronic documentation for the following features:
 - .1 Digital calibration and pushbutton programming for the following variables:
 - .1 Sensitivity – 0-100% in 10% increments
 - .2 Time delay – 1-30 minutes in 1 minute increments
 - .3 Test mode – Five second time delay
 - .4 Detection technology – PIR, Ultrasonic or Dual Technology activation and/or re-activation.
 - .5 Walk-through mode
 - .6 Load parameters including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included in the DLM local network.
 - .2 Two-way infrared (IR) transceiver to allow remote programming through handheld commissioning tool and control by remote personal controls.
 - .3 Device Status LEDs including:
 - .1 PIR Detection
 - .2 Ultrasonic detection
 - .3 Configuration mode
 - .4 Load binding
 - .4 Manual override of controlled loads.
 - .5 One or two RJ-45 port(s) for connection to DLM local network.

- .3 Multiple occupancy sensors may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required. WattStopper product numbers: LMPX, LMDX, LMPC, LMUC, LMDC

2.3 DIGITAL WALL SWITCHES

- .1 Low voltage momentary pushbutton switches in 1, 2, 3, 4, 5, and 8 button configuration; colour per architect, compatible with wall plates with decorator opening. Wall switches shall include the following features:
 - .1 Two-way infrared (IR) transceiver for use with personal and configuration remote controls.
 - .2 Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.
- .2 Multiple digital wall switches may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required to achieve multi-way switching.
- .3 The following switch attributes may be changed or selected using a wireless configuration tool:
 - .1 Load and Scene button function may be reconfigured for individual buttons (from Load to Scene, and vice versa).
 - .2 Individual button function may be configured to Toggle, On only or Off only.
 - .3 Individual scenes may be locked to prevent unauthorized change.
 - .4 Switch buttons may be bound to any load on a room controller and are not load type dependent; each button may be bound to multiple loads.
- .4 Two RJ-45 ports for connection to DLM local network.
- .5 Multiple digital wall switches may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required to achieve multi-way switching.
- .6 WattStopper product numbers: LMSW-101, LMSW-102, LMSW-103, LMSW-104, LMSW-105, LMSW-108, LMDM-101.

2.4 DIGITAL POWER PACKS (ROOM CONTROLLERS)

- .1 Room Controllers automatically bind the room loads to the connected devices in the space without commissioning or the use of any tools. Room Controllers shall be provided to match the room lighting load and control requirements. The controllers will be simple to install and will not have, dip switches, potentiometers or require special configuration. The control units will include the following features:
 - .1 Automatic room configuration to the most energy-efficient sequence of operation based upon the devices in the room.
 - .2 Simple replacement – Using the default automatic configuration capabilities, a room controller may be replaced with an off-the-shelf unit without requiring any configuration or setup.

- .3 Device Status LEDs to indicate:
 - .1 Data transmission
 - .2 Device has power
 - .3 Status for each load
 - .4 Configuration status
- .4 Quick installation features including:
 - .1 Standard junction box mounting
- .5 Plenum rated
- .6 Manual override and LED indication for each load
- .7 120 VAC, 60 Hz operation.
- .8 Zero cross circuitry for each load.
- .2 On/Off Room Controllers shall include:
 - .1 One or multiple relay configuration to suit control details
 - .2 Efficient 150 mA switching power supply
 - .3 Sufficient sensor connection points to suit indicated function without the requirement for additional hardware
 - .4 Discrete model listed for connection to receptacles, for schedule-based control of plug loads within the space.
 - .1 One relay configuration only.
 - .2 Automatic-ON/OFF configuration.
 - .3 Optional Network Bridge for BACnet MS/TP communications
 - .5 Three RJ-45 DLM local network ports.
 - .6 WattStopper product numbers: LMRC-101, LMRC-102, LMPL-101, LMPL-201.
- .3 On/Off Room/Dimming enhanced Room Controllers shall include:
 - .1 One or multiple relay configuration to suit control details.
 - .2 Efficient 250 mA switching power supply.
 - .3 One 0-10 volt analog output per relay for control of compatible ballasts and LED drivers.
 - .4 The following dimming attributes may be changed or selected using a wireless configuration tool:
 - .1 Establish preset level for each load from 0-100%.
 - .2 Set high and low trim for each load.
 - .3 Set lamp burn in time for each load up to 100 hours.
 - .5 Four RJ-45 DLM local network ports.
 - .6 Optional Network Bridge for BACnet MS/TP communications.
 - .7 WattStopper product numbers: LMRC-211, LMRC-212, LMRC-213, LMPL-201, LMRC-311, LMRC-312, LMRC-313.

2.5 DIGITAL ROOM CONTROL SYSTEMS

- .1 Digital occupancy and daylight control system designed to control a small area of a building (room level). Digital devices connect to the room controller(s) using CAT 5e cables (LMRJ) with RJ-45 connectors which provide both data and power to room devices. Features of the system shall include:
 - .1 Plug n' Go automatic configuration and binding of occupancy sensors, switches and lighting loads to the most energy-efficient sequence of operation based upon the device attached.
 - .2 Simple replacement of any device in the system with a standard off the shelf unit without requiring commissioning, configuration or setup.
 - .3 Push n' Learn configuration to change the automatic configuration, including binding and load parameters without tools, using only the buttons on the digital devices which are part of the local system.
 - .4 Two-way infrared communications for control by handheld remotes, and configuration by a handheld tool including adjusting load parameters, sensor configuration and binding, within a line of sight of up to 30 feet from a sensor, wall switch or IR receiver.

2.6 CONFIGURATIONS TOOLS

- .1 A configuration tool facilitates optional customization of digital lighting control system featuring infrared communications.
- .2 Features and functionality of the wireless configuration tool shall include:
 - .1 Two-way infrared (IR) communication with DLM IR-enabled devices within a range of approximately 30 feet.
 - .2 Read, modify and send parameters for occupancy sensors, daylighting sensors, room controllers and buttons on digital wall switches.
 - .3 Save up to nine occupancy sensor setting profiles, and apply profiles to selected sensors.
- .3 WattStopper Product Numbers: LMCT-100, LMCI-100/LMCS-100

Part 3 Execution

3.1 INSTALLATION

- .1 Install the work of this Section in accordance with manufacturer's printed instructions unless otherwise indicated.
- .2 When using wire for connections other than the DLM local network (LMRJ Cat 5e with RJ-45 connectors), provide detailed point to point wiring diagrams for every termination. Provide wire specifications and wire colors to simplify contactor termination requirements.

- .3 Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings.
 - .1 Adjust time delay so that controlled area remains lighted for 5 minutes after occupant leaves area.
- .4 Install power packs in accessible maintenance areas unless noted otherwise. Provide access doors if power packs are installed above drywall ceilings.
- .5 Install sensors in gym where noted on plan at mid-height of wall.
- .6 It shall be the contractor's responsibility to locate and aim sensors in the correct location required for complete and proper coverage within the range of coverage as per the manufacturer's recommendations. The locations and quantities of sensors shown on the drawings are diagrammatic and indicate only the rooms which are to be provided with sensors. The contractor shall provide additional sensors if required to properly and completely cover the respective rooms.
- .7 Provide written or computer-generated documentation on the commissioning of the system including room by room description including:
 - .1 Sensor parameters, time delays, sensitivities, and daylighting setpoints.
 - .2 Sequence of operation, (e.g. manual ON, Auto OFF. etc.)
 - .3 Load Parameters (e.g. blink warning, etc.)
- .8 Re-commissioning – After 30 days from occupancy re-calibrate all sensor time delays and sensitivities to meet the Owner's Project Requirements. Provide a detailed report to the Architect / Owner of re-commissioning activity.

3.2 FACTORY COMMISSIONING

- .1 Upon completion of the installation, the system shall be commissioned by the manufacturer's factory authorized representative who will verify a complete fully functional system.
- .2 The electrical contractor shall provide both the manufacturer and the electrical engineer with ten working days written notice of the system startup and adjustment date.
- .3 Upon completion of the system commissioning the factory-authorized technician shall provide the proper training to the owner's personnel on the adjustment and maintenance of the system.
- .4 Factory commissioning shall include functional testing and documentation of the control system conforming to the "Functional Testing" requirements included in the current ASHRAE standard. This cost shall be included in the Tender Price.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 CAN/ULC-S524 (latest edition), Installation of Fire Alarm Systems.
- .2 ULC-S525 (latest edition), Audible Signal Appliances for Fire Alarm Systems.
- .3 CAN/ULC-S526 (latest edition), Visual Signal Appliances, Fire Alarm.
- .4 CAN/ULC-S527 (latest edition), Control Units, Fire Alarm.
- .5 CAN/ULC-S528 (latest edition), Manual Pull Stations.
- .6 CAN/ULC-S529 (latest edition), Smoke Detectors.
- .7 CAN/ULC-S530 (latest edition), Heat Actuated Fire Detectors, Fire Alarm.
- .8 CAN/ULC-S536 (latest edition), Inspection and Testing of Fire Alarm Systems.
- .9 CAN/ULC-S537 (latest edition), Verification of Fire Alarm Systems.
- .10 CAN/ULC-S552 (latest edition), Inspection, Testing and Maintenance of Smoke Alarms.
- .11 OBC-2012, Ontario Building Code.

1.2 DESCRIPTION OF SYSTEM

- .1 System includes:
 - .1 Control panel to carry out fire alarm and protection functions including receiving alarm signals, initiating general alarm, supervising system continuously, actuating zone annunciators, and initiating trouble signals.
 - .2 Trouble signal devices.
 - .3 Power supply facilities.
 - .4 Addressable manual alarm stations.
 - .5 Addressable and conventional automatic alarm initiating devices.
 - .6 Audible and visual signal devices.
 - .7 End-of-line devices.
 - .8 Annunciators.
 - .9 Ancillary devices.
 - .10 Interface and zone modules.
 - .11 Remote trouble indicator.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- .1 This system is subject to review by local building department officials, local fire department officials. **Therefore, submission of verification certificate and field technician device verification sheets is required prior to inspection by these officials. Schedule accordingly.**

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Electrical General Requirements Section.

1.5 OPERATION AND MAINTENANCE DATA

- .1 Provide operation and maintenance data for Fire Alarm System for incorporation into manual specified in Electrical General Requirements Section.
- .2 Include:
 - .1 Operation and maintenance instructions for complete fire alarm system to permit effective operation and maintenance.
 - .2 Technical data - illustrated parts lists with parts catalogue numbers.
 - .3 Copy of approved shop drawings.
 - .4 List of recommended spare parts for system.

1.6 PERFORMANCE CRITERIA

- .1 These specifications describe the minimum functional requirements for an electronically supervised, microprocessor based, fully integrated system. The initial installation shall include all the necessary electronic hardware, software and memory for a completely operable system in accordance with these specifications.

1.7 QUALITY ASSURANCE

- .1 Each and all items of the fire alarm system shall be listed as the products of a single manufacturer under the appropriate category by the Underwriter's Laboratories of Canada and shall bear the "U.L.C." label.
- .2 Each and all items of the fire alarm system shall be covered by a one year parts and labour warranty covering defects resulting from faulty workmanship and materials. The warranty shall be deemed to begin on the date the system is accepted by the Project Manager on issuance of the substantial performance certificate for the project.
- .3 All control equipment must have Transient Protection Devices to comply with U.L.C. requirements.

Part 2 Products

2.1 ADDRESSABLE MANUAL ALARM STATIONS

- .1 Manual alarm stations shall be addressable, single action, non-coded, semi-flush mounted type. Pull stations shall be break-glass style. Contacts are to activate when the handle is pulled down.
- .2 Addressable pull station electronics shall be mounted to the back plate of the station. The station's address will be set at the time of installation. Device addressing shall be accomplished by either an electrical or mechanical means.

2.2 CONVENTIONAL MANUAL ALARM STATIONS

- .1 Manual alarm stations: pull lever, style, wall mounted semi-flush type, non-coded single pole normally open contact for single stage, English signage.

2.3 INTELLIGENT DETECTORS-GENERAL OPERATION

- .1 Addressable devices shall use simple to install and maintain decade, numbered 0 to 9, address switches. Detectors that have expanded addressing will have decade switch numbered from 0 to 15 for the most significant digit to allow detector addressing from 1 to 250.
- .2 Device addressing shall be accomplished by either an electrical or mechanical means.
- .3 Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel signalling line circuits.
- .4 Addressable smoke detectors shall provide dual alarm and power/polling LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the LED flash shall have the ability to be removed from the system program. An output connection shall also be provided in the base to connect an external remote alarm LED.
- .5 The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system. Sensitivity shall be automatically adjusted by the panel on a time-of-day basis.
- .6 Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance.
- .7 The detectors shall be ceiling-mount and shall include a separate twist-lock base with tamper proof feature.
- .8 The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.
- .9 Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (PHOTO, THERMAL).
- .10 Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.
- .11 Detectors shall provide address-setting means using decimal switches and shall also store an internal identifying code that the control panel shall use to identify the type of device. LEDs shall be provided that shall flash under normal conditions, indicating that the device is operational and is in regular communication with the control panel.

- .12 Addressable devices shall provide address-setting means using decimal switches and shall also store an internal identifying code that the control panel shall use to identify the type of device. LED(s) shall be provided that shall flash under normal conditions, indicating that the device is operational and is in regular communication with the control panel.
- .13 The sensors shall be of a low profile design and ULC listed for both ceiling and wall mount applications.
- .14 Automatic smoke sensors shall be equipped with a dust cover, which shall be removed at the time of verification to prevent dust and dirt entering the smoke chamber during construction.
- .15 A magnetic test switch shall be provided to test detectors and modules. Detectors shall report an indication of an analog value reaching 100% of the alarm threshold.

2.4 STANDARD DETECTOR MOUNTING BASES

- .1 Provide standard detector mounting bases suitable for mounting on North American 1-gang, 85mm (3 ½ ") or 100 mm (4") octagon box and 100 mm (4") square box. The base shall, contain no electronics, support all detector types and have the following minimum requirements:
 - .1 Removal of the respective detector shall not affect communications with other detectors.
 - .2 Terminal connections shall be made on the room side of the base. Bases which must be removed to gain access to the terminals shall not be acceptable.

2.5 AUDIBLE/VISUAL SIGNAL DEVICES

- .1 150 mm (6") Bells: surface mounted bell, vibration type 24Vdc, 150 mm (6"), 92dBA rating at 3 m (10'), red finish, FM and ULC listed.
- .2 Strobe: semi-recessed, 24Vdc operation, complete with selectable 15/30/75/110 candela output (unless otherwise noted set at 75 cd), synchronized strobe, red finish, FM and ULC listed. Suitable for mounting on a single gang box.

NOTES:

- .1 **Signal devices with integral strobe lights in high abuse areas (i.e. gymnasium, change rooms, etc.) must be provided with protective wireguards.**
- .2 **Any surface mounted signal devices must be provided with suitable backboxes supplied by the manufacturer.**
- .3 **Provide synchronization modules to suit signal devices (if required by manufacturer).**

2.6 END OF LINE RESISTORS

- .1 End-of-line resistors for signalling circuits shall be sized to ensure the correct supervisory current flows in each circuit.
- .2 End-of-line resistors shall be mounted on a stainless steel plate for mounting on a standard single gang box and bear the ULC label.

2.7 GRAPHIC DISPLAY (PASSIVE)

- .1 Black and white layout of facility showing all zones as specified/indicated.
- .2 Display is to be found behind Plexiglas, approximate size: 500 mm x 500 mm (20" x 20").
- .3 Finish frame to architects direction.

2.8 INTELLIGENT MODULES – GENERAL OPERATION

- .1 The modules shall have a minimum of two (2) diagnostic LED's mounted behind a finished coverplate. A green LED shall flash to confirm communication with the loop controller. A red LED shall flash to display alarm status. The module shall be capable of storing up to 24 diagnostic codes, which can be retrieved for troubleshooting assistance. Input and output circuit wiring shall be supervised for open and ground faults. The module shall be suitable for operation in the following environment:
 - .1 Temperature: 0°C to 49°C (32°F to 120°F).
 - .2 Humidity: 0-93% RH, non-condensing.

2.9 MONITOR MODULE

- .1 The monitor modules shall have the following operating characteristics:

A flashing LED indicates that the module is in communication with the control panel. The LED latches steady on alarm (subject to current limitations on the loop).
- .2 The monitor modules shall have the following features:

Nominal operating voltage:	15 to 32 VDC.
Maximum current draw:	5.1 mA (LED on)
Average operating current:	400 uA (LED flashing)
EOL resistance:	47K ohms.
Temperature range:	0°C to 49°C (32°F to 120°F)
Humidity range:	10% to 93% noncondensing
Dimensions:	114.3mm (4.5") high x 101.6 mm (4") wide x 31.75 mm (1.25") deep. Mounts to a 101.6 mm (4") square x 53.975 mm (2.1/8") deep box.

2.10 ISOLATOR MODULE

- .1 Fault isolator modules shall be provide to automatically isolate wire-to-wire short circuits on an SLC loop. The fault isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop. If a wire-to wire short occurs, the fault isolator module shall automatically open-circuit (disconnect) the SLC loop. When the short circuit condition is corrected, the fault isolator module shall automatically reconnect the isolated section of the SLC loop. The fault isolator module shall not require any address-setting, and its' operations shall be totally automatic. It shall not be necessary to replace or reset a fault isolator module after its normal operation. The fault isolator module shall mount in a standard 10.16 cm (4") deep electrical box, in a surface-mounted backbox, or in the fire alarm control panel. It shall provide a single LED which shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

2.11 CONTROL MODULE

- .1 Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.
- .2 The control module NACs may be wired for Style Z or Style Y (Class A/B) with up to 1 Amp of inductive A/V signal, or 2 Amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to ensure that 100% or all auxiliary relay or NACs may be energized at the same time on the same pair of wires.
- .3 The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 Amps at 30 VDC.

2.12 SYSTEM WIRING

- .1 The system wiring must be FSA rated in conformance with the Electrical Safety Code to suit the type of installation.
- .2 Wiring shall be minimum #18 AWG twisted shielded pair in conduit. "Securex 2" armoured cable will be permitted to be used for "drops" to devices on accessible ceilings.
- .3 As indicated on system riser diagram initiating device wiring shall be run in a loop with a home run from the last device to the control panel (Class 'A' configuration). Wiring from the "loop" module to conventional devices must be supervised, run in conduit, and conform to the standards of the Electrical Safety Code.
- .4 Signal wiring is to be cross connected in a class 'B' configuration.
- .5 Install isolator modules and end of line resistors in service rooms no higher than 2.4 M AFF. Provide location of these devices at the time of shop drawing submission.
- .6 **These are the basic wiring requirements for system operation. Prior to tender close manufacturer and contractor are to confirm all necessary wiring specifications and requirements.**

2.13 APPROVED EQUIPMENT

<u>DEVICE</u>	<u>EDWARDS</u>
<u>Control Panel</u>	
	EST
<u>Intelligent Devices</u>	
Manual Alarm Stations 1-Stage	SIGA-270
Smoke Detectors	SIGA-PS
Monitor Module	SIGA-CT Series
Control Module	SIGA-CR
Isolator Module	SIGA-IM
<u>Conventional and Auxiliary Devices</u>	
Manual Alarm Stations	270 Series
150 mm (6") Bells	439D Series or MB Series
Strobe	G1R-VM

Part 3 Execution

3.1 INSTALLATION

- .1 The entire system shall be installed in accordance with CAN/ULC-S524 (latest edition) and approved manufacturers manuals and wiring diagrams. The contractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation, All wiring shall be of the type recommended by the Electrical Safety Code, approved by local authorities having jurisdiction for the purpose, and shall be installed in dedicated conduit throughout.
- .2 Locate and install detectors and connect to alarm circuit wiring. **Do not mount detectors within 1 m (39") of air outlets.** Maintain at least 600 mm (24") radius clear space on ceiling, below and around detectors. Locate duct type detectors in straight portions of ducts.
- .3 Connect alarm circuits to main control panel.
- .4 Install end-of-line devices at end of applicable alarm and signalling circuits.
- .5 **Connect smoke damper integral detector outputs to monitor modules for alarm condition and for monitoring of AC power to smoke damper as trouble condition at fire alarm panel based on module address.**

3.2 PROTECTION

- .1 Contractor is to ensure all fire protection system detectors are protected from dust, dirt, humidity, and water at all times during construction. This applies to detectors installed, stored on site or stored in storage containers. Any detectors that are damaged or dirty shall be replaced at the contractor's expense.

3.3 FIELD QUALITY CONTROL

- .1 The system shall be installed and fully tested under the supervision of trained manufacturer's representative. The system shall be demonstrated to perform all the functions as specified.

3.4 ACCEPTABLE INSTALLER

- .1 The fire alarm / life safety system specified herein shall be installed by an Authorized Electrical Contractor who is CFAA certified.

3.5 EXAMINATION

- .1 Prior to the commencement of any of the work detailed herein, an examination and analysis of the area(s) where the Fire Alarm / Life Safety System and all associated components are to be installed shall be made.
- .2 Any of these area(s) which are found to be outside the manufacturers' recommended environments for the particular specified products shall be noted on a Site Examination Report which shall be given to the Building Owners Representative, and the Consultant.
- .3 Any shorts, opens, or grounds found on existing wiring shall be corrected prior to the connection of these wires to any panel component or field device.

3.6 **DEMONSTRATION**

- .1 Each of the intended operations of the installed Fire Alarm / Life Safety System shall be demonstrated to the Building Owners' Representative and the Consultant.

3.7 **SYSTEM TEST**

- .1 Perform tests in accordance with General Electrical Requirements Section and CAN/ULC-S537-(latest edition) Standard for the Verification of Fire Alarm Systems.
- .2 Fire alarm system:
 - .1 Test each new or renovated device and alarm circuit to ensure noted devices transmit alarm to control panel and actuate general alarm and ancillary devices.
 - .2 Check annunciator panels to ensure zones are shown correctly.
 - .3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of system.
 - .4 Class A circuits.
 - .1 Test each conductor on all circuits for capability of providing alarm signal on each side of single open-circuit fault condition imposed near middlemost point of circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
 - .2 Test each conductor on all circuits for capability of providing alarm signals during ground-fault condition imposed near middlemost point of circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
 - .5 Class B circuits
 - .1 Test each conductor on all circuits for capability of providing alarm signal on line side of single open-circuit fault condition imposed at electrically most remote device on circuit. Reset control unit after each alarm function and correct imposed fault after completion of each test.
- .3 Any sensor that fails this test shall indicate a '**SELF-TEST ABNORMAL**' trouble condition with the sensor's address at the control panel.

The system shall automatically indicate when an individual sensor needs cleaning. When the sensor's average value reaches a predetermined value, a '**DIRTY SENSOR**' trouble condition shall be audibly and visually indicated at the local control panel for that sensor. If a '**DIRTY SENSOR**' indication is left unattended and its average value increases to a second predetermined value, an '**EXCESSIVELY DIRTY SENSOR**' trouble condition shall be indicated at the local control panel for that sensor. To prevent false alarms, these '**DIRTY**' conditions shall in no way decrease the amount of smoke obscuration necessary to generate an alarm condition.
- .4 An operator having a proper access level, shall have the capability to manually access the following information from the control panel:
 - .1 Primary Status
 - .2 Device Type
 - .3 Present Average Value

- .4 Present Sensitivity Selected*
 - .5 Highest Peak Detection Values (HVP)*
 - .6 Sensor Range (Normal, Dirty, Excessively Dirty)
- * Values shall be in 'percent of smoke obscuration' format so that no interpretation is required by the operator.

- .5 **Provide "Integrated Testing" of this life safety system in conformance with the noted specification section. Include all associated costs in tender.**

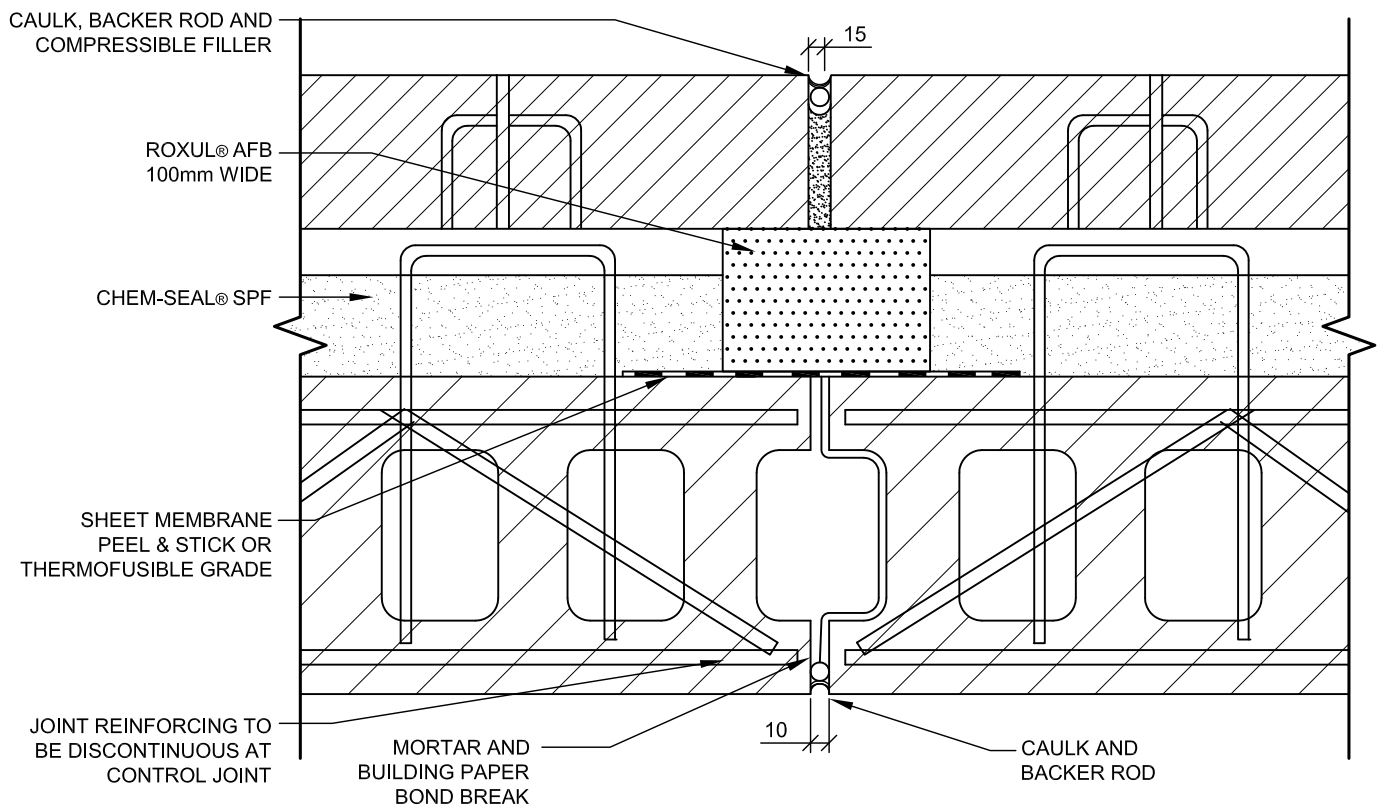
3.8 AUDIBILITY TESTING

- .1 Audibility Testing:
 - .1 The contractor is to coordinate an audibility test prior to occupancy of the facility. The test is to be performed by the representatives of the fire alarm manufacturer in the presence of the consultant. The test report is to be in chart form indicating:
 - .1 Project
 - .2 Date of test
 - .3 Room name and number
 - .4 Ambient dB level
 - .5 Alarm dB level
 - .6 Name of testing technician
 - .2 The test results are to be submitted to the consultant for review prior to issuing to owner's representatives and/or authorities having jurisdiction.

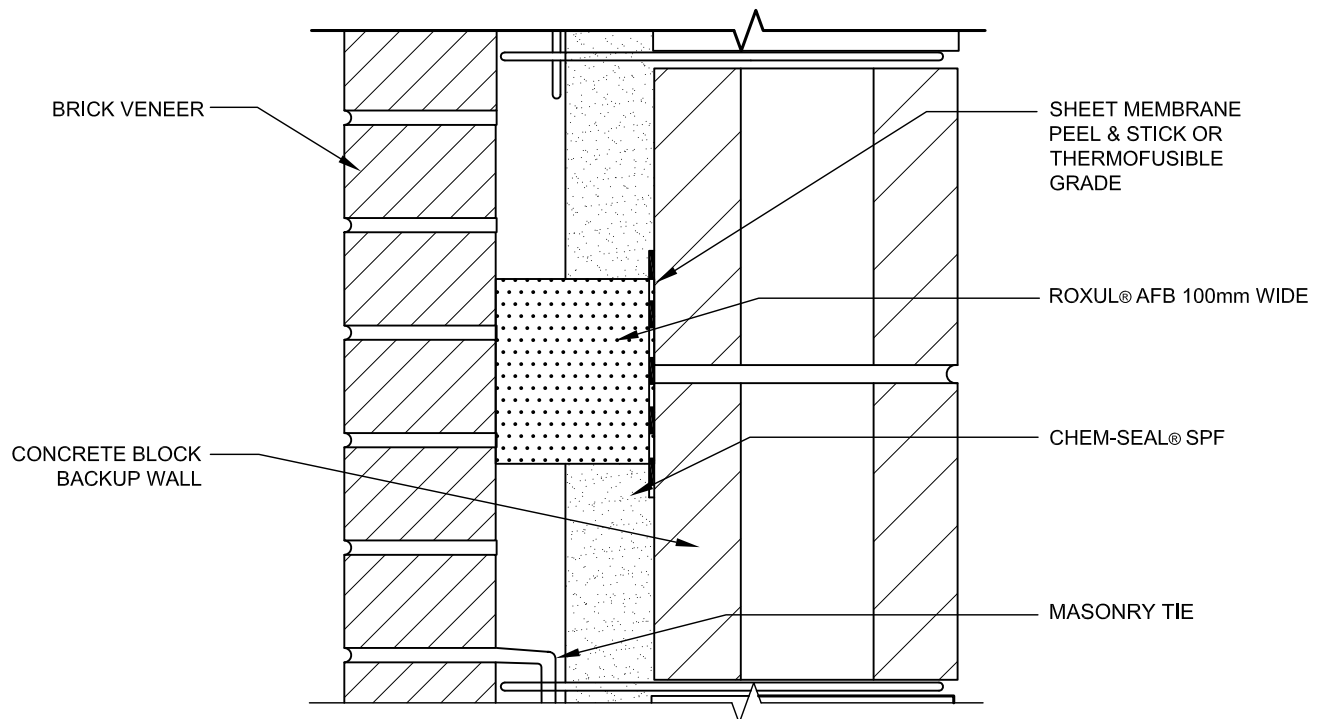
3.9 ADDITIONAL INSTALLED FIRE ALARM SYSTEM COMPONENTS

- .1 The electrical contractor is to include in their bid the cost to add five (5) additional fire smoke damper connections and 120V loss of power trouble signal with associated module and including ten (10) additional isolation modules to be installed and verified as directed by the consultant.

END OF SECTION



VERTICAL FIRE STOPPING



HORIZONTAL FIRE STOPPING

FIRESTOPPING DETAIL AT CAVITY WALL

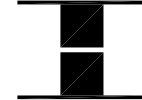
PROJ: 24143

SCALE: 1:5

DRAWN: GB

DATE: MAY 2023

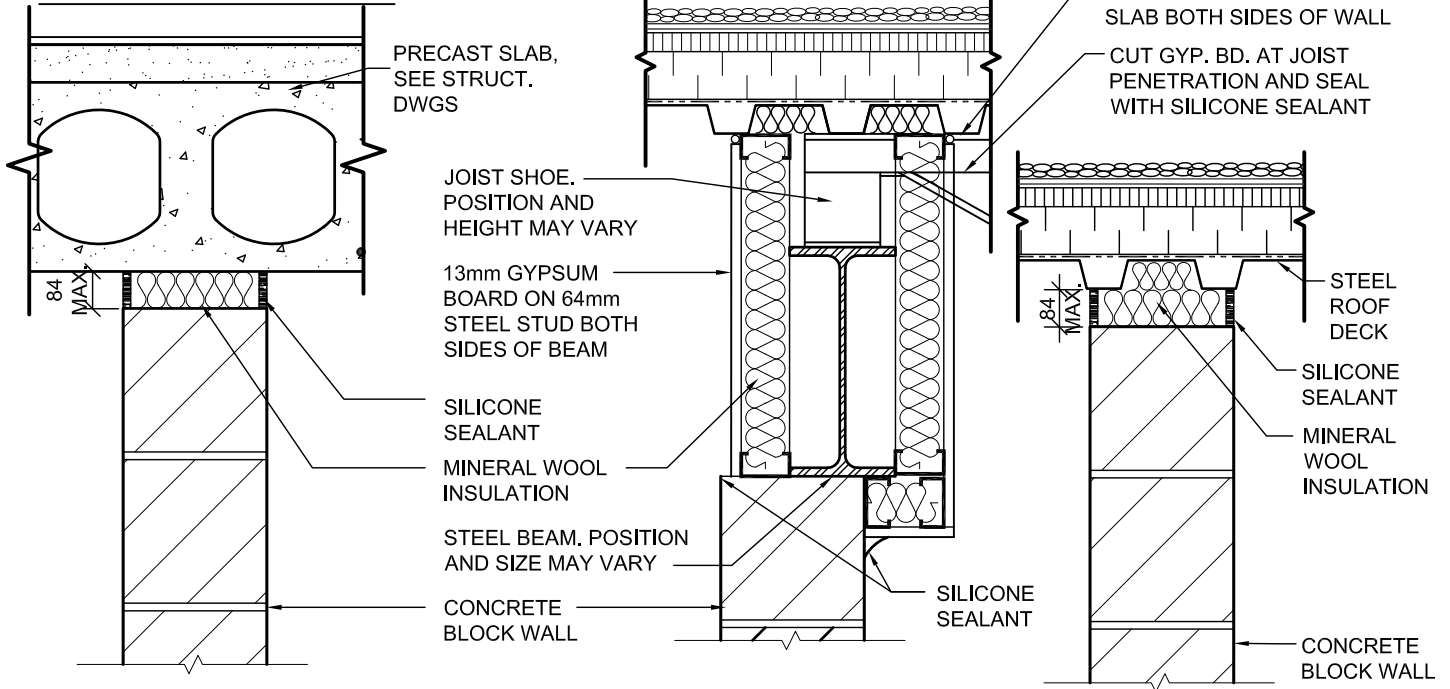
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& ASSOCIATES
ARCHITECTS**



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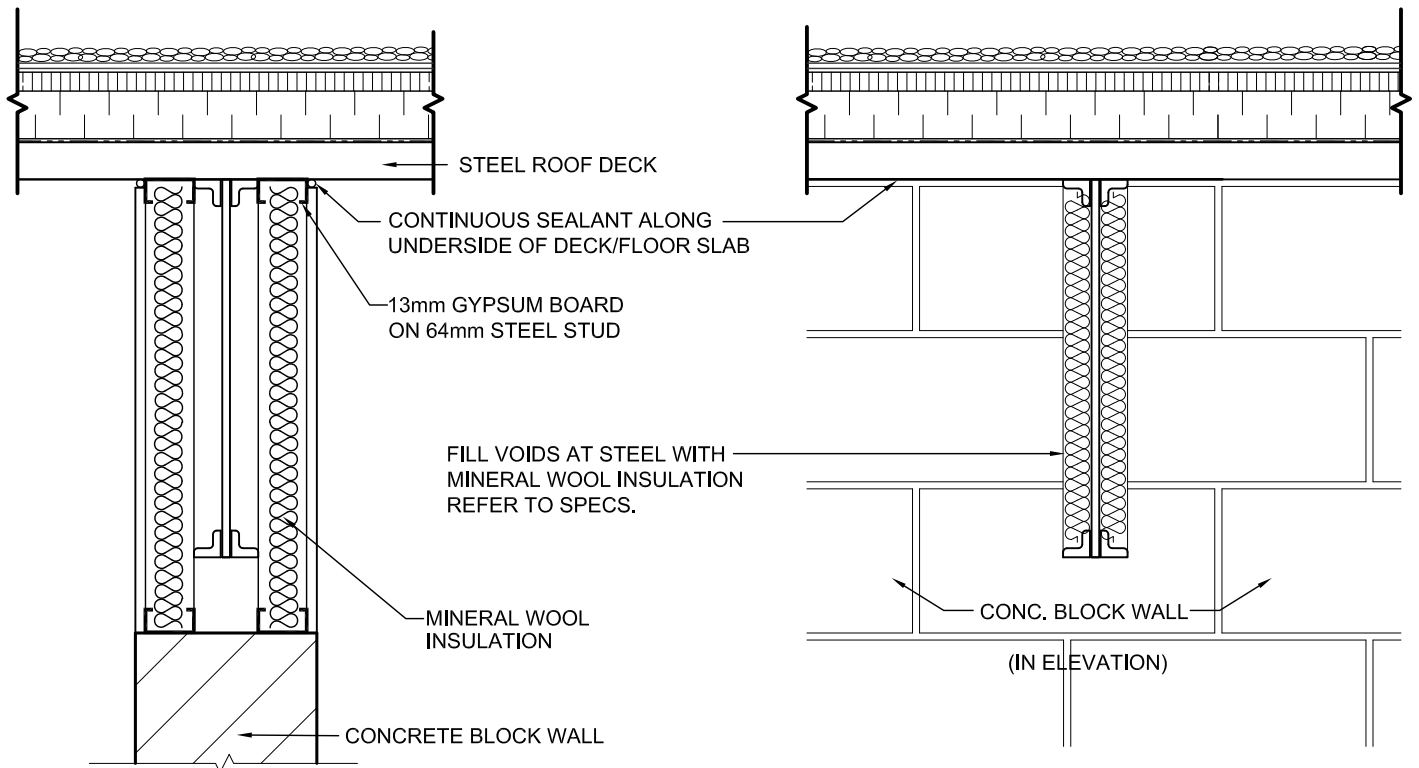
CONDITION AT OFFSET BEAM / JOIST AT ROOF



CONDITION AT FLOOR

CONDITION AT FLOOR

CONDITION AT ROOF



CONDITION AT PARALLEL JOIST OR BEAM

NOTE: ADJUST STEEL STUD SIZES TO SUIT BLOCK WALL CONDITION.
MIN. 64mm STUD AT MAX. 400 O.C.
REF. SPECS FOR FIRE-RATED SEALANTS

CONDITION AT PERPENDICULAR JOIST OR BEAM

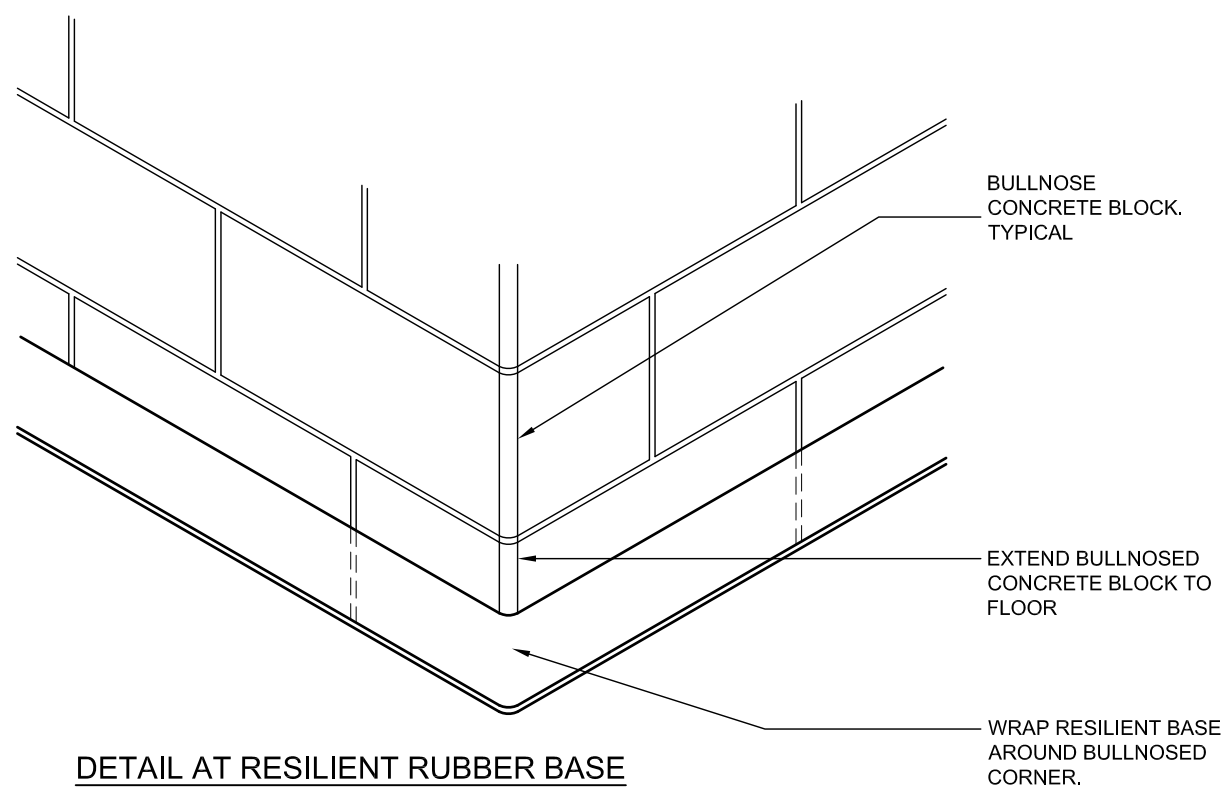
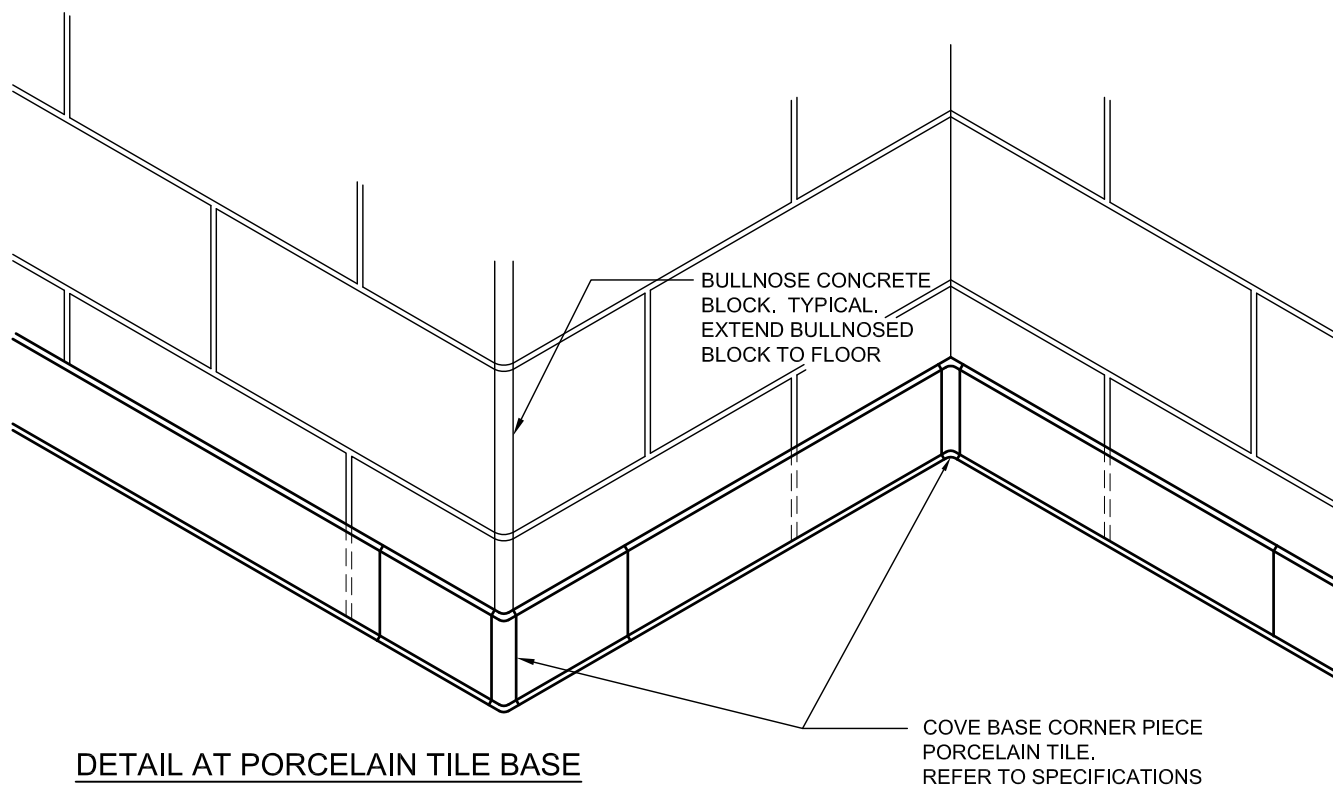
TOP OF WALL CONSTRUCTION
AT NON-RATED ASSEMBLY.

PROJ: 24143
SCALE: 1:5
DRAWN: CC
DATE: 25 02 21



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CONCRETE BLOCK WALL BASES

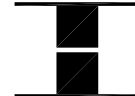
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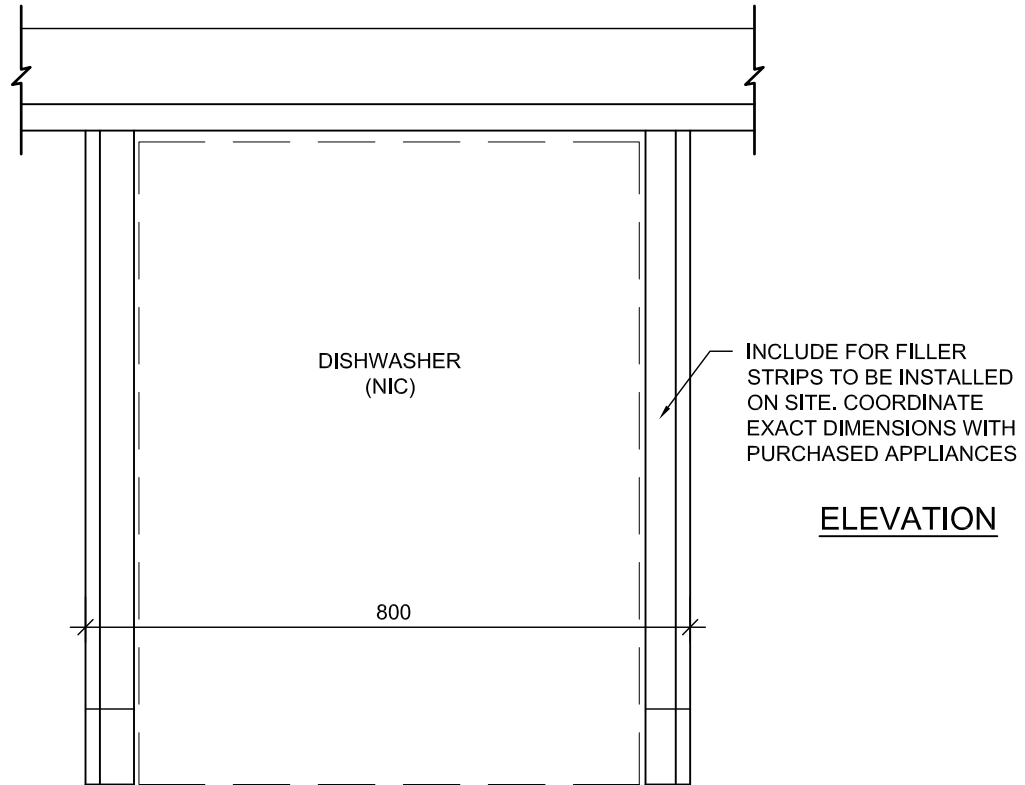
DATE: FEB 2022

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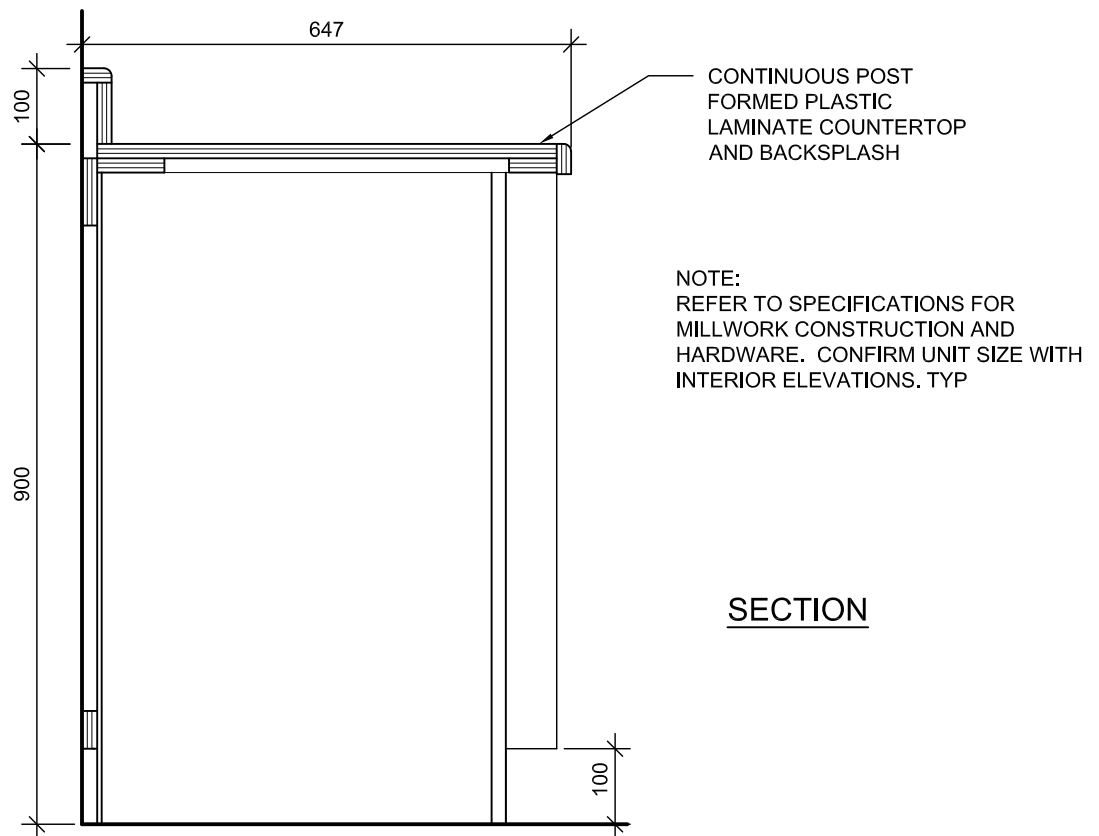


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501



ELEVATION



SECTION

TYPE B3 - DISHWASHER LOWER MILLWORK

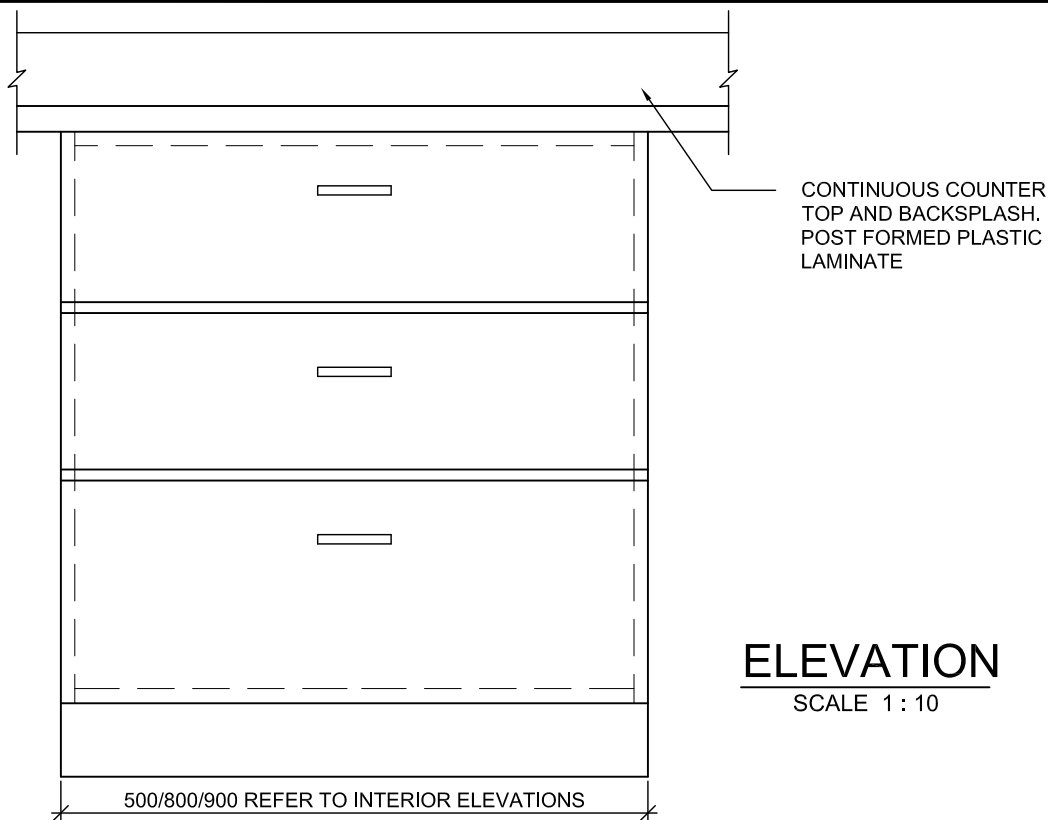
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DATE: FEB 2022

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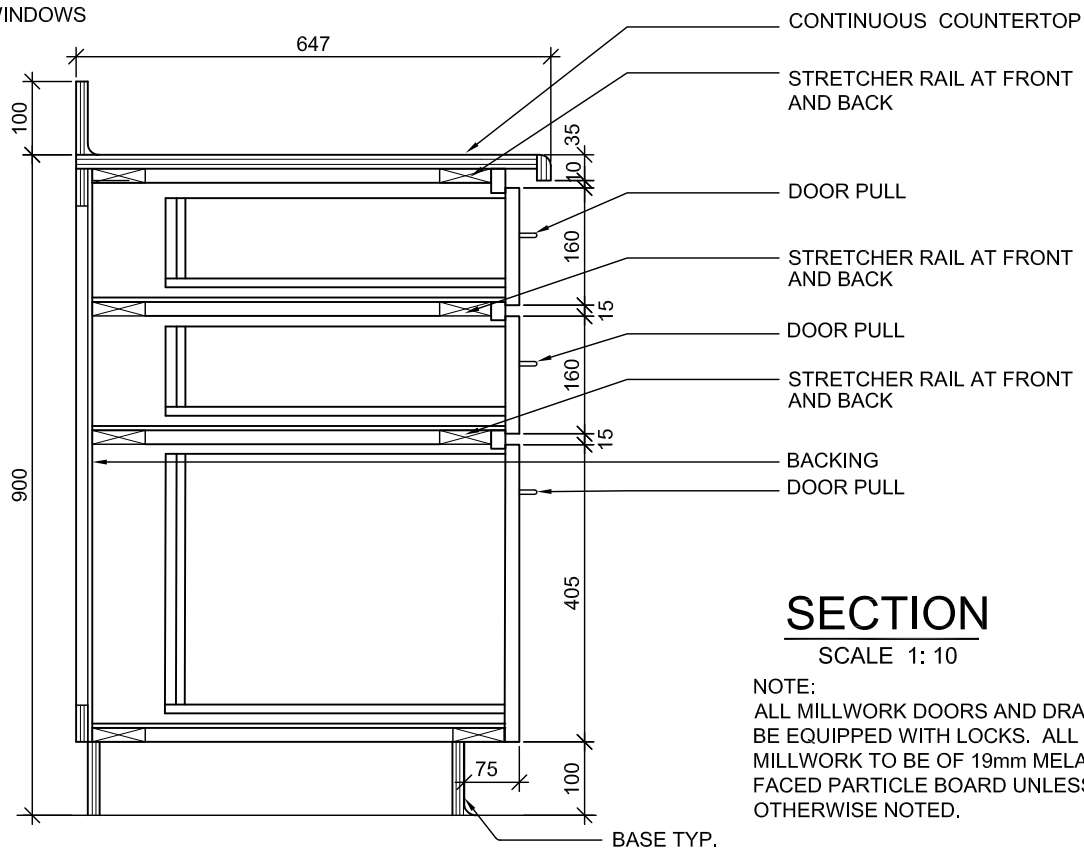


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603



NOTE: CUT SPLASHBACK AT WINDOWS



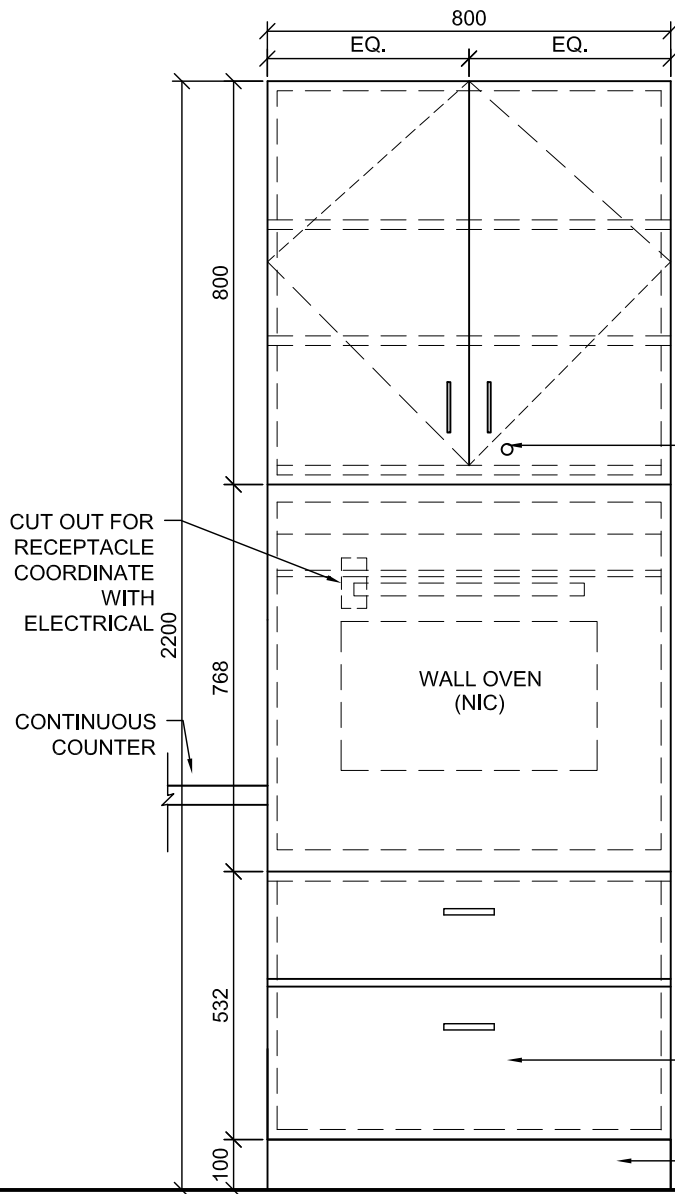
CABINET TYPE B7

PROJ: 24143
SCALE: 1:10
DRAWN: GB
DATE: FEB 2022

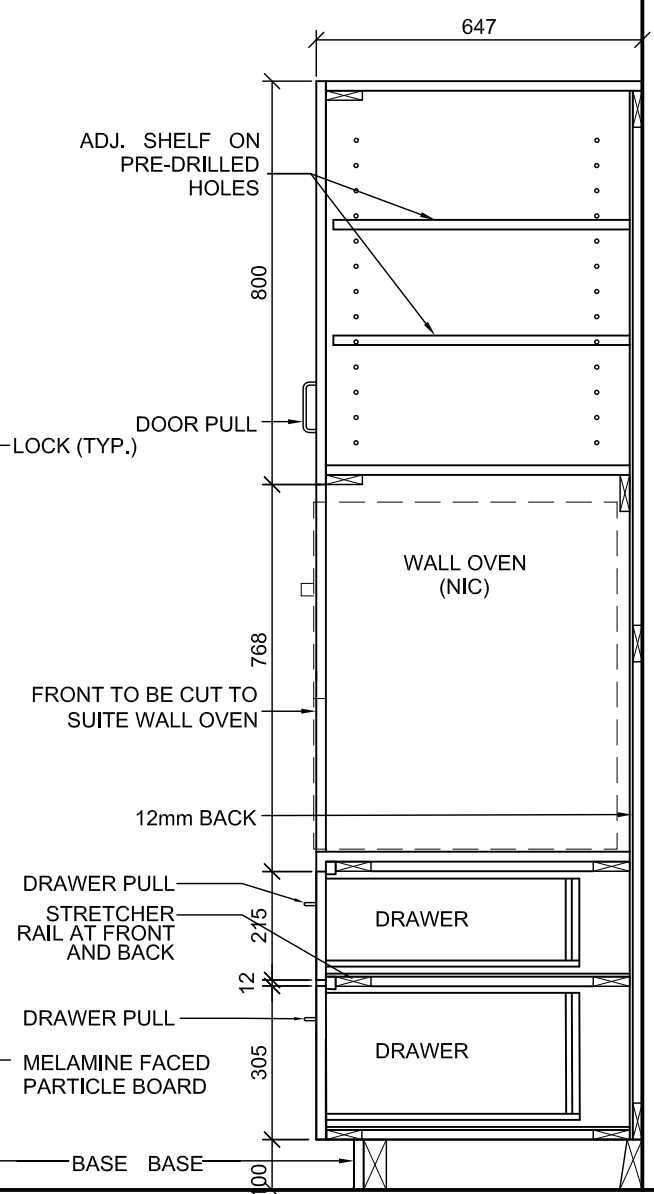


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ELEVATION
SCALE 1:15



SECTION
SCALE 1:15

NOTE:
ALL MILLWORK DOORS AND DRAWERS
TO BE EQUIPPED WITH LOCKS
REFER TO SPECIFICATION FOR MILLWORK
CONSTRUCTION AND HARDWARE.
REFER TO INTERIOR ELEVATIONS
FOR DOOR SWING DIRECTION

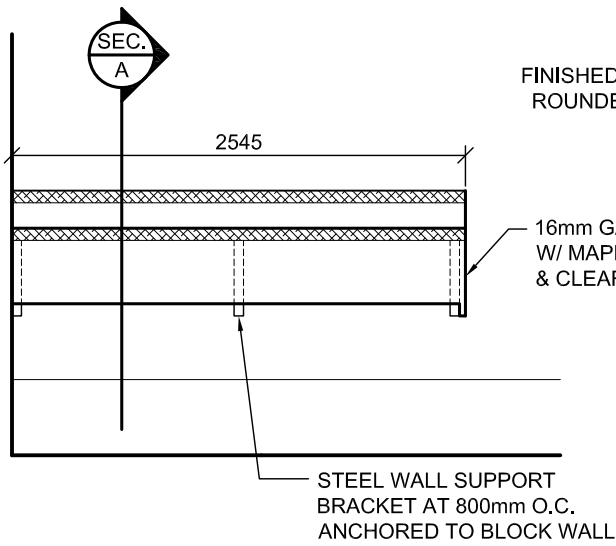
**TYPE B25 BARRIER FREE WALL OVEN
CABINET**

PROJ: 24143
SCALE: 1:15
DRAWN: GB
DATE: FEB 2022

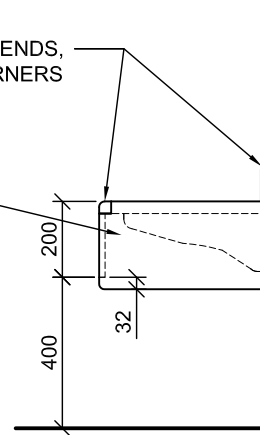
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610

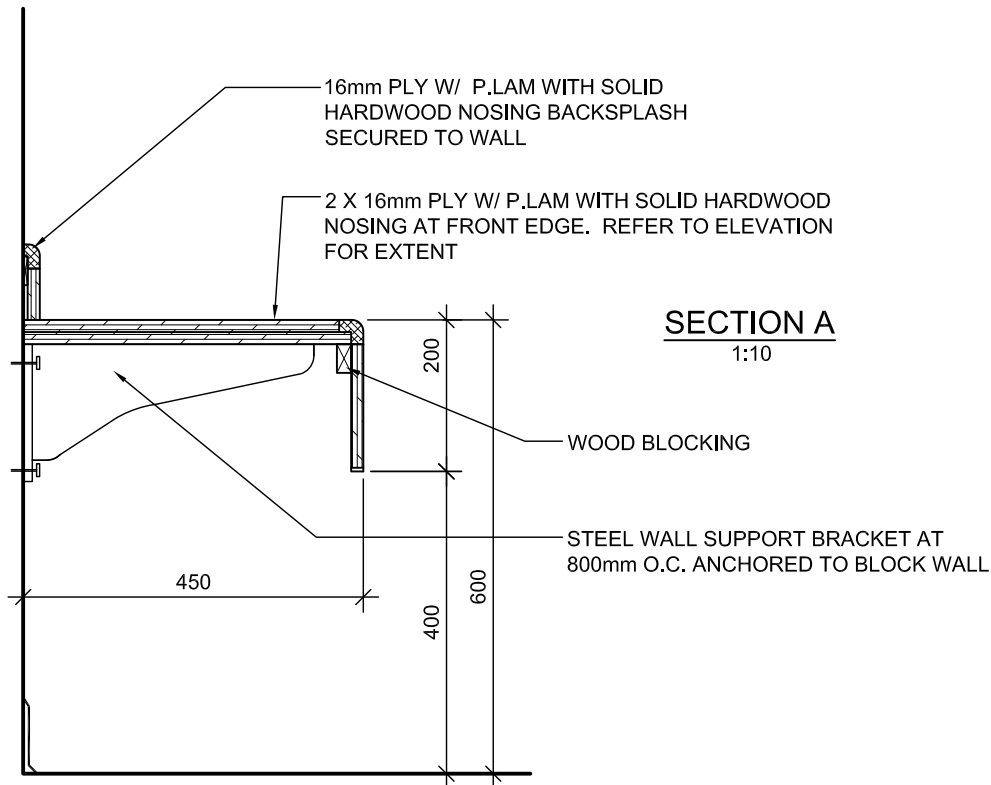


ELEVATION
SCALE 1 : 20



ELEVATION
AT EXPOSED
GABLE END
SCALE 1 : 20

NOTES:
REFER TO SPECIFICATIONS FOR MILLWORK
CONSTRUCTION AND HARDWARE.
CONFIRM UNIT SIZE WITH INTERIOR ELEVATIONS. TYP.



SECTION A
1:10

WOOD BENCH - C16

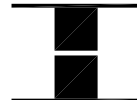
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SCALE: NOTED

DRAWN:JK

DATE: MAR 2021

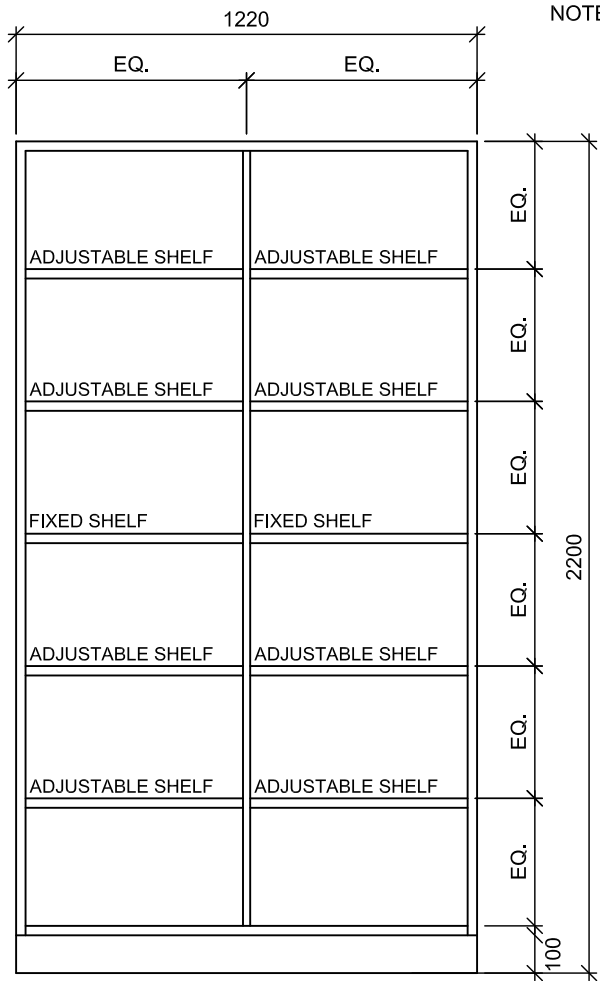
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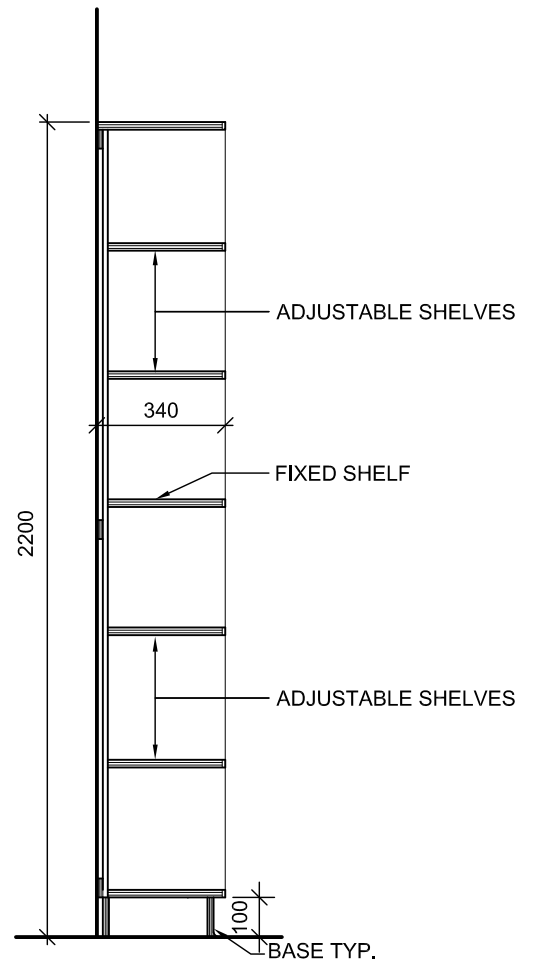
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648

NOTE:
ALL MILLWORK TO BE OF 19mm MELAMINE
FACED PARTICLE BOARD UNLESS OTHERWISE
NOTED.



ELEVATION
SCALE 1 : 20



SECTION
SCALE 1: 20

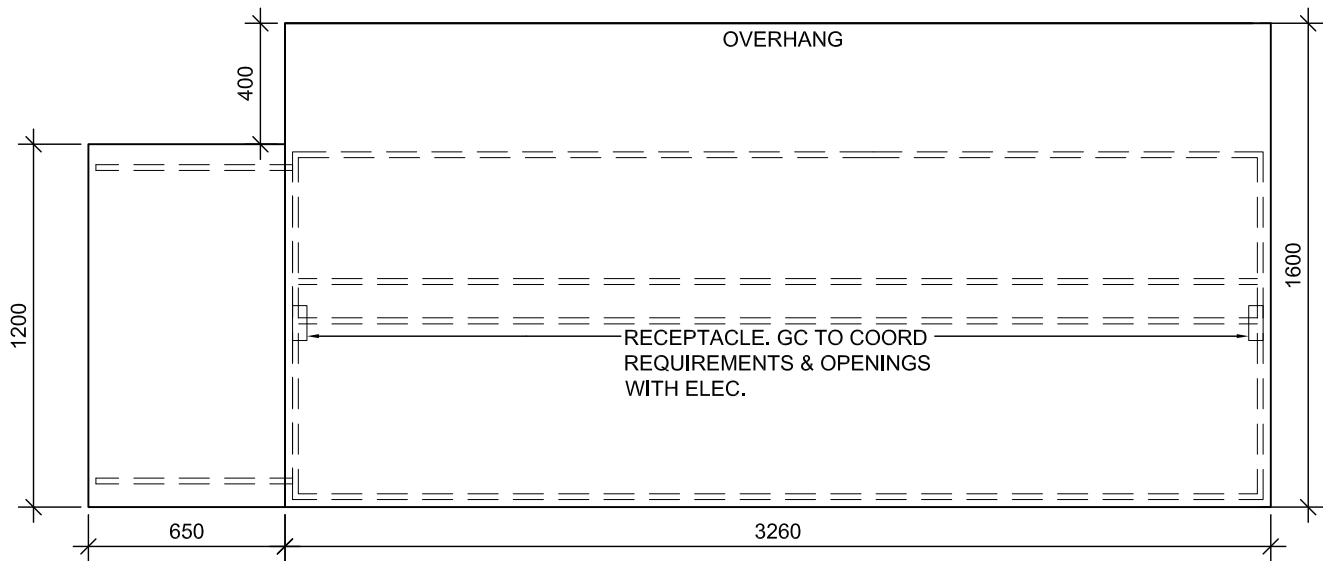
CABINET TYPE C2

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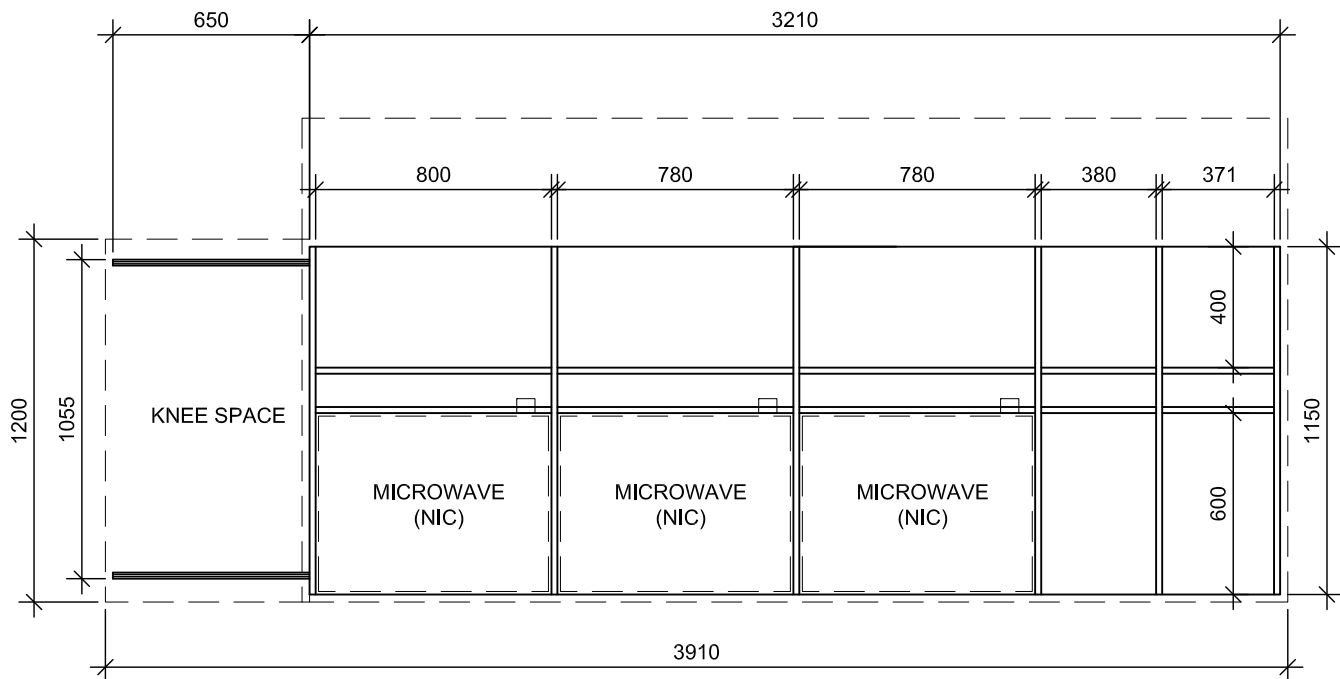
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& ASSOCIATES
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652



PLAN



PLAN SECTION

STAFF LOUNGE ISLAND - TYPE B29

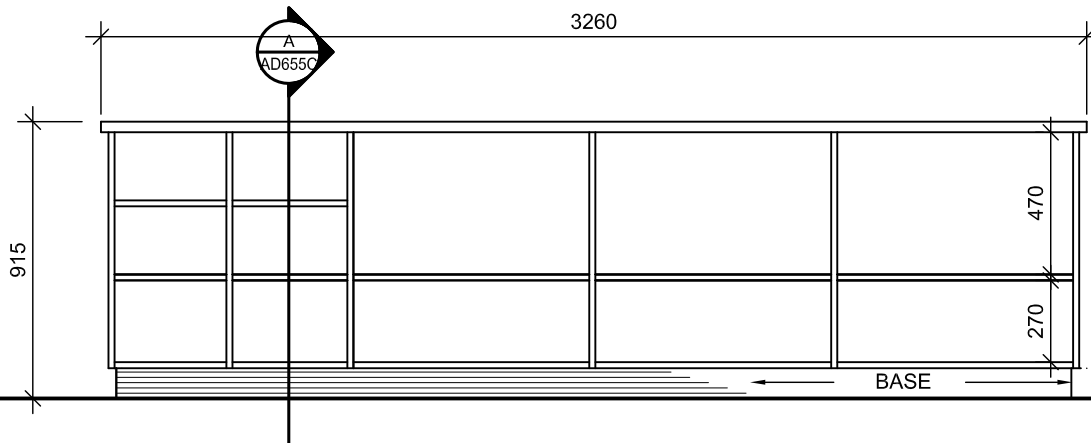
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DATE: FEB 2022

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ARCHITECTS**



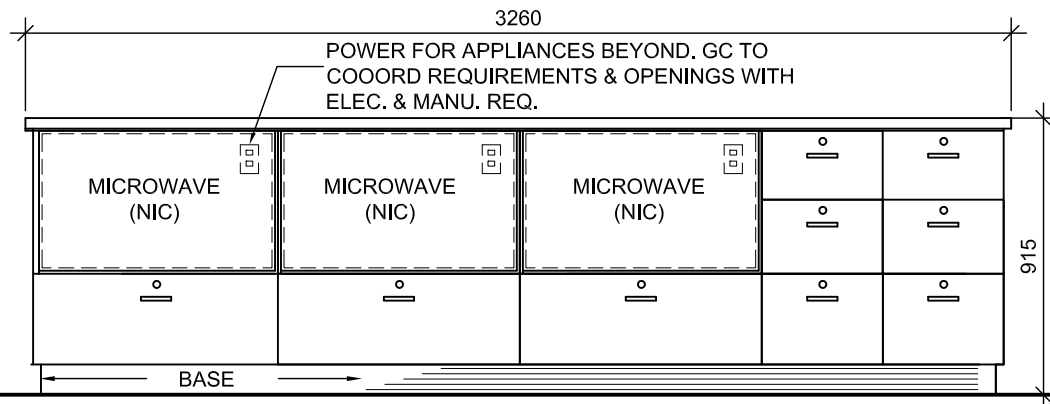
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655A



ELEVATION -A

NOTE:
ALL MILLWORK DOORS AND DRAWERS TO BE
EQUIPPED WITH LOCKS.



ELEVATION -B

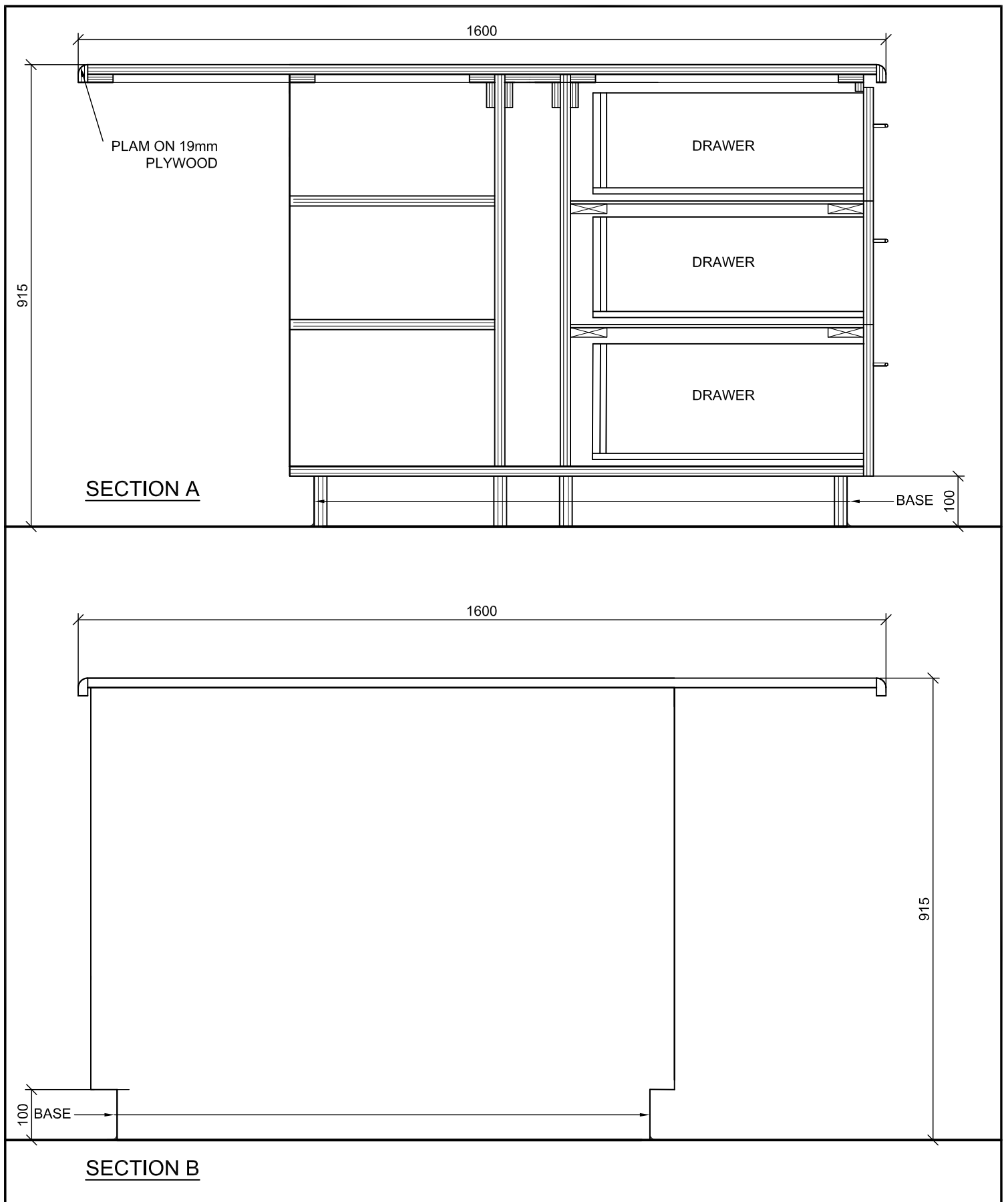
STAFF LOUNGE ISLAND - TYPE B29 ELEVATIONS

PROJ: 24143
SCALE: 1:25
DRAWN: GB
DATE: FEB 2022

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STAFF LOUNGE ISLAND - TYPE B29
SECTIONS

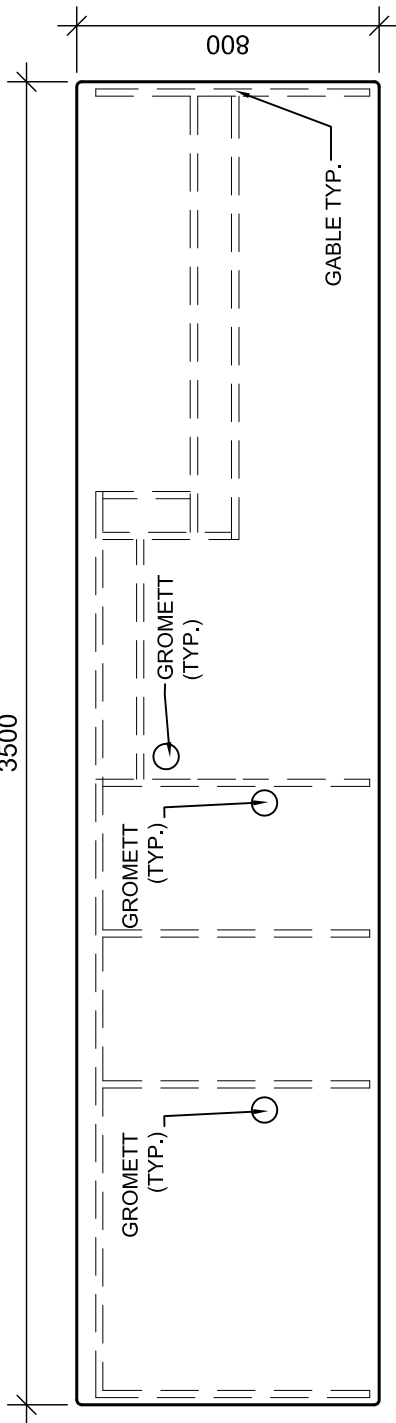
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DRAWN:	GB
DATE:	FEB 2022

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ARCHITECTS**

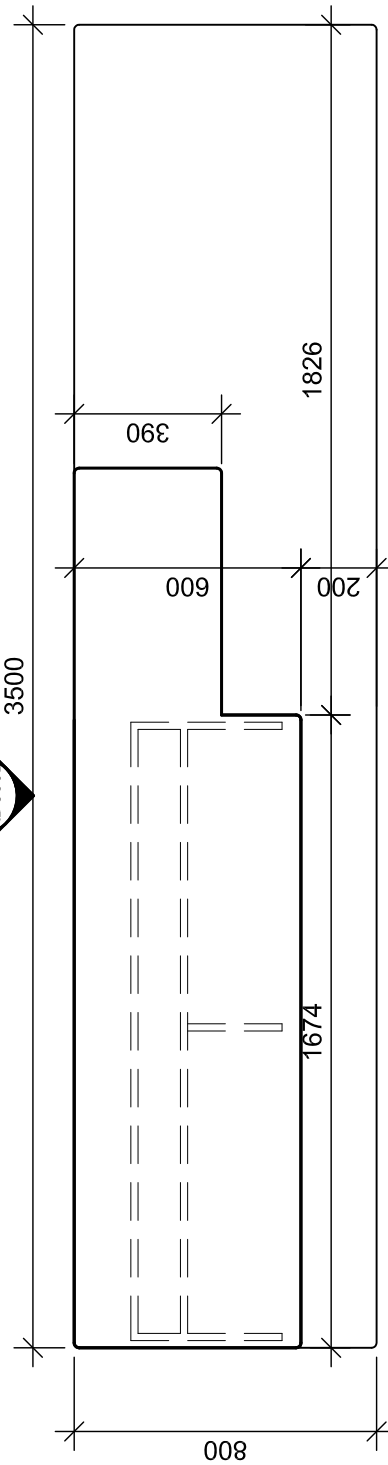


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655C



PLAN - B



PLAN - A

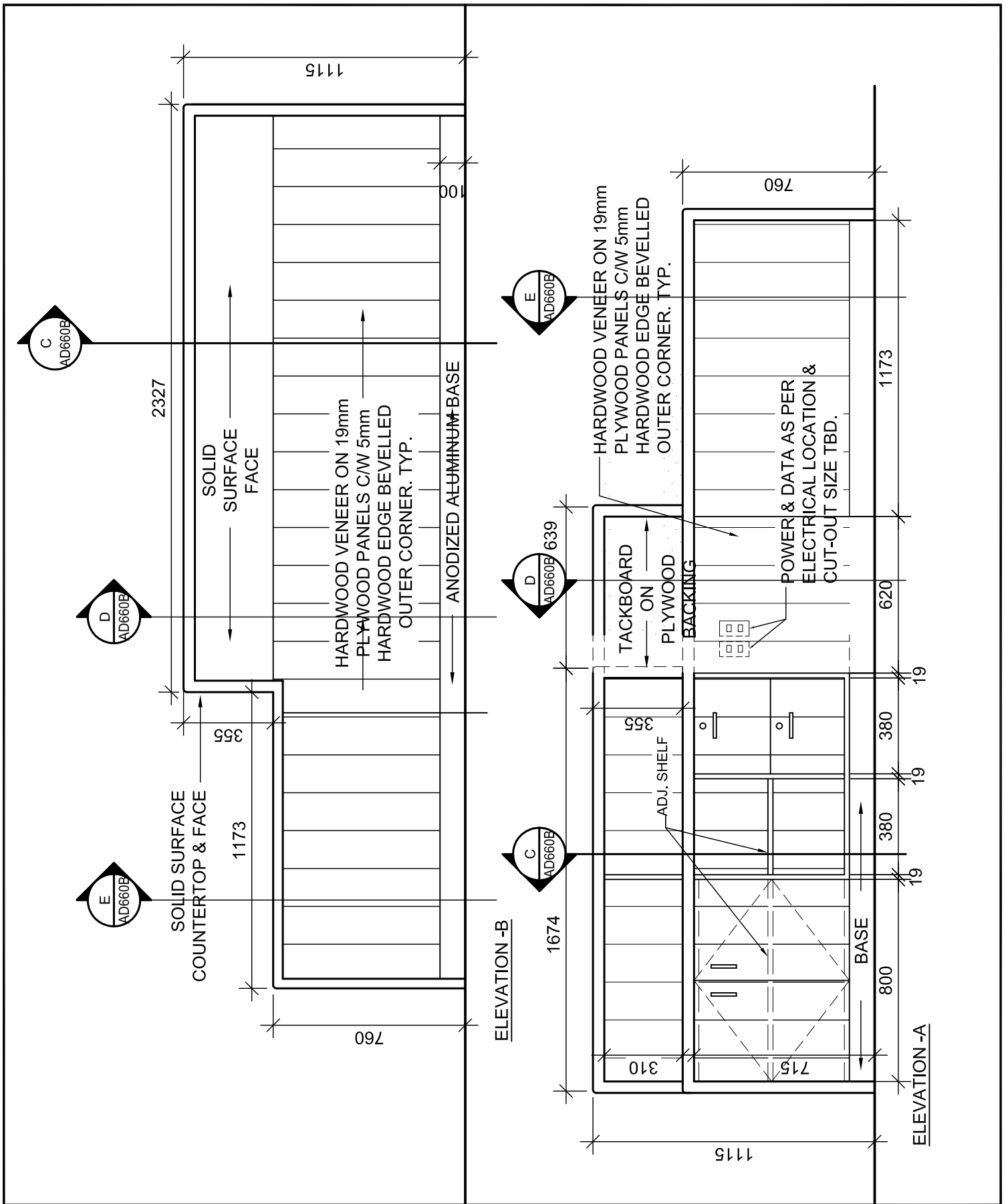
RECEPTION DESK
TYPE B30 - DETAILS

PROJ:	24143
SCALE:	1:20
DRAWN:	GB
DATE:	FEB 2022



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656A



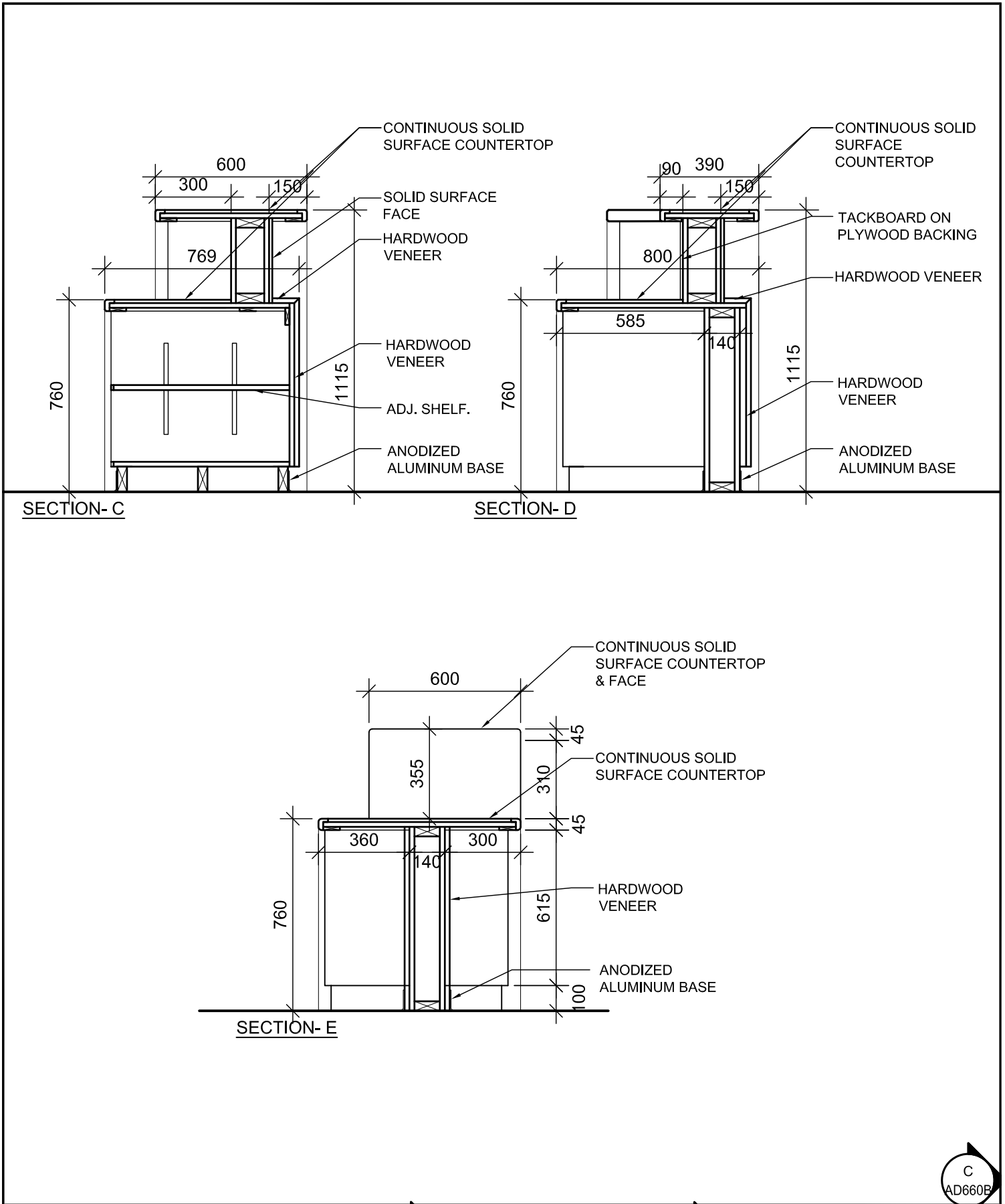
RECEPTION DESK
TYPE B30 - DETAILS
ELEVATIONS & SECTIONS

PROJ: 24143
SCALE: 1:20
DRAWN: GB
DATE: FEB 2022

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656B



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AD660B

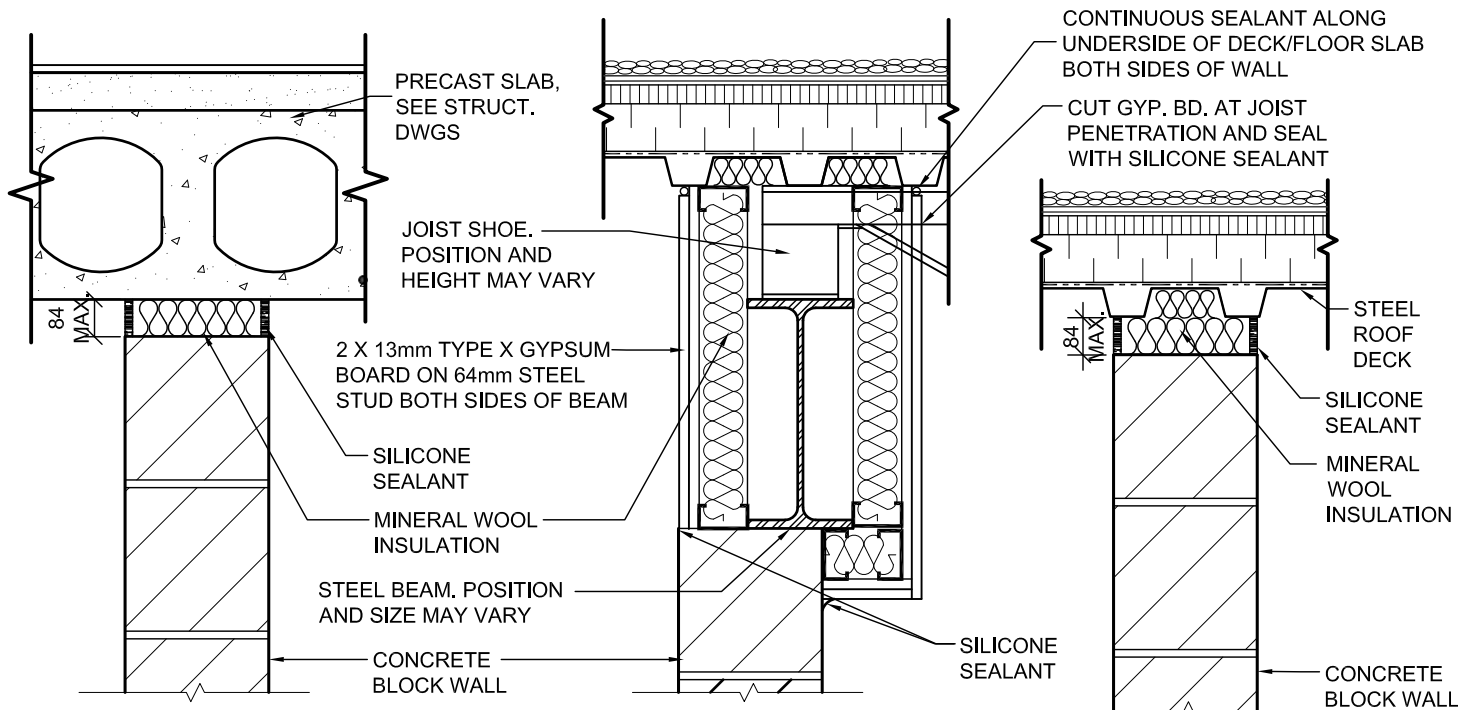
RECEPTION DESK
TYPE B30 - DETAILS
SECTIONS

PROJ: 24143
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DATE: FEB 2022

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& ASSOCIATES
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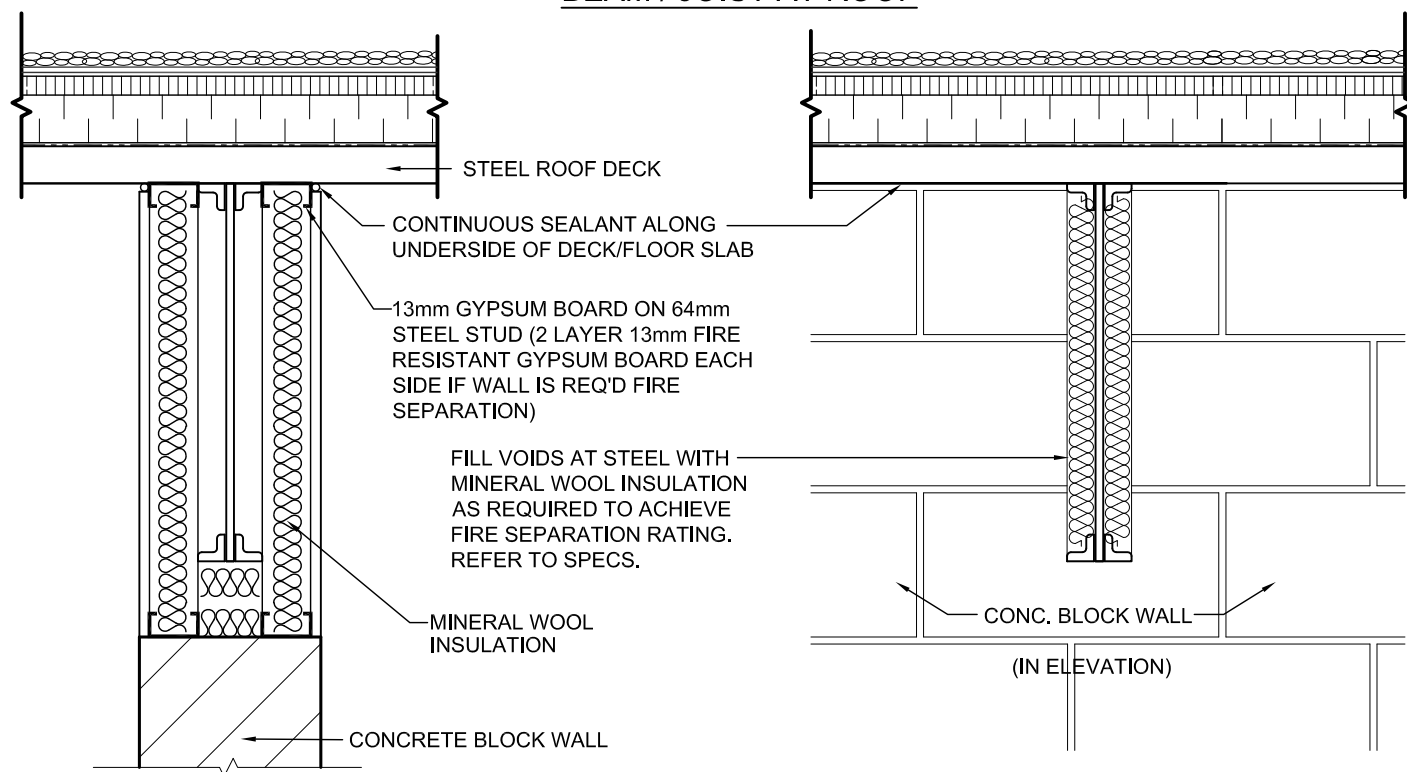
AD
656C



CONDITION AT FLOOR

CONDITION AT OFFSET BEAM / JOIST AT ROOF

CONDITION AT ROOF



CONDITION AT PARALLEL JOIST OR BEAM

NOTE: ADJUST STEEL STUD SIZES TO SUIT BLOCK WALL CONDITION.
MIN. 64mm STUD AT MAX. 400 O.C.
REF. SPECS FOR FIRE-RATED SEALANTS

CONDITION AT PERPENDICULAR JOIST OR BEAM

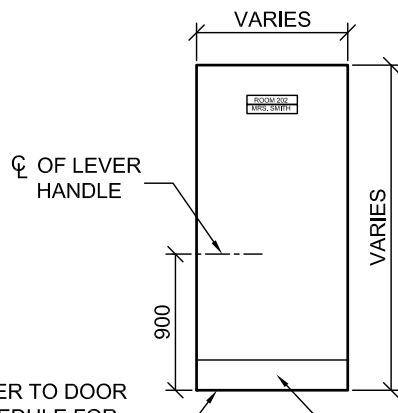
TOP OF WALL CONSTRUCTION AT
FIRE SEPARATION ASSEMBLY

PROJ: 24143
SCALE: 1:5
DRAWN: CC
DATE: 25 02 21



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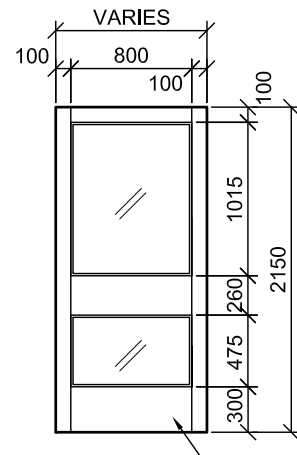
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REFER TO DOOR
SCHEDULE FOR
WHERE 25mm
UNDERCUT
IS REQUIRED

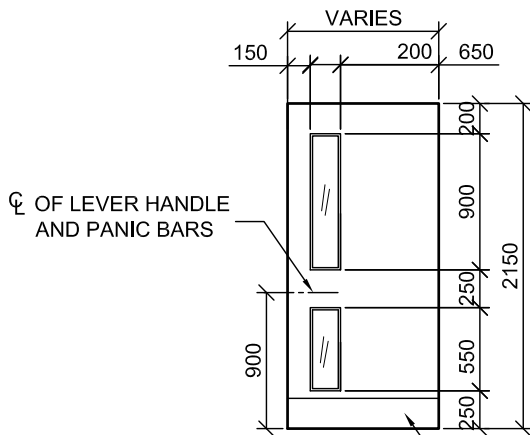
A

200mm KICKPLATE
AT EXTERIOR AND
H.T. DOORS



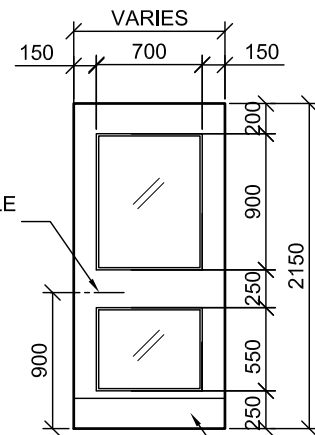
B
ALUM. EXT/INT

200mm KICKPLATE
AT EXTERIOR AND
H.T. DOORS



C

200mm KICKPLATE
AT EXTERIOR AND
H.T. DOORS



D

200mm KICKPLATE
AT EXTERIOR AND
H.T. DOORS

NOTES:

1. GLAZING TO BE:
FIRE RATED GLASS AT FIRE RATED DOORS - REFER
TO SPECIFICATIONS. 6mm TEMPERED PLATE GLASS
AT NON-FIRE RATED DOORS.
2. ALL DOORS AND FRAMES ARE VIEWED FROM
EXTERIOR OF ROOM OR AREA SERVED
3. REFER TO DOOR SCHEDULE FOR SOLID CORE
WOOD DOORS W/STAINED FINISH OR HOLLOW
METAL
4. EXTERIOR EXIT DOORS AND HEAVY TRAFFIC
DOORS TO HAVE PIANO HINGES. SEE HARDWARE
SCHEDULE
5. ϕ FOR HANDLE LEVERS ARE **ALWAYS** AT 900mm,
PANIC BAR ϕ MAY DIFFER IN HEIGHT UNLESS THERE
IS NO HANDLE, THEN PANIC BAR IS AT 900mm.

DOOR TYPES

PROJ: 24143

SCALE: 1:50

DRAWN: SC

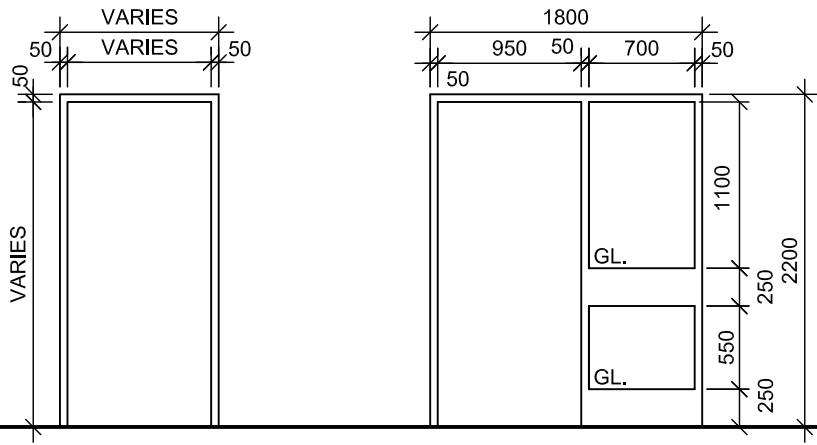
DATE: MAY 2023

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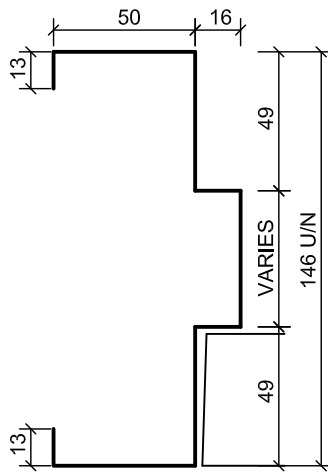
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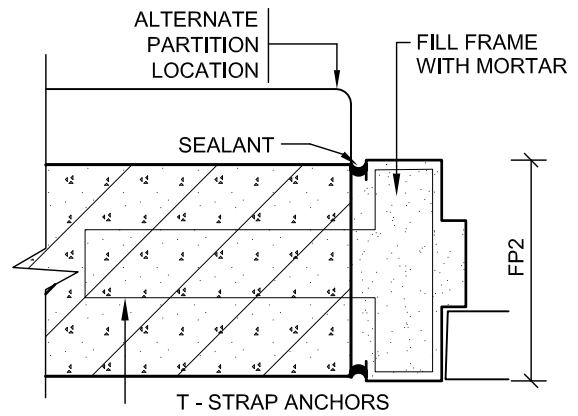


TYPE 1
H.M. INT

TYPE 2
H.M. INT



FRAME PROFILE FP1
METAL FRAME SECTION (MASONRY WALLS)
(NTS)



MF1 (NTS)

HOLLOW METAL FRAMES & JAMB DETAILS

PROJ: 24143
SCALE: 1:50
DRAWN: SC
DATE: JAN 2022



ISSUE/REV.

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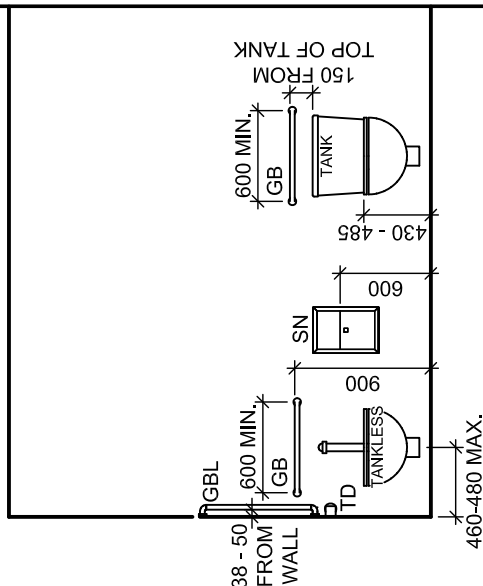
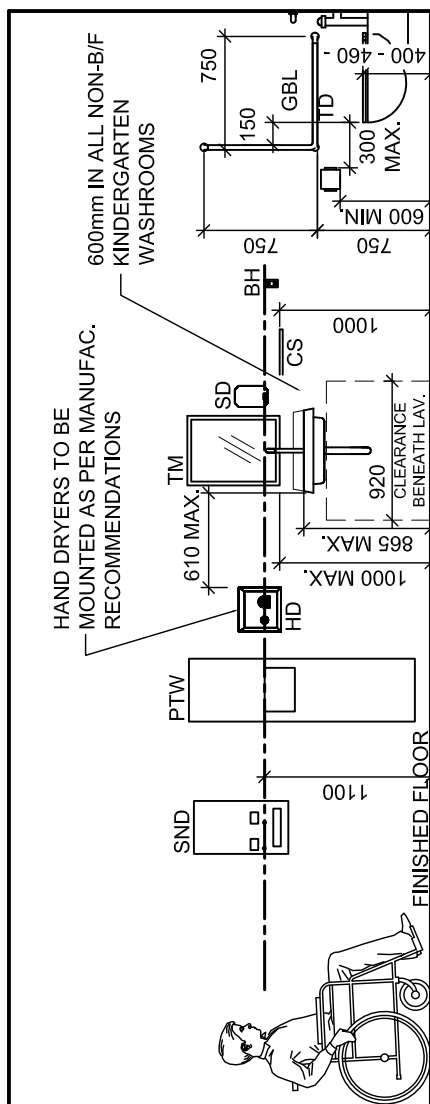
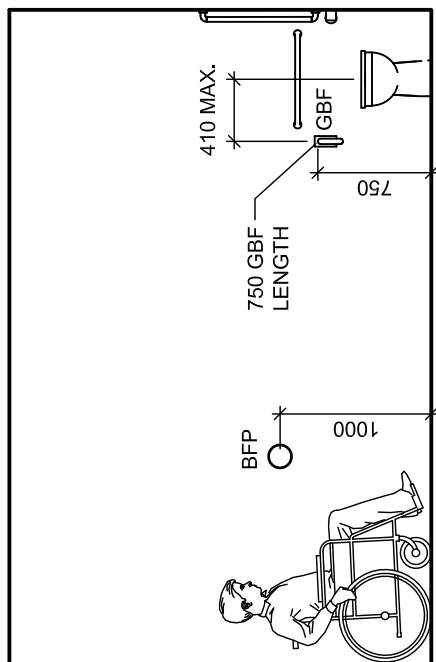
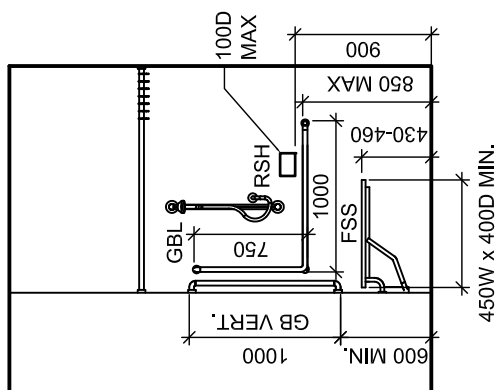
WASHROOM FIXTURE MOUNTING HEIGHTS

PROJ: 24143
SCALE: 1:50
DRAWN: KB
DATE: 24 01 09

HOSSACK
ARCHITECTURE

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ABBREVIATIONS

BH BREAK-AWAY TYPE COAT HOOK
CS CONVENIENCE SHELF
HD HAND DRYER
GB GRAB BAR (STRAIGHT)
GBL GRAB BAR 'L' SHAPE
GBF GRAB BAR FOLDING TYPE
PTD PAPER TOWEL DISPENSER
FSS FOLDING SHOWER SEAT

PTW PAPER TOWEL DISPENSER /
WASTE RECEPTACLE COMBO UNIT
SN SANITARY NAPKIN DISPOSAL
SND SANITARY NAPKIN DISPENSER
TM TILTED MIRROR
TD TOILET PAPER DISPENSER
BFP BARRIER-FREE PUSH BUTTON
RSH RECESSED SOAP HOLDER

NOTES:

1. THE DIMENSION IS TO THE CENTRE OF THE OPERATOR.
2. REFER TO PROJECT FLOOR PLANS AND INTERIOR ELEVATIONS FOR WASHROOM FIXTURE LAYOUT

ELEVATIONS / SECTIONS

MATERIAL LEGEND:

MATERIALS LEGEND

- ① DISPLAY CASE
- ② 100 HIGH RUBBER BASE TOE KICK ON 19 VENEER CORE PLYWOOD
- ③ 19mm MELAMINE PANEL OPEN STORAGE c/w 5 ADJUSTABLE SHELVES
- ④ 19mm MELAMINE PANEL DRAWER FRONT c/w 3mm PVC EDGES. REFER TO SPEC FOR DRAWER SLIDERS AND DRAWER CONSTRUCTION (METABOX)
- ⑤ 19mm MELAMINE GABLE PANEL c/w 3mm PVC ON ALL EXPOSED EDGES AND PIN HOLES FOR 19mm ADJUSTABLE SHELVES AS SHOWN
- ⑥ 19mm MELAMINE PANEL BANK OF 4 DRAWERS
- ⑦ POST FORMED PLASTIC LAMINATE COUNTERTOP c/w 76 HIGH BACKSPLASH ON STOCK
- ⑧ GYPSUM BOARD BULKHEAD
- ⑨ 19mm MELAMINE PANEL UPPER CABINETS c/w FINISHED END GABLES WHERE REQUIRED AND ADJUSTABLE SHELVES AS SHOWN
- ⑩ 80 HIGH MELAMINE PANEL VALANCE x 19mm
- ⑪ STAINLESS STEEL SINGLE SINK
- ⑫ PLASTIC LAMINATE SEPARATE BACKSPLASH ON 19mm PLYWOOD
- ⑬ 19mm MELAMINE COUNTERTOP C/W 3mm PVC ON ALL EXPOSED EDGES AND BETWEEN BUTT JOINT EDGES
- ⑭ DISHWASHER
- ⑮ 19mm MELAMINE ADJUSTABLE SHELF WITH 3mm PVC EDGES
- ⑯ 16mm MELAMINE BACK c/w 3mm PVC EDGE WHERE EXPOSED
- ⑰ 19mm MELAMINE TOP, BOTTOM c/w 3mm PVC EDGE
- ⑱ ENAMELLED STEEL VANITY LAVATORY
- ⑲ LOCKABLE CASTERS REFER TO SPEC.
- ⑳ PLASTIC LAMINATE POST FORMED WORKSURFACE ON MELAMINE PANEL INTERMEDIATE GABLES
- ㉑ PLASTIC LAMINATE POST FORMED COUNTERTOP AND MELAMINE PANEL OPEN STORAGE c/w FINISHED GABLE END WHERE REQUIRED AND ADJUSTABLE SHELVES AS SHOWN
- ㉒ 19mm MELAMINE FIXED SHELF c/w 3mm PVC EDGE
- ㉓ 19mm MELAMINE DOOR c/w 3mm PVC EDGE ON ALL EXPOSED EDGES
- ㉔ 19mm MELAMINE PANEL c/w 3mm PVC EDGE ON ALL EXPOSED EDGES
- ㉕ 16mm MELAMINE PANEL c/w 3mm PVC EDGE ON ALL EXPOSED EDGES FRAME
- ㉖ 16mm FIXED MELAMINE PANEL/SHELF c/w 3mm PVC EDGE ON ALL EXPOSED EDGES
- ㉗ PLASTIC LAMINATE POST FORMED COUNTERTOP AND MELAMINE PANEL GABLES
- ㉘ PLASTIC LAMINATE ON 19mm PLYWOOD
- ㉙ 25mm MELAMINE WITH PVC EDGE AT FRONT FACE AND EACH FACE OF THE JOINTS IN THE COUNTER TOP
- ㉚ 38mm X 89mm SOLID HARDWOOD SUPPORT
- ㉛ SINGLE 19mm MELAMINE GABLE C/W 1/8" PVC EDGE
- ㉜ TRIPLE 19mm MELAMINE GABLE SUPPORT C/W 3mm PVC EDGE ON FRONT AND FLOOR EDGE AT APROX. 910mm O.C. MAX. WAFER AND SCREW TOGETHER.
- ㉝ ADJUSTABLE FEET SEE SPEC.
- ㉞ 51mm X 102mm OR 19mm PLYWOOD CONTINUOUS BLOCKING ON WALL, PROVIDE WOOD BLOCKING AT ALL EDGE END WAL CONDITIONS.
- ㉟ 19mm HARDWOOD SCREW STRIP BETWEEN MELAMINE GABLES.
- ㊱ PLYWOOD PANEL FILLER 19mm
- ㊲ 19mm VENEER CORE PLYWOOD CONTINUOUS JOINTS TO BE AT GABLE LOCATIONS.

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GENERAL NOTES:

ON ALL DWGS. AW REFERS TO ARCHITECTURAL WOODWORK.

FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LEGEND

Status	-
Folder	-
File	-
Drawn By	-
Check By	-
Scale	N.T.S.
Date	November 2015
Last Plot	-
Job No.	-
Sheet No.	-

AW001

29

THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

FILLERS

Status

Folder t:\DRAWING\WRDSB MILLWORK

File AW002.DWG

Drawn By NST

by SKA

Scale

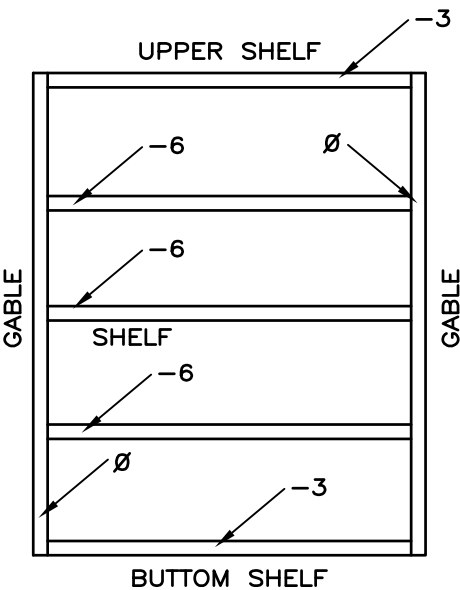
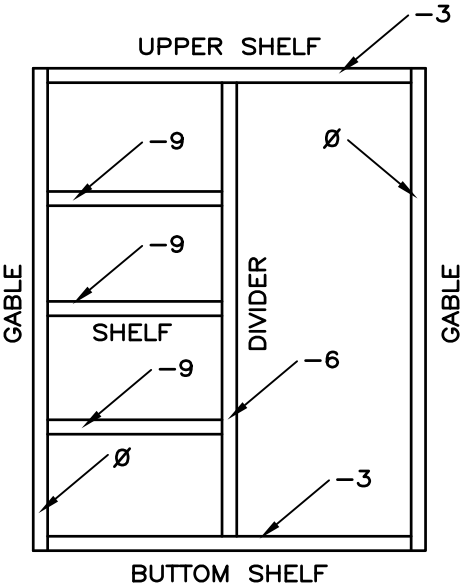
Date February 2015

Last Plot 6/2/2016 8:44 AM

Job No.

AW002

SAMPLE SETBACKS OF
PANELS AND SHELVES
(STEPPED TO MATCH PVC
EDGING)



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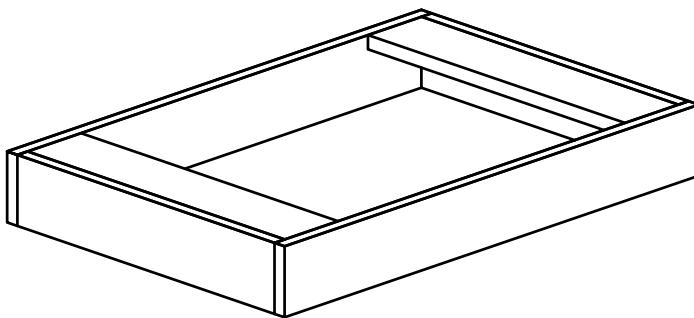
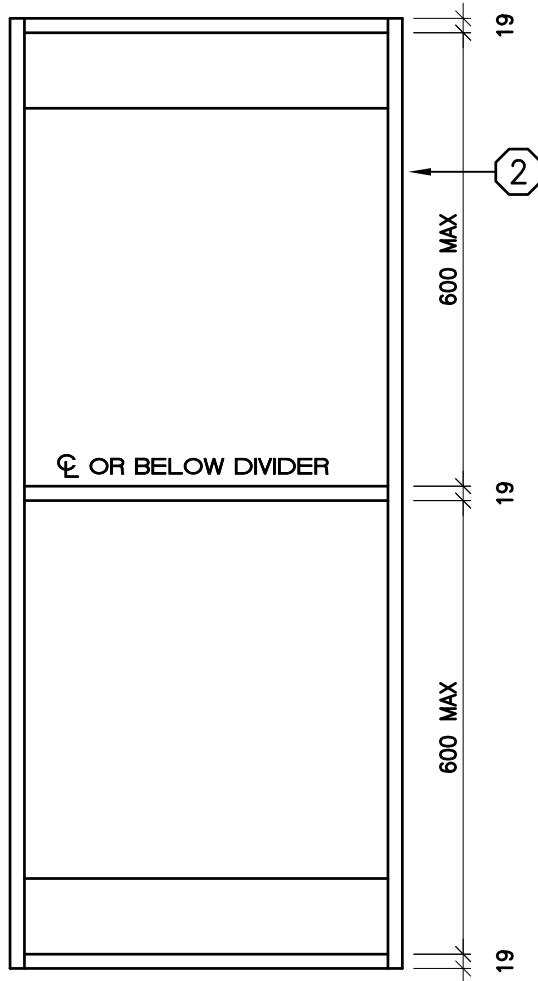
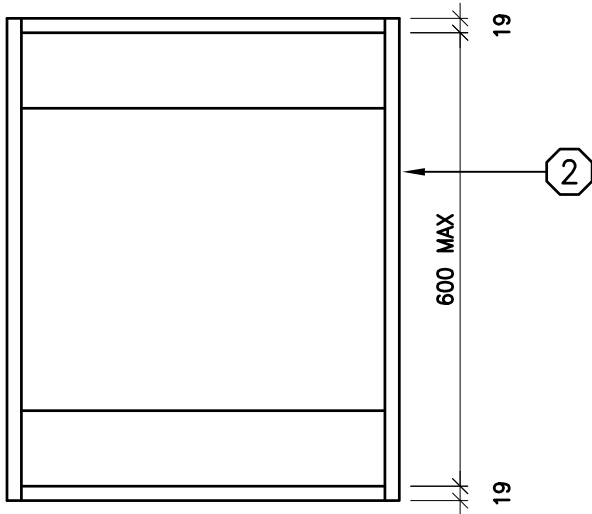
ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

SAMPLE SETBACKS OF PANELS AND SHELVES

Status
Folder t:\DRAWING\WRDSB MILLWORK
File AW003.DWG
Drawn By NST
Check By SKA
Scale
Date November 2015
Last Plot 6/2/2016 8:44 AM
Job No.
Sheet No.

AW003



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FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



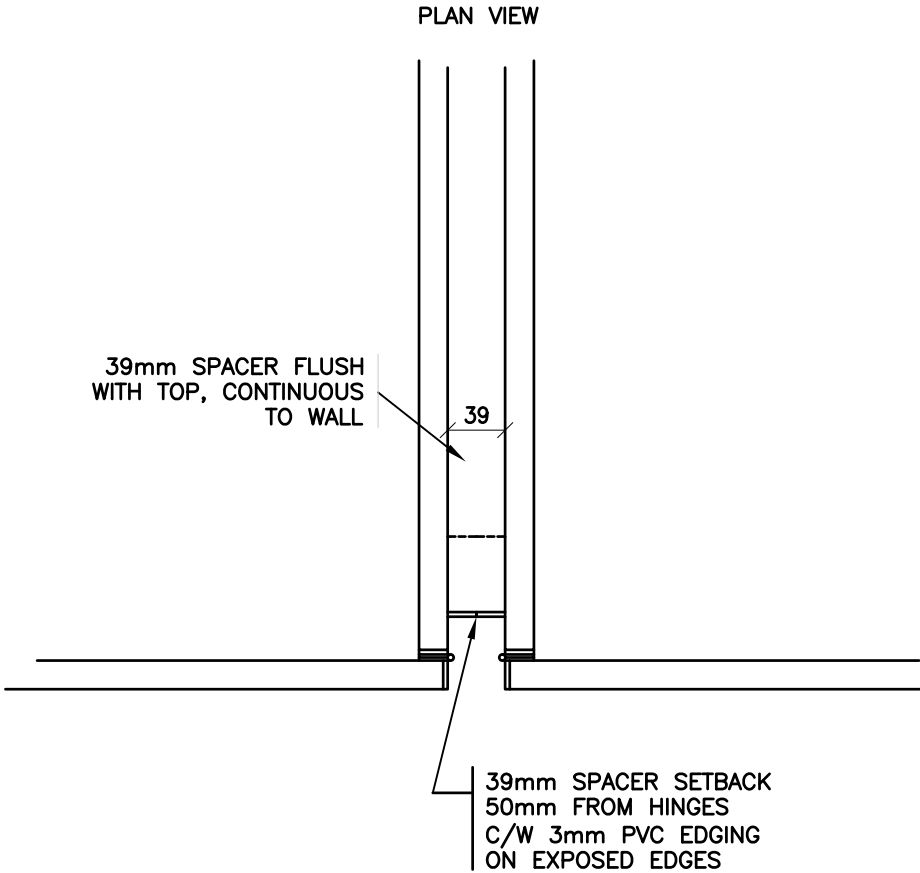
ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

TOE KICK DETAIL

Status	
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File	AW004.DWG
Drawn By	NST
Check By	SKA
Scale	
Date	November 2015
Last Plot	6/2/2016 8:44 AM
Job No.	
Sheet No.	

AW004



DETAIL TO BE USED WHEN TEACHERS
CLOSETS ARE PLACED SIDE BY SIDE

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ARCHITECTURAL WOODWORK STANDARDS
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

TEACHERS CLOSET SPACER DETAIL

Status

Folder C:\USERS\DOUMMA\DROPBOX\WRDSB MILLWORK\DWG

File AW009.DWG

Drawn By NST

Check By SKA

Scale 1:10

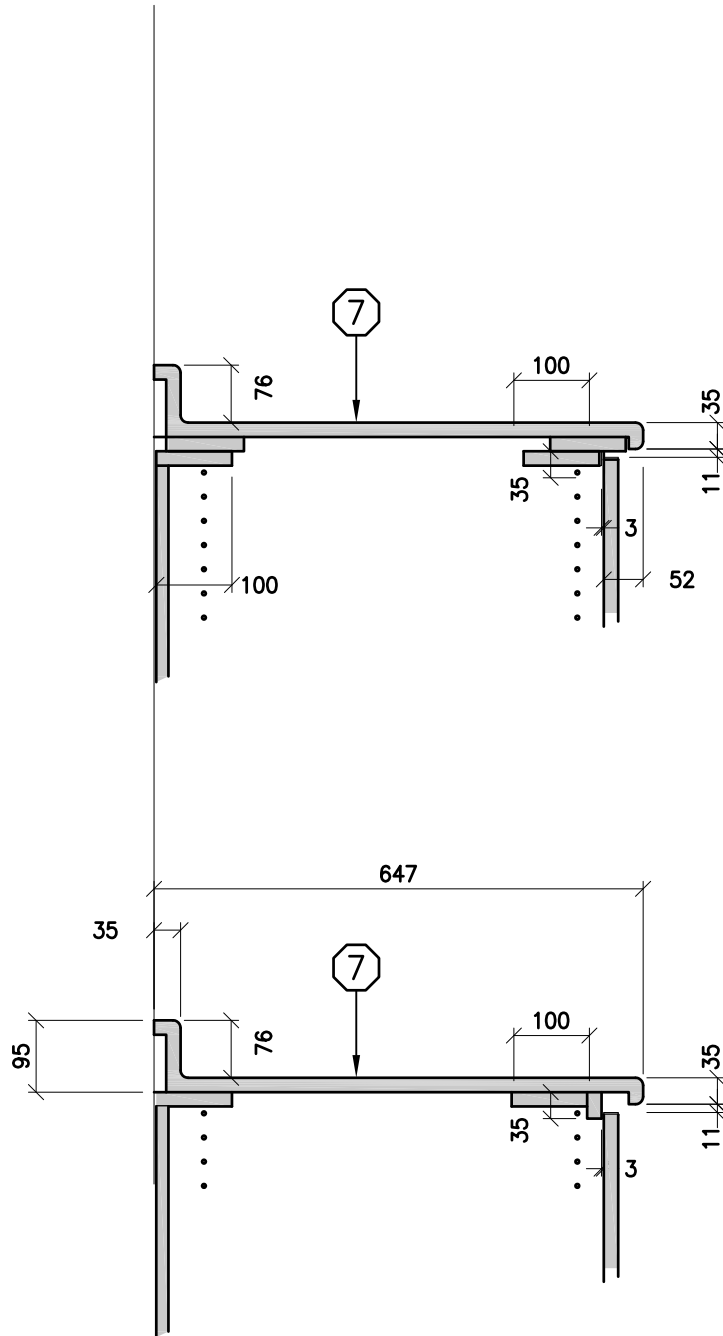
Date November 15

Last Plot 6/2/2016 9:25 AM

Job No.

Sheet No.

AW009



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

CABINET/COUNTERTOP - ACCEPTABLE CONSTRUCTION DETAIL

Status

Folder C:\USERS\DOUMMA\DROPBOX\WRDSB MILLWORK\20

File AW010.DWG

Drawn By SKA

Check By SKA

Scale

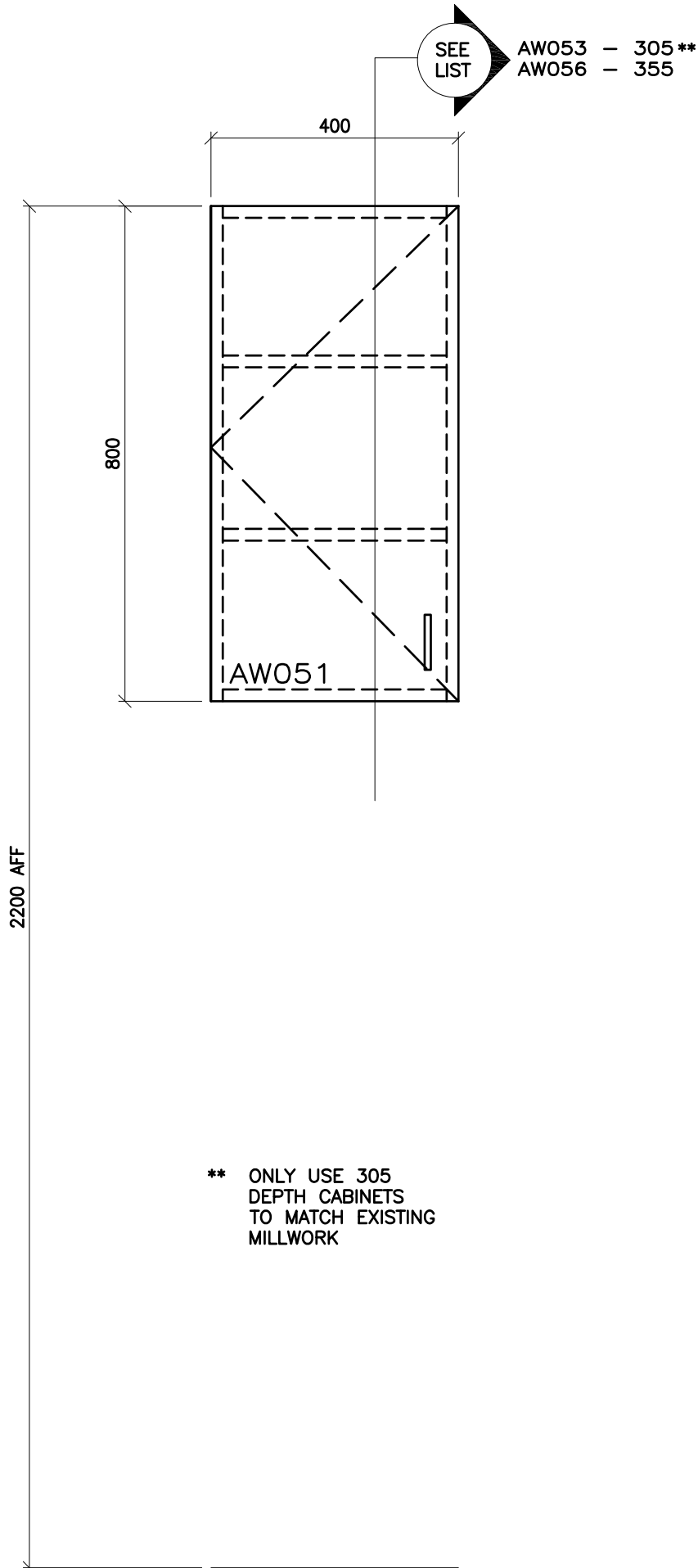
Date November 2015

Last Plot 6/2/2016 9:25 AM

Job No.

Sheet No.

AW010



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

UPPER CABINET - 400 - ELEVATION

Status

Folder t:\DRAFTING\WRDSB MILLWORK

File AW051.DWG

Drawn By NST

Check By SKA

Scale 1:10

Date April 15

Last Plot 6/2/2016 8:44 AM

Job No.

Sheet No.

AW051

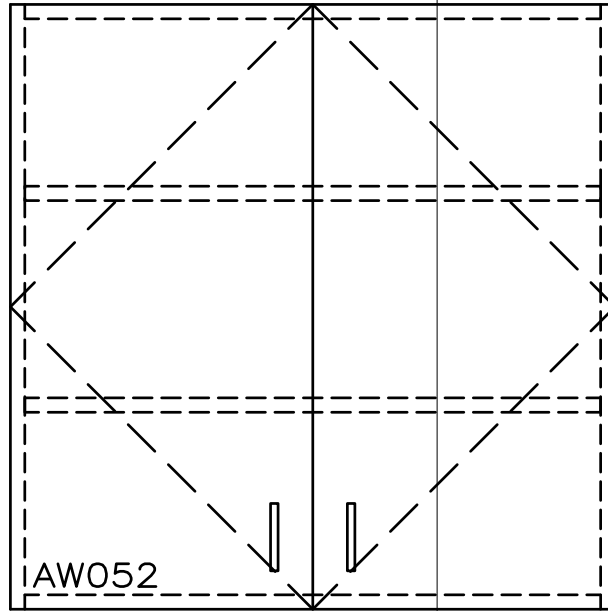
2200 AFF

800

800

SEE
LIST

AW053 - 305 **
AW056 - 355



** ONLY USE 305 DEPTH
CABINETS TO MATCH
EXISTING MILLWORK

THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

UPPER CABINET - 400 - ELEVATION

Status

Folder \\DRAFTING\WRDSB MILLWORK

File AW052.DWG

Drawn By NST

Check By SKA

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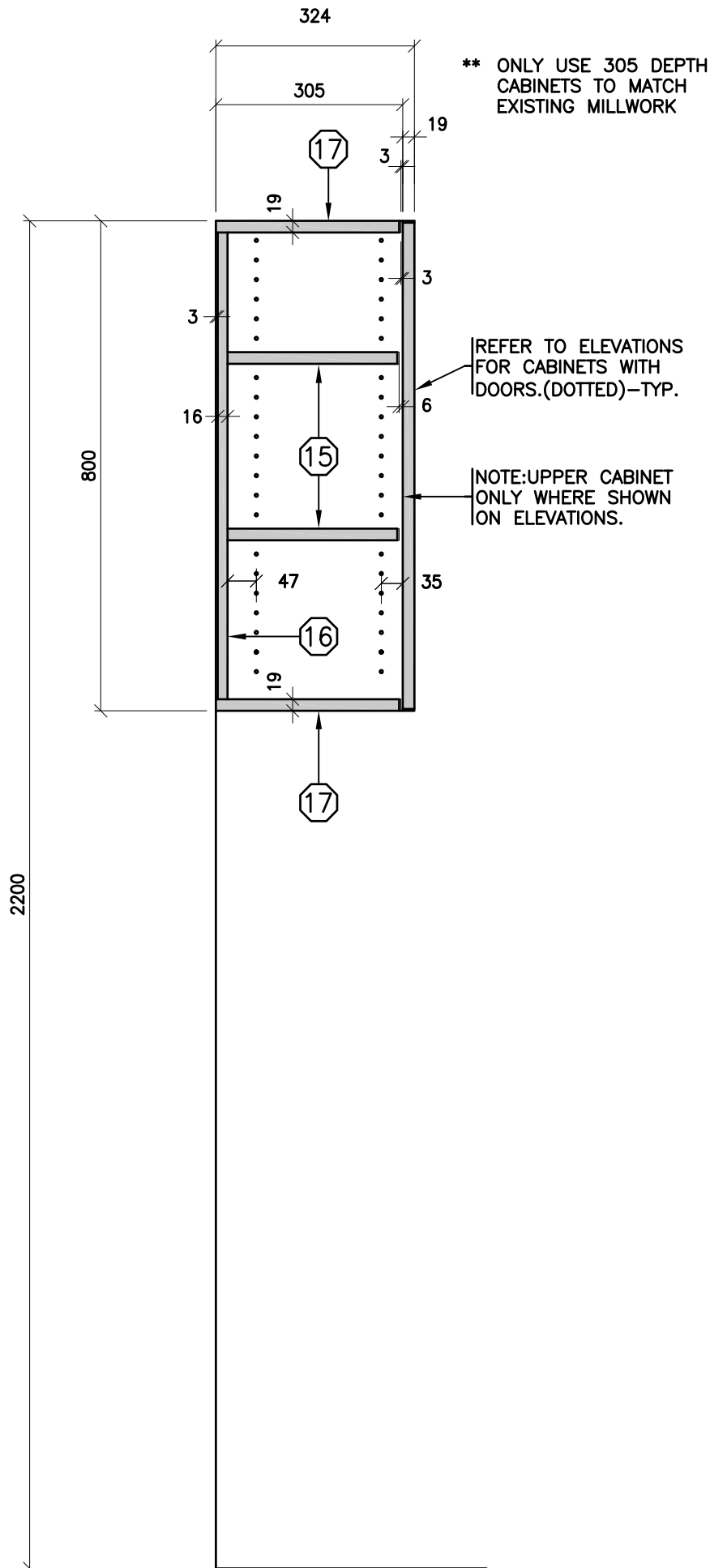
Date April 15

Last Plot 6/2/2016 8:45 AM

Job No.

Sheet No.

AW052



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ARCHITECTURAL WOODWORK STANDARDS

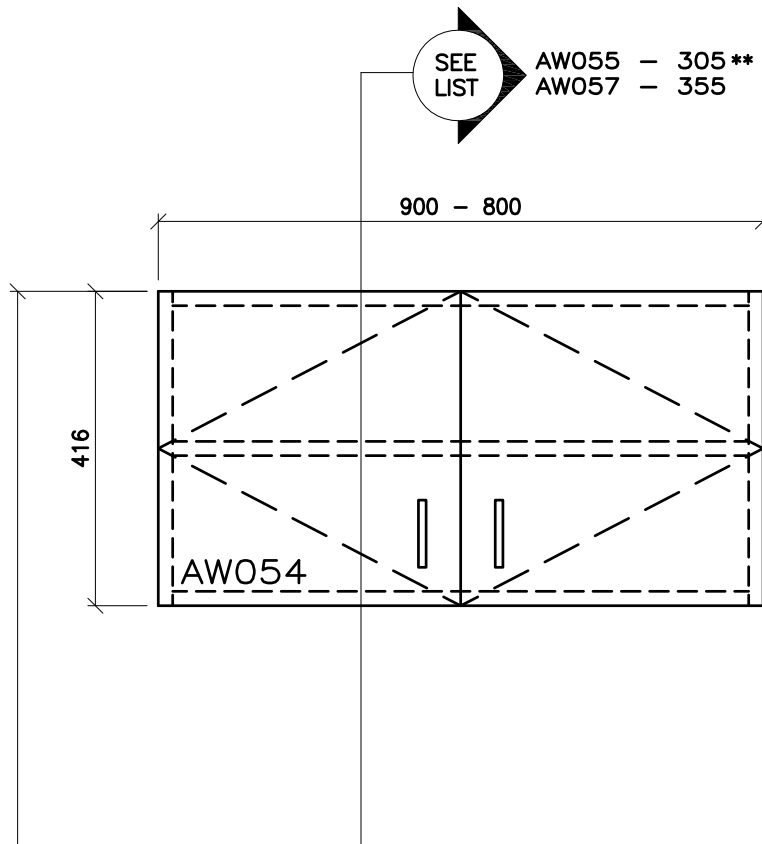
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

UPPER CABINET - SECTION

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File AW053.DWG
Drawn By NST
Check By SKA
Scale 1:10
Date April 15
Last Plot 6/2/2016 8:45 AM
Job No.
Sheet No.

AW053

2200 AFF



** ONLY USE 305 DEPTH
CABINETS TO MATCH
EXISTING MILLWORK

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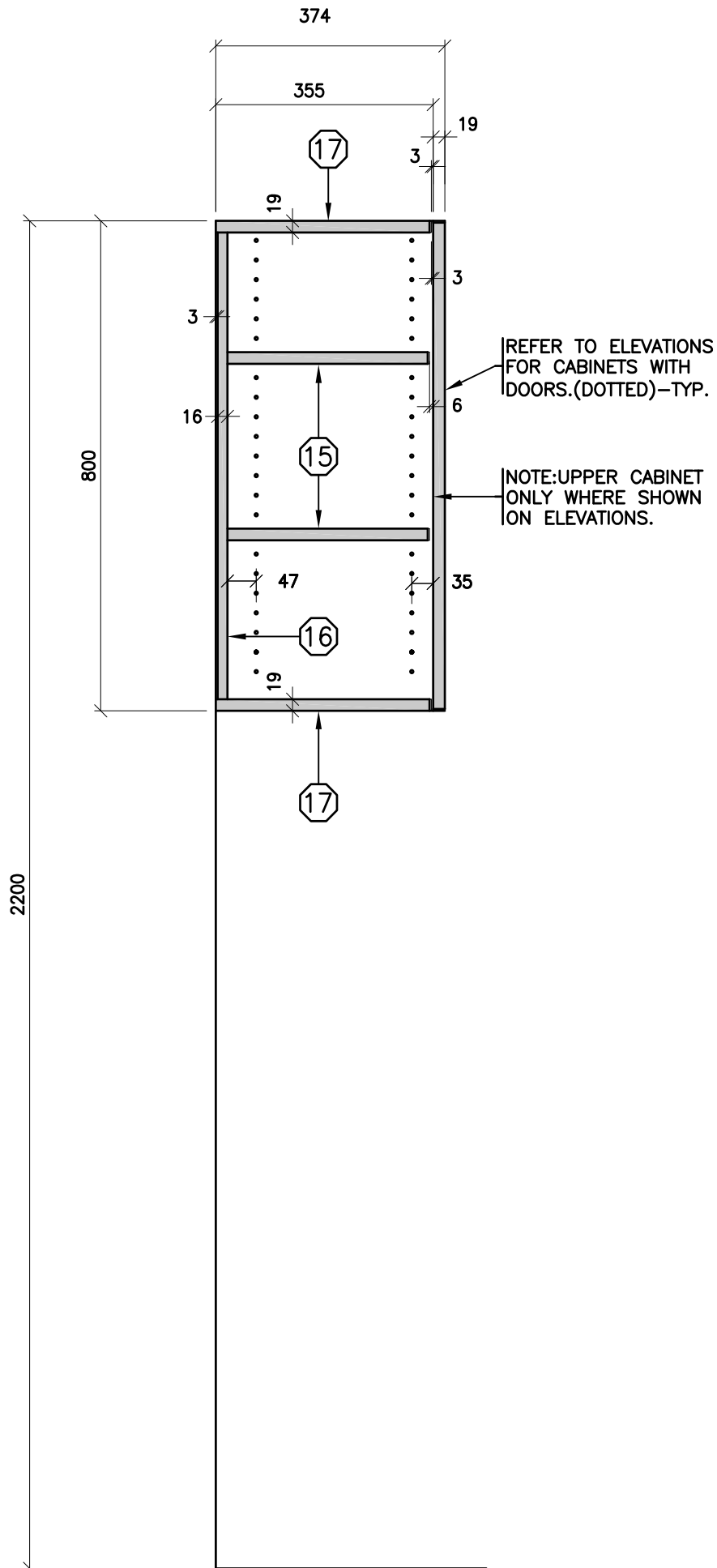


ARCHITECTURAL WOODWORK STANDARDS
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

SMALL UPPER CABINET - ELEVATION

Status
Folder t:\DRAFTING\WRDSB MILLWORK
File AW054.DWG
Drawn By NST
Check By SKA
Scale 1:10
Date April 15
Last Plot 6/2/2016 8:45 AM
Job No.
Sheet No.

AW054



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REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

UPPER CABINET - SECTION - 355 DEEP

Status

Folder C:\USERS\DOUMMA\DROPBOX\WRDSB MILLWORK\AW

File AW056.DWG

Drawn By NST

Check By SKA

Scale 1:10

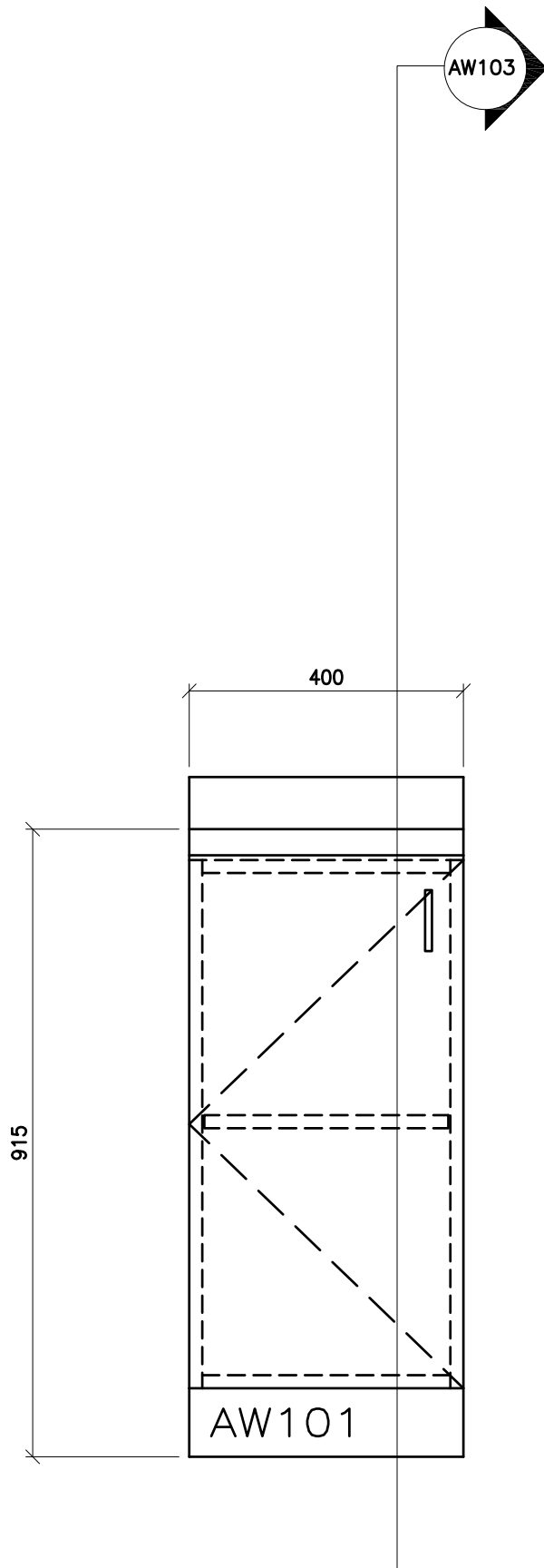
Date April 15

Last Plot 6/2/2016 9:26 AM

Job No.

Sheet No.

AW056



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ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOWER CABINET-400 WIDE- ELEVATION

Status

Folder t:\DRAWING\WRDSB MILLWORK

File AW101.DWG

Drawn By NST

Check By SKA

Scale

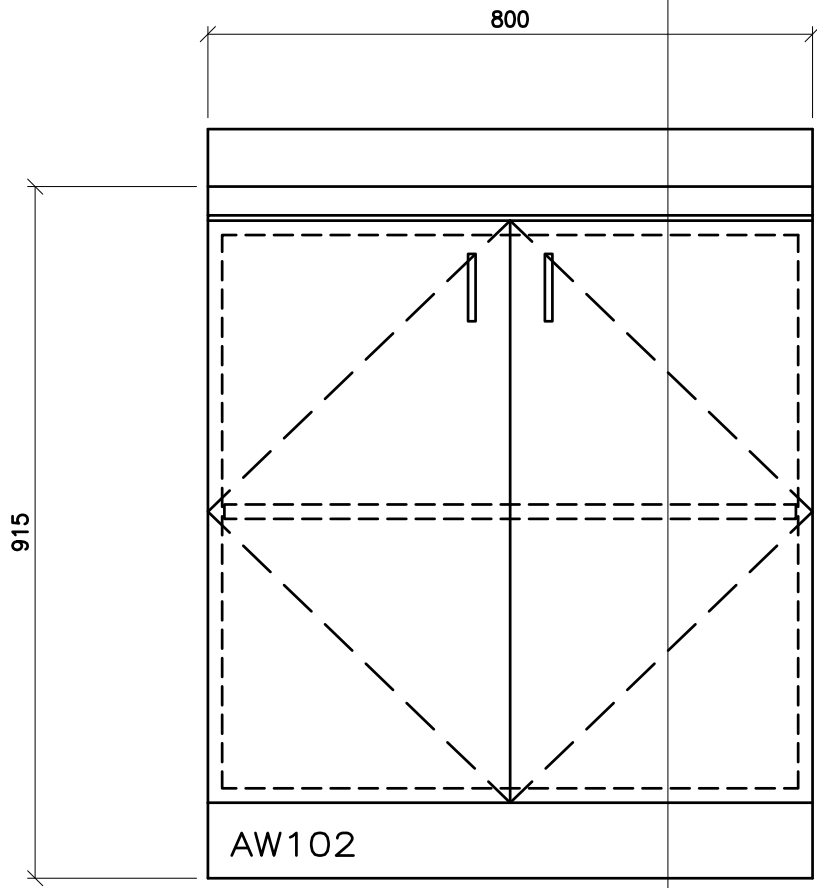
Date February 2015

Last Plot 6/2/2016 8:45 AM

Job No.

Sheet No.

AW101



AW103

THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOWER CABINET-800 WIDE - ELEVATION

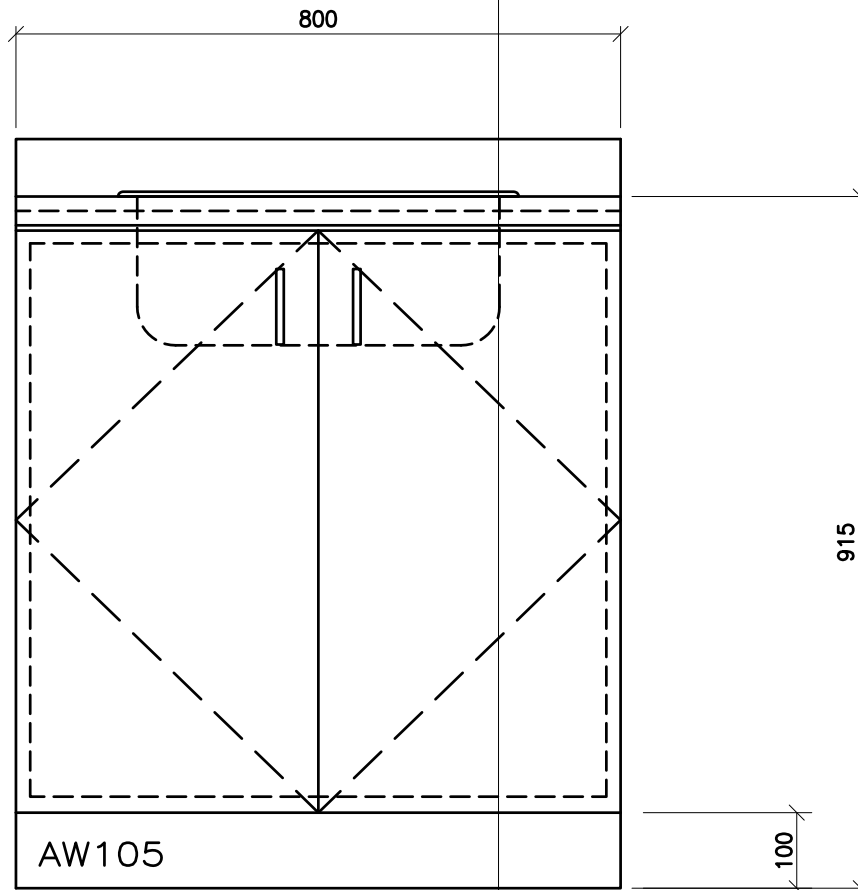
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File AW102.DWG
Drawn By NST
Check By SKA
Scale
Date November 2015
Last Plot 6/2/2016 8:45 AM
Job No.
Sheet No.

AW102

AW103

- SINGLE SINK: 800 WIDE
- DOUBLE SINK: 863 WIDE MINIMUM,
USE 900 WIDE CABINET
- UPPER CABINET TO HAVE A DIVIDER
- COUNTERTOP TO HAVE CLASSIC
NO-D RIP PROFILE

AW106



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS

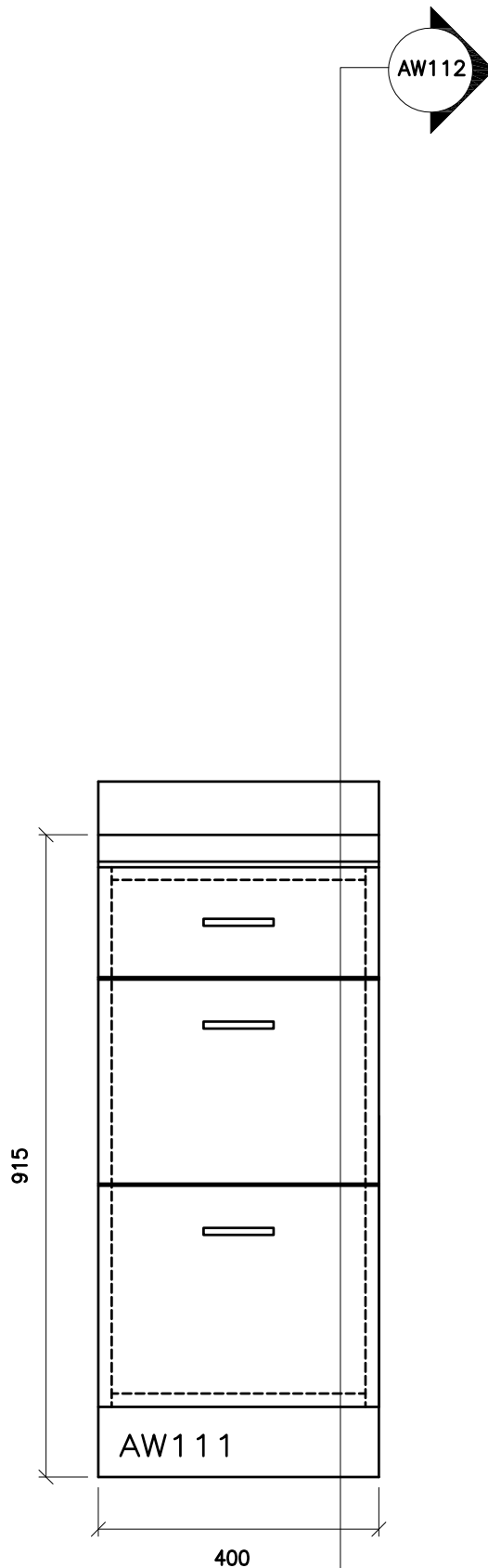
FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOWER CABINET WITH SINGLE SINK - ELEVATION

Status	
Folder	\\DRAFTING\WRDSB MILLWORK
File	AW105.DWG
Drawn By	NST
Check By	SKA
Scale	
Date	November 2015
Last Plot	6/2/2016 8:46 AM
Job No.	
Sheet No.	

AW105

- # AW106



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOWER CABINET WITH DRAWERS - 3D c/w DL+ FD - ELEVATION

Status

Folder t:\DRAFTING\WRDSB MILLWORK

File AW111.DWG

Drawn By NST

Check By SKA

Scale

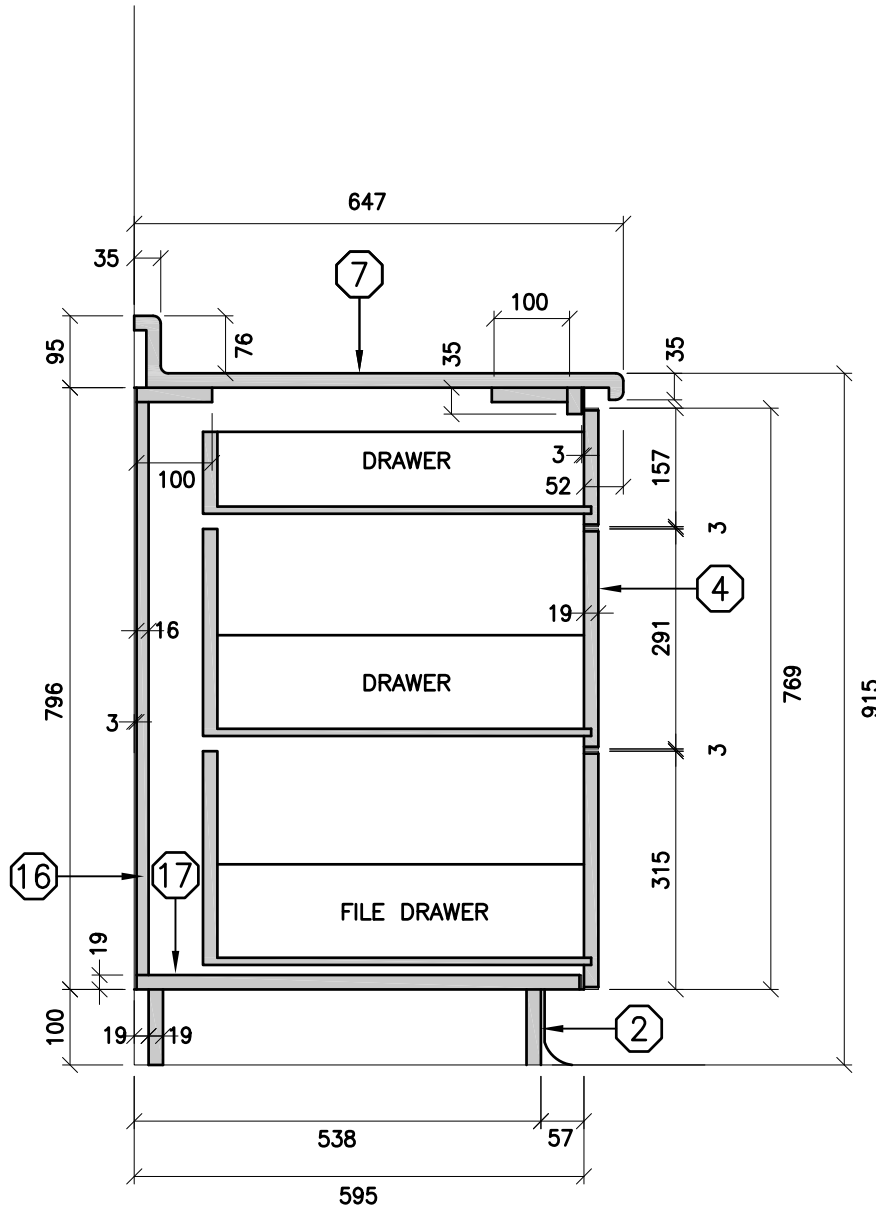
Date November 2015

Last Plot 6/2/2016 8:46 AM

Job No.

Sheet No.

AW111



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FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



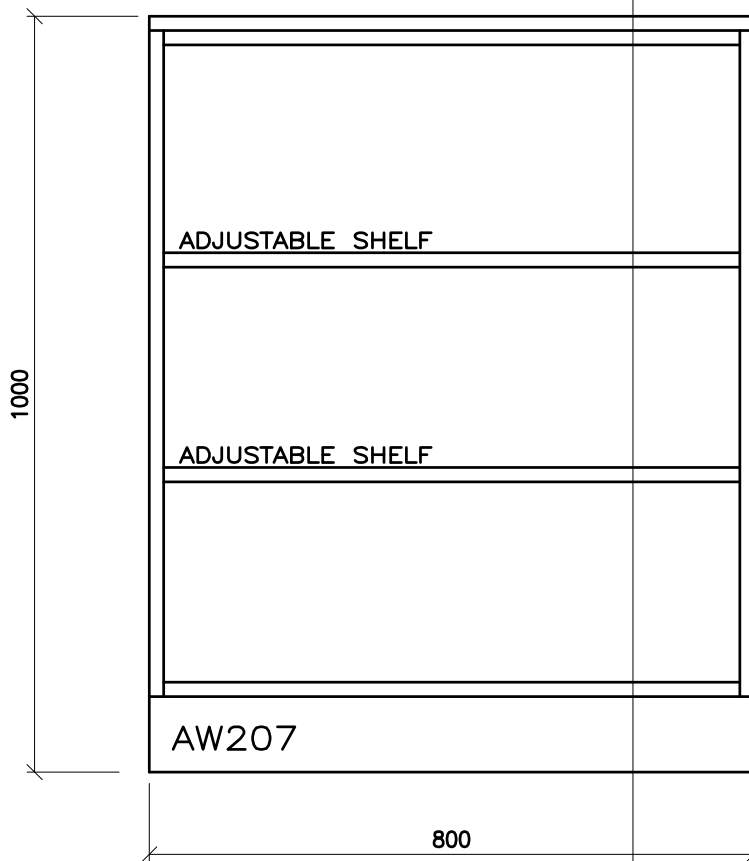
ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOWER CABINET WITH DRAWERS - 3D c/w DL + FD - SECTION

Status
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File AW112.DWG
Drawn By NST
Check By SKA
Scale
Date November 2015
Last Plot 6/2/2016 8:46 AM
Job No.
Sheet No.

AW112



SEE LIST

AW209 - 305
AW210 - 375

THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ARCHITECTURAL WOODWORK STANDARDS FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOW BOOKSHELF - 1000 - ELEVATION

Status
Folder t:\DRAFTING\WRDSB MILLWORK
File AW207.DWG
Drawn By NST
Check By SKA
Scale
Date February 2015
Last Plot 6/2/2016 8:54 AM
Job No.
Sheet No.

AW207

REPRODUCTION OF DWGB. AND
RELATED DOCUMENTS IN PART OR IN
WHOLE IS FORBIDDEN WITHOUT THE
WRDGB'S WRITTEN PERMISSION.

GENERAL NOTES:

ON ALL DWGS. AW REFERS TO ARCHITECTURAL WOODWORK.

**FOR APPROPRIATE PRODUCTS REFER TO
AW001 AND THE SPECIFICATIONS.**

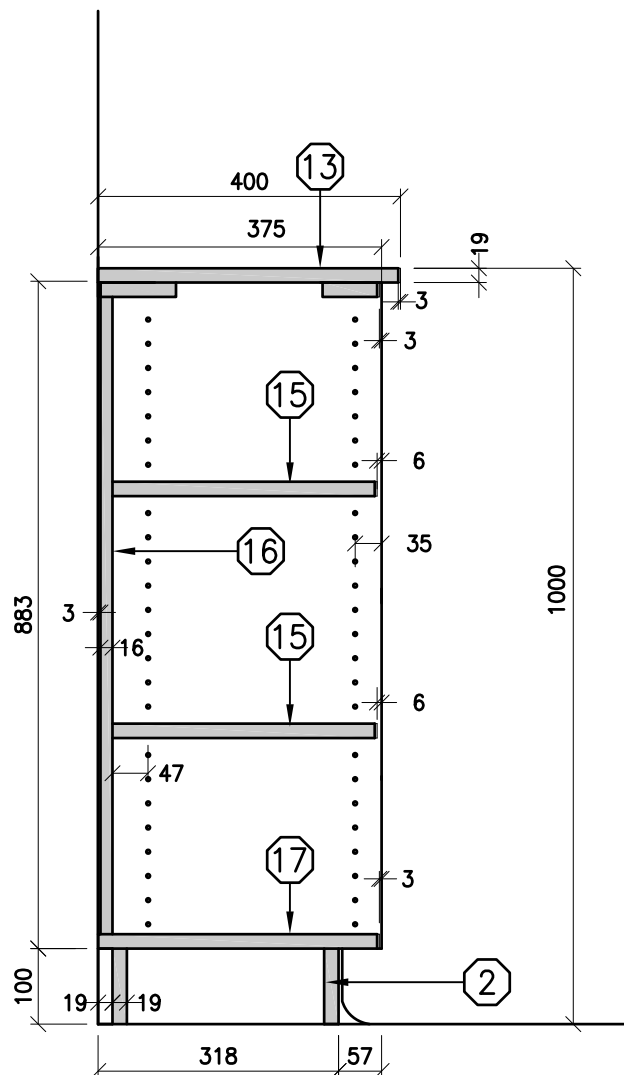
REFER TO AW002 TO AW020 FOR
ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

LOW BOOKSHELF - 1000 - 375 DEEP - SECTION



Status

Folder I:\DRAFTING_WRDSB MILLWORK

File **AW210.DWG**

Drawn By **NST**

Check By	SKA

Scale

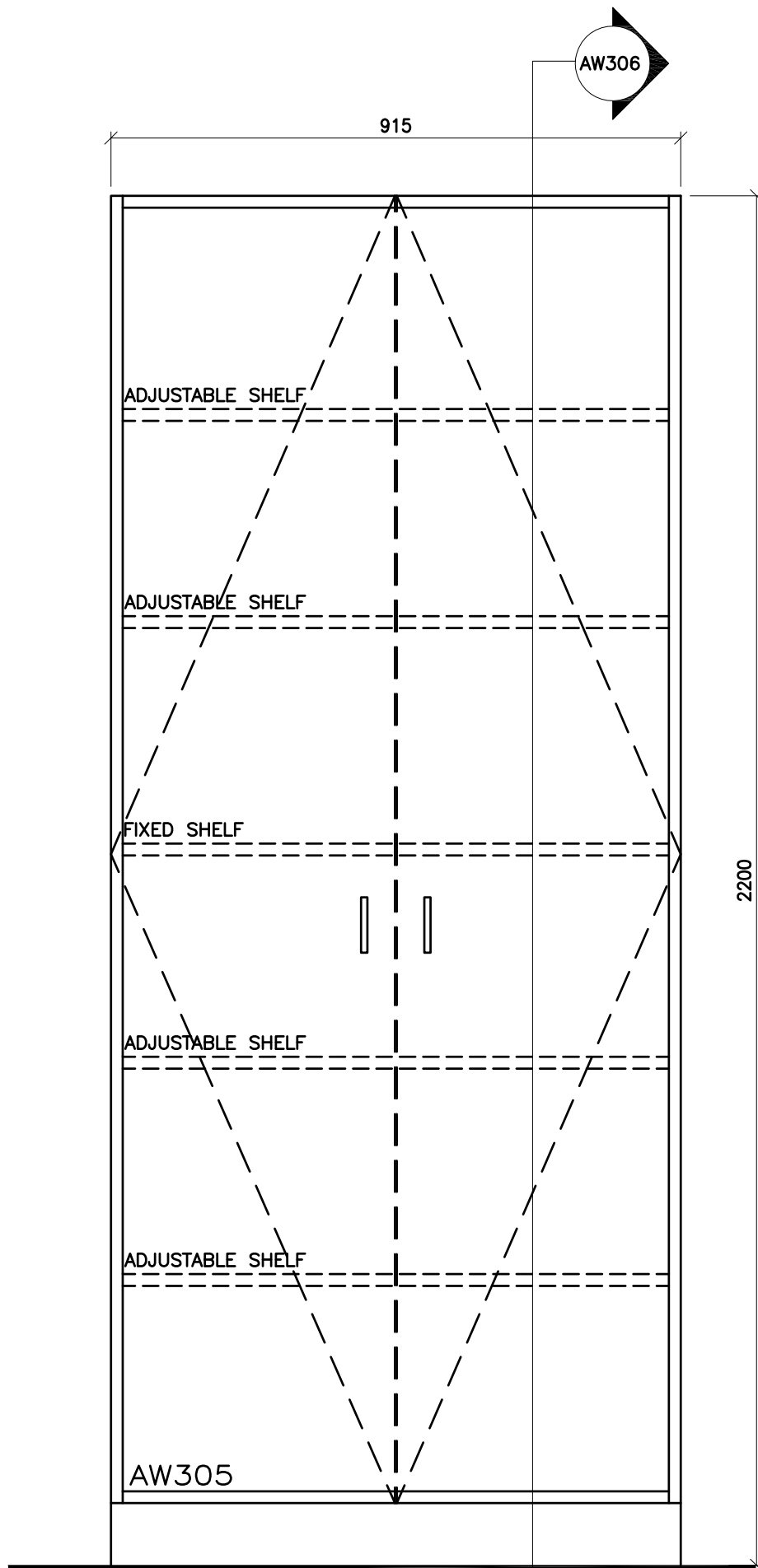
Date	November 2015

Last Plot 6/2/2016 8:55 AM

Job No.

Sheet No.

AW210



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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REPRODUCTION OF DWGS. AND RELATED DOCUMENTS IN PART OR IN WHOLE IS FORBIDDEN WITHOUT THE WRDSB'S WRITTEN PERMISSION.

GENERAL NOTES:

ON ALL DWGS. AW REFERS TO ARCHITECTURAL WOODWORK.

FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



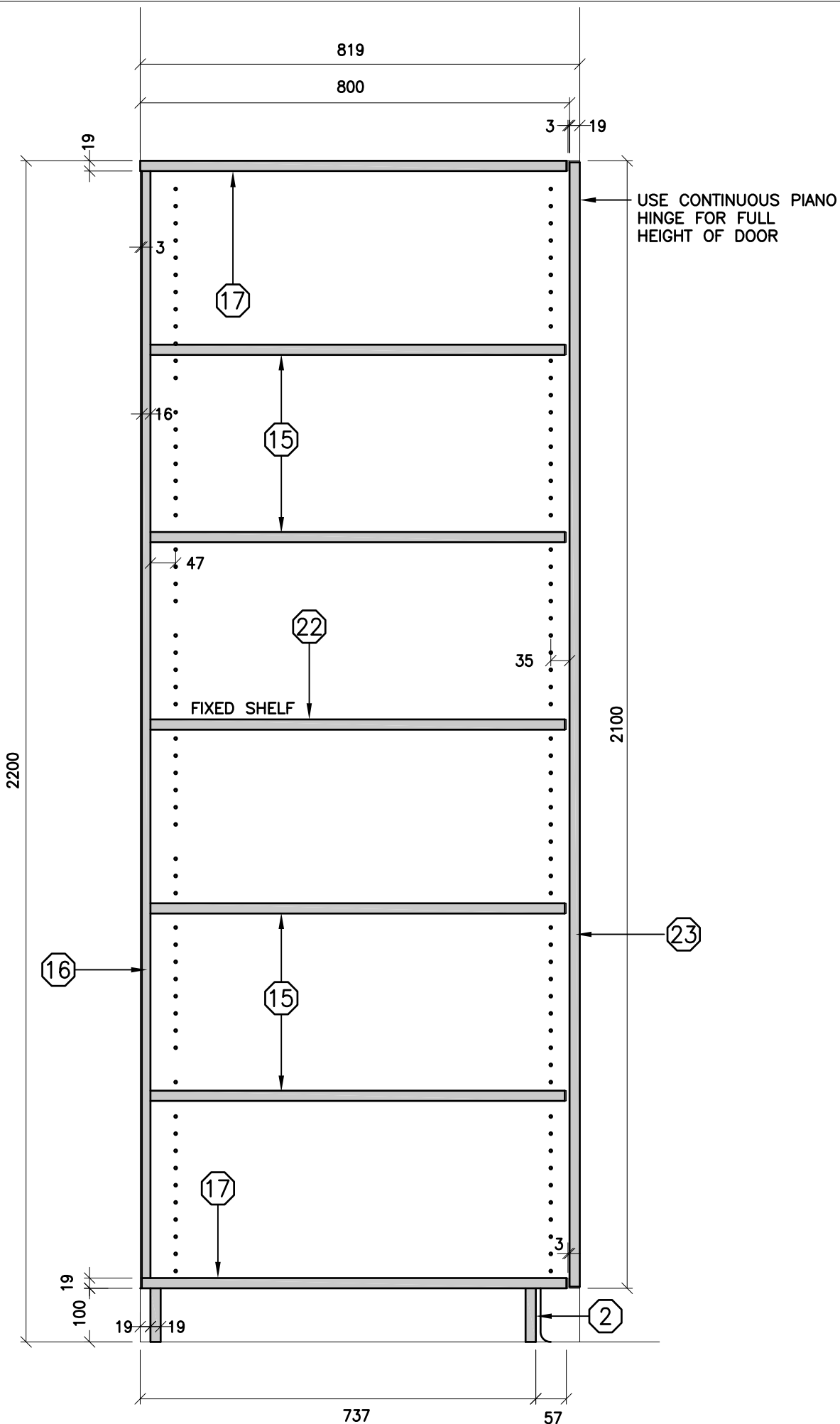
ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

TEACHERS CLOSETS - TYPE 3 - 2 DOORS - ELEVATION

Status	
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File	AW305.DWG
Drawn By	NST
Check By	SKA
Scale	
Date	November 2015
Last Plot	6/2/2016 8:59 AM
Job No.	
Sheet No.	

AW305



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWG. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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ON ALL DWGS. AW REFERS TO ARCHITECTURAL WOODWORK.

FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



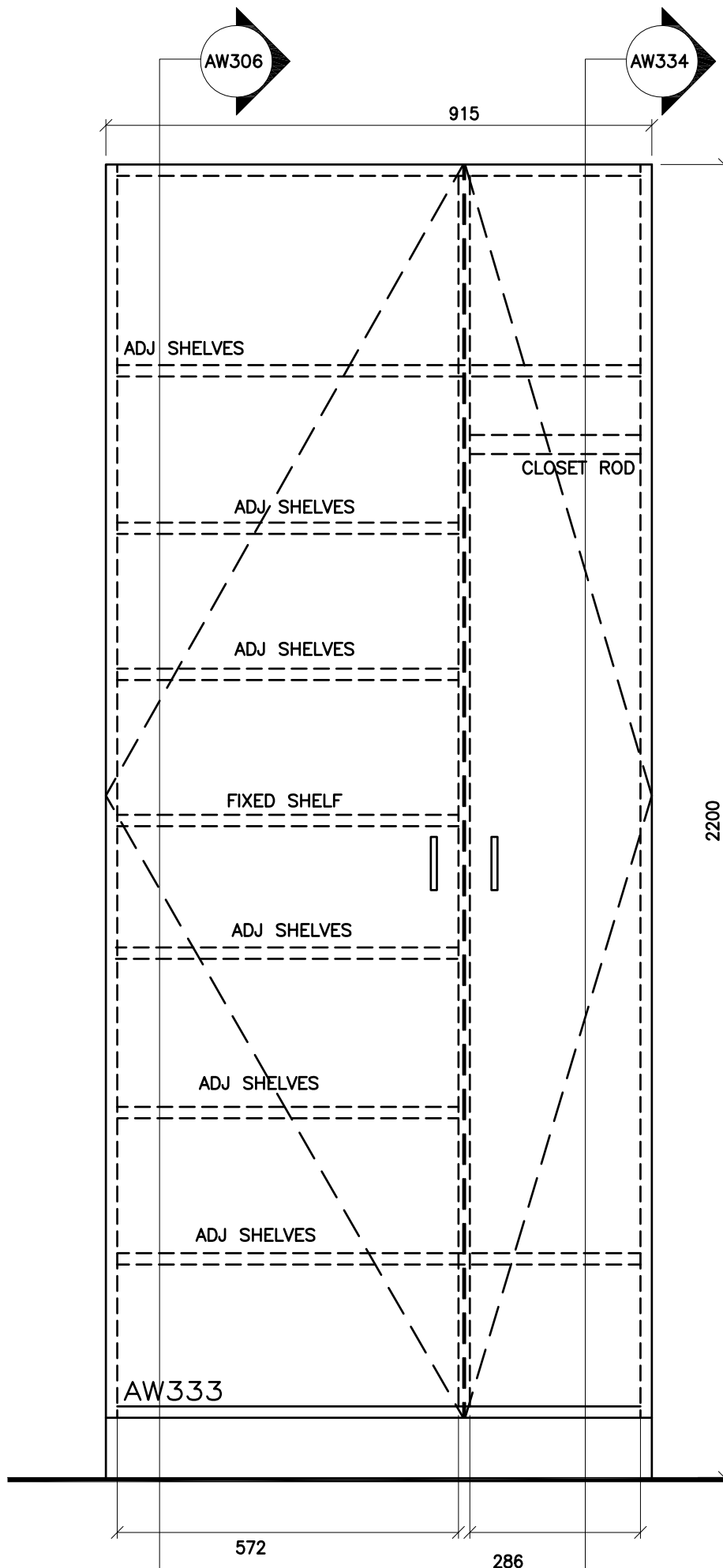
ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

5 SHELF STORAGE CABINET 800 - SECTION

Status
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File AW306.DWG
Drawn By NST
Check By SKA
Scale
Date November 2015
Last Plot 6/2/2016 8:59 AM
Job No.
Sheet No.

AW306



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

TEACHERS CLOSETS - TYPE 4 - 2 DOORS - ELEVATION

Status

Folder C:\USERS\DOUMMA\DROPBOX\WRDSB MILLWORK\20

File AW333.DWG

Drawn By NST

Check By SKA

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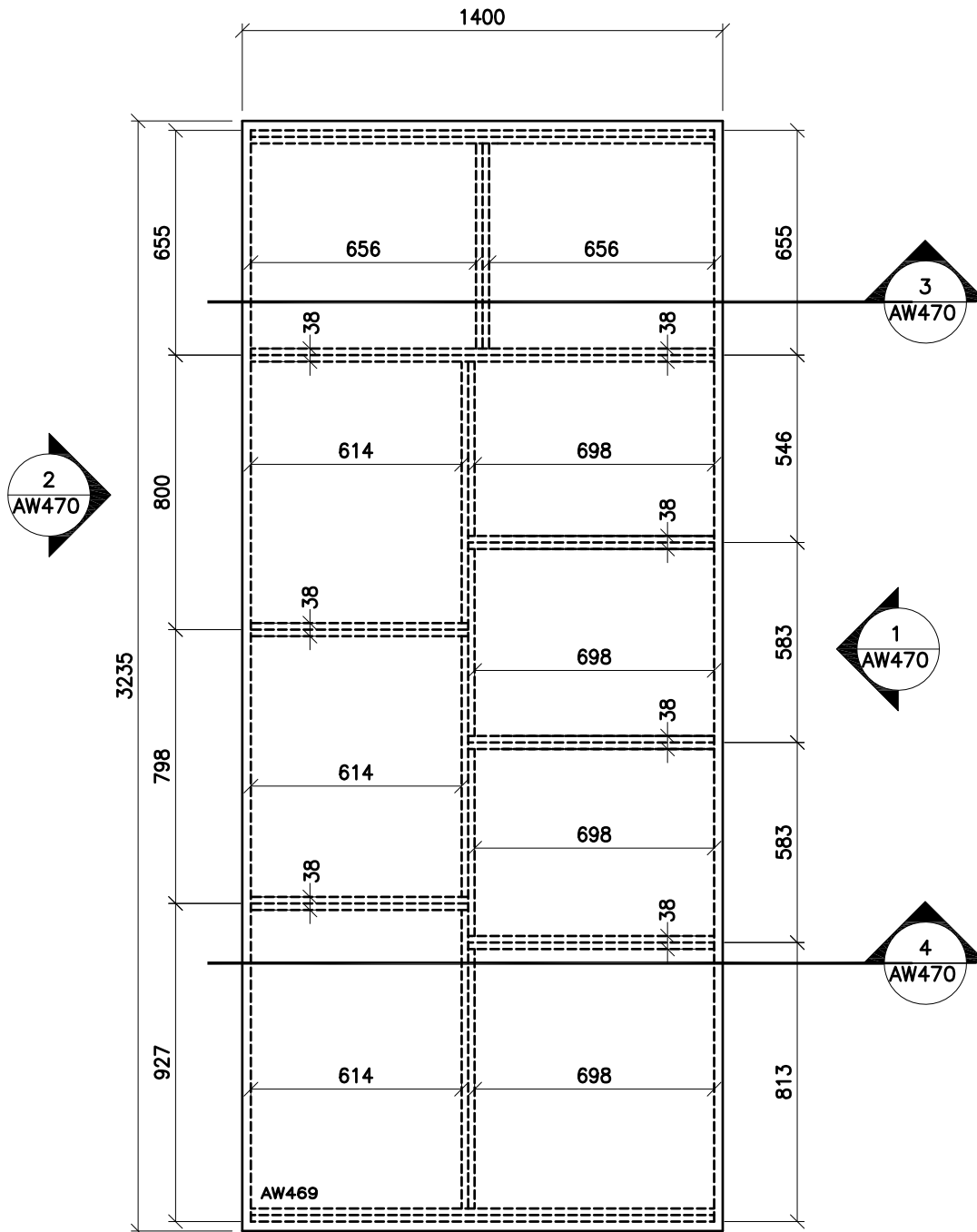
Date November 15

Last Plot 6/2/2016 9:27 AM

Job No.

Sheet No.

AW333



THE CONTRACTOR SHALL VERIFY ALL DWGS. AGAINST THE ARCHITECTURAL WOODWORK DWGS. AND MUST REPORT ANY INCONSISTENCIES TO THE WRDSB BEFORE PROCEEDING WITH WORK.

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FOR APPROPRIATE PRODUCTS REFER TO AW001 AND THE SPECIFICATIONS.

REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.

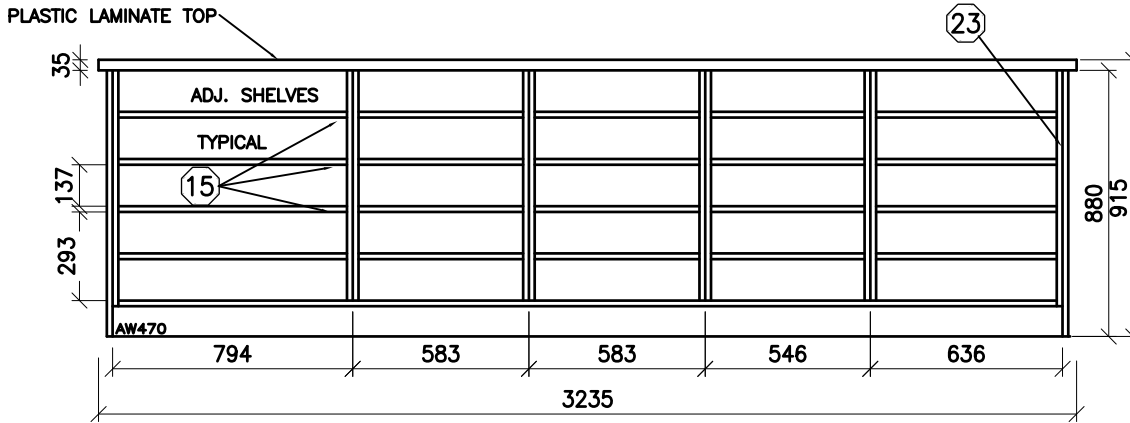


ARCHITECTURAL WOODWORK STANDARDS FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

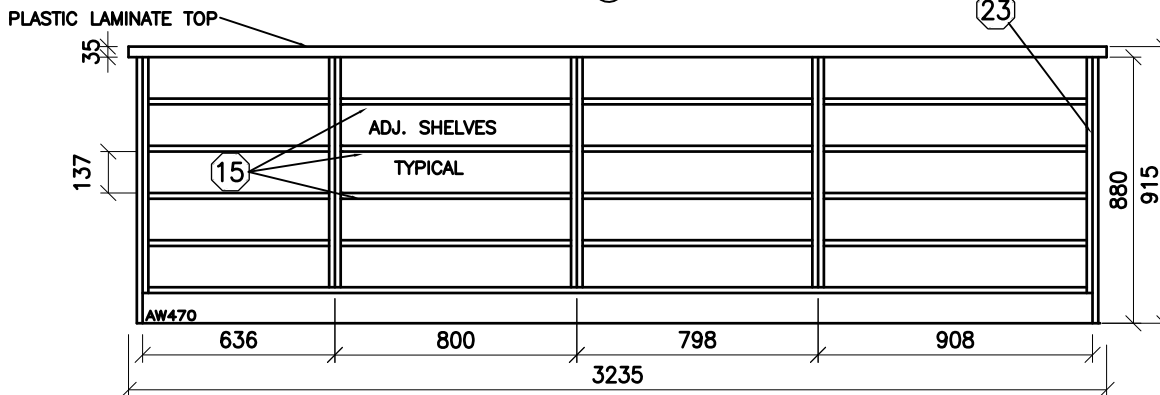
WORK ROOM COUNTER - TYPE 4 - PLAN

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Drawn By NST
Check By SKA
Scale
Date February 2015
Last Plot 6/2/2016 9:05 AM
Job No.
Sheet No.

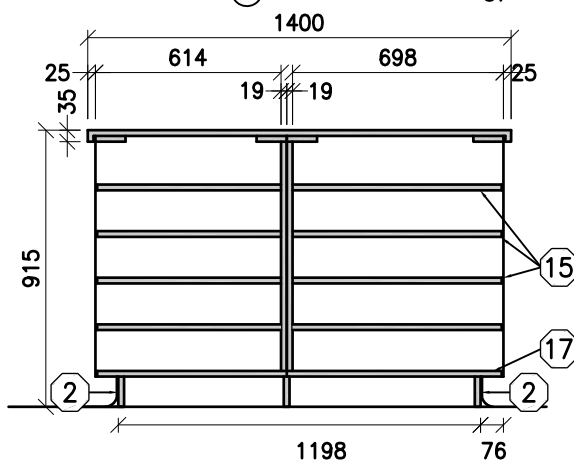
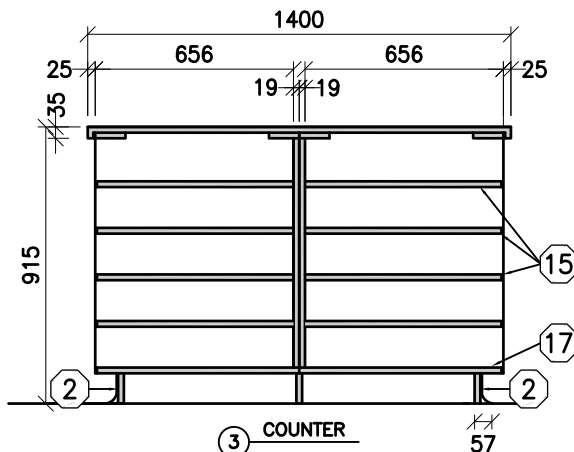
AW469



① COUNTER



② COUNTER



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REFER TO AW002 TO AW020 FOR ADDITIONAL DETAILS.



ARCHITECTURAL WOODWORK STANDARDS

FOR THE WATERLOO REGION DISTRICT SCHOOL BOARD

WORK ROOM COUNTER - TYPE 4 - SECTION

Status

Folder \\DRAFTING\WRDSB MILLWORK

File AW470.DWG

Drawn By NST

Check By SKA

Scale

Date February 2015

Last Plot 6/2/2016 9:05 AM

Job No.

Sheet No.

AW470

25-7729-RFT - Hillside Public School Office and Staff Room Renovation

Opening Date: March 31, 2025 4:30 PM

Closing Date: April 22, 2025 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	25-7729-RFT Hillside Public School Office and Staff Room 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

Bidder Instructions

Answer all questions that are marked Mandatory. Reference information is provided below

Question #1 Reference

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 and 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.

Question #2 Reference

"Ontario Business" definition as per the BOBI Act:

- is a supplier, manufacturer or distribution of any business structure;
- conducts its activities on a permanent basis in Ontario; and
- has either
 - its headquarters or main office in Ontario, or
 - at least 250 full-time employees in Ontario at the time of the applicable procurement process.

Question #4 Reference

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.

NOTE: By responding NO, you acknowledge the deadline requirement above.

Confirm your organization will comply with this Act.
YES or NO. If no, please explain.

Does your company qualify as an Ontario Business
under the BOBI Act? YES or NO

If you answered NO to Question #2 above, is your
company a Canadian business? YES or NO

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

.

Title	Name *	E-mail *	Cell Phone Number *	
Project Manager				*
Site Supervisor				*
Optional – Alternative Site Supervisor				

Documents

It is your responsibility to ensure the uploaded file(s) is/are not defective or corrupted and are able to be opened and viewed by the Owner. If the attached file(s) cannot be opened or viewed, your Bid Submission may be rejected.

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 WRDSB 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.		