Halton District School Board

Request for Tender
RFT 23-078

Elevator Upgrades
White Oaks SS South

Closing Date: April 13, 2023

Closing Time: 2:00 p.m.

Sealed RFTs will be received **via email to arrudama@hdsb.ca**
on or before 2:00 p.m., Eastern Daylight Time

Late or Facsimile Bids will not be considered

Mario Arruda, CPPB
Officer – Purchasing

March 23, 2023

Communications Notice

To obtain documents online please visit: https://hdsb.bidsandtenders.ca

If you subscribe to bids & tenders you can login to your account to download the document(s) without the preview watermark. You may also opt to purchase a one-time download for this opportunity. Documents are not provided in any other manner.

All proponents shall be registered as a Plan Taker for this opportunity, which will enable the proponent to download the Request for Proposal (RFP) without the watermark preview, to receive addenda email notifications, and to download addenda.

Should the HDSB receive a proposal that is subsequently found to be from a bidder that is not registered with bids & tenders and the bidder did not obtain the proposal document from https://hdsb.bidsandtenders.ca the HDSB reserves the right to remove the proposal from further consideration.

To ensure receipt of the latest information and updates via email regarding this opportunity, the onus is on the proponent to register as a Plan Taker for this opportunity at https://hdsb.bidsandtenders.ca.

The following documents form part of all HDSB competitive proposal documents:

HDSB Procurement Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/Procurement.pdf

HDSB Asbestos Management in Facilities Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/AsbestosManagementInFacilities.pdf

HDSB Vendor Performance Management Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/VendorPerformanceManagement.pdf

Broader Public Sector Procurement Directive

https://www.doingbusiness.mgs.gov.on.ca/mbs/psb/psb.nsf/Attachments/001-BPS_Procurement_Directive/$FILE/BPS_Procurement_Directive.pdf

Contents

Part A – Outline and Instructions

1. Introduction and Board Profile
2. General Terms of the RFT
3. Bid Security and Bonding Requirements
4. RFT Closing Information
5. Accuracy of Information/Liability for Errors or Omissions
6. Communication after RFT Issuance
7. Addenda
8. Planned Schedule of Events
9. Bidder's Costs
10. Bidding Format
11. Pricing
12. Subcontractors
13. Site Meeting

Part B – Standard Terms and Conditions

14. Scope
15. Definitions
16. Reserved Rights of the Board
17. Litigation with the Board
18. Accessibility for Ontarians with Disabilities (AODA)
19. Ability to Negotiate/Contract Negotiations
20. Agree to Abide by the Established Process
21. Assignment
22. Award
23. Breaking a Tie
24. Change Orders
25. Conflict of Interest
26. Board Confidential Information
27. Criminal Background Checks
28. Debrief
29. Dispute Resolution
30. Environmental Statement
31. Force Majeure
32. Guarantees and Warranties
33. Health & Safety/WHMIS
34. Indemnification and Liability
35. Insurance and Liability
36. Invoicing/Payment/EFT
37. Irrevocability
38. Municipal Freedom of Information and Protection of Privacy Act (MFIPPA)
39. No Guarantee of Work or Exclusivity Contract

40. Non-Performance/Termination of Contract
41. Ownership
42. Permits, Licenses and Approvals
43. Co-operative Purchasing Provisions
44. Proof of WSIB Coverage
45. Right to Withdraw
46. Smoking on Board Property
47. Vehicle Operation on Board Property
48. Bidder Conduct

Form of Tender (2 pages)
Appendix A – Declaration Signature Sheet (1 page)
Appendix B - HDSB List of Pre-Qualified Sub-Contractors (4 pages)
Scope of Work (5 Pages)
Specifications (175 Pages)
Asbestos DSM (49 Pages)
Asbestos Specs (32 Pages)

Part A – Outline and Instructions

1. Introduction and Board Profile

The Halton District School Board is composed of approximately 104 school locations (86 elementary and 18 secondary schools). These locations service approximately 65,000 regular day school students (Junior Kindergarten to Grade 12). The HDSB employs approximately 10,860 employees. Please visit **http://www.hdsb.ca** for additional information.

2. General Terms of the RFT

The Halton District School Board, hereinafter referred to as HDSB, is seeking qualified Contractors to complete an Elevator Upgrades at White Oaks SS South located at 1330 Montclair Dr, Oakville, ON L6H 1Z5, as outlined herein. Specific details of the RFT are to be found in the attached scope of work and drawings.

3. Bid Security and Bonding Requirements

Any bid submission equal to or greater than $500,000 inclusive of tax, must be submitted with a Bid Bond in the value of ten percent (10%) of the Total Cost and a Surety Consent in favour of the Halton District School Board. The Surety Consent shall cover a Performance Bond and a Labour & Materials Payment bond, each in the amount of fifty percent (50%) of the contract price as a guarantee that the Bidder shall execute the contract upon award. The Bid Security so submitted shall be irrevocable and valid for 90 from the closing date set for the submission of tender.

In order to be considered for award of a contract equal to or over $500,000 inclusive of tax, the Bidder shall submit as part of their Submission, a Surety Consent, completed by a Bonding Company. Any others will not be accepted.

Upon receipt of written notice from the Halton District School Board that it has been awarded the Contract, the successful Bidder shall provide, within five (5) working days of such notice, an original Performance Bond and a Labour and Material Payment Bond, each for the amount of fifty per cent (50%) of the total lump sum price, to guarantee the performance of all obligations of the Contract.

4. RFT Closing Information

Bidders must submit their Submission **via email** on or before 2:00 p.m., Eastern Daylight Time on **April 13, 2023** (the "Closing Time") to the following address:

arrudama@hdsb.ca
Attention: Mario Arruda

Submissions will be deemed to be officially received by the time stamp issued by the HDSB's email server. Submissions received after the official closing time will be declared non-compliant and shall not be considered during the selection process.

Electronic submission shall be no larger than 25MB. Proponents are responsible for confirming that their submission has been successfully received.

5. Accuracy of Information/Liability for Errors or Omissions

While the HDSB has used considerable efforts to ensure an accurate representation of information in this document, the information contained in it is supplied solely as a guideline for Bidders. Any data contained in this RFT or provided by way of Addenda are estimates only and are for the sole purpose of indicating to the Bidder the general size of what is being requested hereunder. The information is not guaranteed or warranted to be accurate by the HDSB, nor is it necessarily comprehensive or exhaustive. Nothing in this document is intended to relieve Bidders from forming their own opinions and conclusions with respect to the matters addressed in this RFT. It is the Bidder's responsibility to avail itself of all the necessary information to prepare a Submission in response to this RFT.

6. Communication After RFT Issuance

All Communications regarding any aspect of this RFT must be submitted via Bids and Tenders. Bidders that fail to comply with the requirement to direct all communications to the RFT Authority via Bids and Tenders may be disqualified from this RFT process.

Without limiting the generality of this provision, Bidders shall not communicate with or attempt to communicate with the following as it relates to this RFT:

- any employee or agent of the HDSB, other than the RFT Purchasing contact;
- any member of the HDSB governing body including, without limitation, the director, officers, trustees, superintendents, and any advisors thereto;

Bidders shall promptly examine this RFT and all Appendices, including the Form of Tender, and:

- shall report any errors, omissions or ambiguities; and
- may direct questions or seek additional information on or before the Deadline for Questions to the RFT Purchasing contact.

It is the responsibility of the Bidder to seek clarification, by submitting questions to the RFT Authority via Bids and Tenders, on any matter it considers to be unclear. The HDSB shall not be responsible for any misunderstanding on the part of the Bidder concerning this RFT or its process.

In the event a Bidder has any reason to believe that an error, omission or ambiguity exists, the Bidder must notify the RFT Authority via Bids and Tenders prior to submitting a Proposal.
If appropriate, the RFT Authority will then clarify the matter for the benefit of all Bidders by publication on the same public platform, its website or by notice to Bidders who have requested a copy of this RFT in the same manner as set out in section 6 below.

In answering a Bidder's questions, the HDSB will set out the question, without identifying the Bidder that submitted the question, and the HDSB may in its sole discretion:

- edit the question for clarity;
- answer similar questions from various Bidders only once.

Where an answer results in any change to the RFT, such answer will be formally evidenced through the issue of a separate addendum for this purpose.

7. Addenda

If the HDSB for any reason, determines that it is necessary to provide additional information relating to this RFT, such information will be communicated to all Bidders by addendum in the same manner the RFT was communicated. Each Addendum shall form an integral part of this RFT. This RFT may only be amended in accordance with this section.

All questions related to this Tender must be submitted in writing via bids and tenders prior to 2 p.m. on April 4, 2023. Any addendum will be posted no later than April 6, 2023.

Any amendment or supplement to this RFT made in any other manner will not be binding on the HDSB. All Addenda shall become an integral part of this RFT and shall be incorporated into any content. Each Bidder shall be responsible for verifying before depositing its Proposal that it has received all Addenda that have been issued.

8. Planned Schedule of Events – Project Schedule

Event	**Date**
Release of RFT	March 23, 2023
Mandatory Site Meeting	March 30, 2023
Question Deadline	April 4 , 2023
Issuance of Final Addendum	April 6, 2023
RFT Closing	April 13, 2023
Timeline for Completion of Work	July 4, 2023 – August 25, 2023

9. Bidder's Costs

Bidders shall bear all costs and expenses incurred relating to any aspect of its participation in this RFT process, including all costs and expenses relating to the Bidder's participation in:

- the preparation, presentation and receipt of its Submission;
- the Bidders attendance at any meeting in relation to the RFT process, including any presentation or interview;
- the conduct of any due diligence on its part, including any information-gathering activity;
- the preparation of the Bidder's own questions prior to the Deadline for Questions; and
- any discussion and/or finalization, if any, in respect of the Form of Agreement.

10. Bidding Format

Unless otherwise specified in these RFT documents or the final contract entered into between the HDSB and the successful Bidder, responses shall be for a stipulated sum without escalator clauses or other qualifications (when applicable). Bidders submitting a bid with escalator clauses or other qualifications that are not in accordance with the terms and conditions of this RFT may have their bid rejected.

All information entered on this RFT document must be typewritten or entered in ink. No pencil entries will be accepted.

Erasure(s), overwriting or strike-out(s) must be initialed in ink by the person signing this Submission.

Respondents will use the following format for their submission:

- Form of Tender (complete form must be included with your submission, including bonds and any other information as may be required herein)
- Appendix A - Signed Declaration Sheet (must be included with your submission)
- Bid Security and Bonding Requirements as required

11. Pricing

Please do not add tax to base (unit) price. (when applicable). Early payment discounts may be considered part of the Submission. Credit Card payment acceptance may be considered part of the Submission.

12. Subcontractors

The Electrical Contractor must select a subcontractor from the HDSB pre-qualified list of sub-contractors attached in Appendix B.

The Contractor agrees to preserve and protect the rights of the parties under the contract with respect to work performed under subcontract, and shall:

- enter into contracts or written agreements with their subcontractors to require them to perform their work in accordance with and subject to the terms and conditions of the contract. Further, the Contractor shall be fully responsible to the Owner for acts and omissions of their subcontractors and of any persons directly or indirectly employed by them as for acts and omissions of persons directly employed by them.

- therefore, agree that they will incorporate the terms and conditions of the Contract Documents into all Subcontractor Agreements they enter into with their subcontractors.

The HDSB reserves the right, at its discretion to waive the requirement to utilize the mandatory list of pre-qualified sub-trades at any time during the tendering process based on market conditions.

13. Site Meeting

There will be Mandatory Site Meeting on **Thursday March 30, 2023 at 3:30 p.m. commencing from the main office of White Oaks SS South located at 1330 Montclair Dr, Oakville, ON L6H 1Z5.** Bidders shall follow all Public Health and HDSB Covid-19 protocols while on site.

Part B – Standard Terms and Conditions

14. Scope

Unless otherwise expressly stated these Standard Terms and Conditions form a part of this document and apply in like force to contracts for the purchase of commodities as stated in this document. All Bidders will be bound by the terms and conditions set forth, except as specifically qualified in Special Terms and Conditions issued in connection with this document or any Addenda issued relating to this document.

15. Definitions

As used herein as well as in all RFSQ, RFQ, RFP, RFI, Tender or contract documents issued by the Halton District School Board, the following definitions will apply.

Addenda/Addendum	an addition/change made to this document, subsequent to its printing or publication.
Applicable Law and Applicable Laws	means any common law requirement and all applicable and enforceable statutes, regulations, directives, policies, administrative interpretations, orders, by-laws, rules, guidelines, approvals and other legal requirements of any government and/or regulatory authority in effect from time to time.
Bid/Submission/Proposal	an offer from a Bidder in response to a Proposal/Tender which is subject to acceptance or rejection.
Proponent	a legal entity, being a company, partnership or individual who submits a Bid, Proposal, or Submission in response to a formal request for Bid, Proposal, or Submission.
Board/HDSB	means the Halton District School Board.
Contract	means the agreement, in writing, governing the performance of the Work and/or the purchase and sale of commodities and includes, without limitation, the document (including standard terms and conditions), Bidder Submission and the written document accepting the Bidder Submission (including any notice of acceptance or award).

Document	means the document describing the Goods and/or Services to be purchased and the terms upon which the Goods and/or Services are to be purchased and includes, without limitation, those documents referenced on the index of the document and such Addenda as may be issued by the HDSB.
Goods *or* **Services**	product and/or any and all labour, vehicles or equipment used by a Bidder in fulfilling a Contract.
HST	means Harmonized Sales Tax.
Intellectual Property	means any trademark, copyright, moral right, patent, industrial design, trade name, domain name, trade secret, know how, integrated circuit topography or other intellectual property, industrial property or proprietary right owned by, licensed to, or used by any third person.
Mandatory Requirement	a minimum requirement – where the words “mandatory”, “must”, “required”, “shall” and/or “will” are referenced in this document and such requirement is identified as a Mandatory Requirement. Failure to comply will deem the submission non-compliant and the bid/submission will be disqualified.
Proposal/RFP	a sealed written offer to supply Goods and/or Services of any value, acceptance of which may be subject to negotiation.
Quotation/RFQ	a written offer to supply Goods and/or Services with a value that is less than $100,000.
Response	the package submitted by a Bidder in response to an RFP or RFT.
Specifications	those stated requirements for the Goods and/or Services set out in the document.
Subcontractor	a person, firm or corporation having a direct contract with the contractor to perform a part or parts of the Work, or to supply Goods worked to a special design according to the contract documents, but does not include one who merely supplies Goods not so worked.
Tender/RFT	a sealed written offer to supply Goods and/or Services with a value that is greater than $100,000.

Bidder Submission	means the document as completed by the Bidder for the purpose of offering to sell to the HDSB the services and/or goods specified in the document, and includes but is not limited to Quotations, Tenders and Proposals.
Work	means the Work to be undertaken by the Bidder pursuant to the provisions of the Contract.

16. Reserved Rights of the HDSB

The HDSB reserves the right to:

(a) make public the names of any or all Bidders;

(b) request written clarification or the submission of supplementary written information in relation to the clarification request from any Bidder and incorporate a Bidder's response to that request for clarification into the Bidder's Submission;

(c) assess a Bidder's Submission on the basis of:

(i) a financial analysis determining the actual cost of the Submission when considering factors including quality, service, price and transition costs arising from the replacement of existing goods, services, practices, methodologies and infrastructure (howsoever originally established);

(ii) information provided by references;

(iii) the Bidder's past performance on previous contracts awarded by the HDSB;

(iv) the information provided by a Bidder pursuant to the HDSB exercising its clarification rights under this RFT process; or

(v) other relevant information that arises during this RFT process;

(d) waive formalities and accept Submissions that substantially comply with the requirements of this RFT;

(e) verify with any Bidder or with a third party any information set out in a Submission;

(f) check references other than those provided by any Bidder;

(g) disqualify any Bidder whose Submission contains misrepresentations or any other inaccurate or misleading information;

(h) disqualify any Bidder or the Submission of any Bidder who has engaged in conduct prohibited by this RFT;

(i) disqualify a Bidder for any conduct, situation or circumstance that constitutes a Conflict of Interest, as solely determined by the HDSB and at any time.

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

(k) select any Bidder other than the Bidder whose bid reflects the lowest cost to the HDSB;

(l) review all Bidders utilizing the HDSB Vendor Performance Management Administrative Procedure, which can include suspension of Bidders who fail the meet the HDSB's expectations or who are involved in litigation or threatened litigation against HDSB. The HDSB Vendor Performance Management Administrative Procedure is found at the attached link

(www.hdsb.ca/our-board/Policy/VendorPerformanceManagement.pdf)

(m) award to one or more bidders according to their requirements;

(n) cancel this RFT process at any time and for any or no reason;

(o) cancel this RFT process at any stage and issue a new RFT for the same or similar deliverables;

(p) accept any Submission in whole or in part; or

(q) award to multiple bidders if circumstances are warranted;

(r) reject any or all Submissions;

(s) to limit the number of pre-qualified Bidders eligible to submit proposals for any future projects. HDSB shall not be obligated to provide all pre-qualified Bidders with the same opportunity to bid on all future projects within each stated category. By participating in this RFT, Bidders acknowledge that there is no guarantee that a Bidder will receive any assignments, work or projects and that there is no expectation that any specified number of projects will be made available during the pre-qualification term;

and these reserved rights are in addition to any other express rights or any other rights that may be implied in the circumstances.

In addition, the HDSB reserves the right at any time during normal business hours, and as often as the HDSB may deem necessary, to examine, the successful Bidder's

records with respect to the successful Bidder's services under the Bidder's purchase order and/or Submission and any Contract. The successful Bidder shall permit the HDSB to audit, examine, and make copies, excerpts or transcripts from such records, and to make audits of data relating to matters covered by a Submission, any purchase order and/or any Contract. The successful Bidder shall maintain and retain all records and other documents related to a Submission, any purchase order, and/or any Contract for a period of seven (7) years from the date of final payment, except in cases where unresolved audit questions require a longer period of time for resolution, as determined by the HDSB.

17. Litigation with the HDSB

The HDSB may, in its absolute discretion, reject a Submission submitted by a Bidder **prior to or after a Submission opening, if the Bidder:**

(a) is or has in the past 10 years been a party to litigation with the HDSB; or

(b) directly or indirectly, including by common ownership or control or otherwise, is related to a party currently in litigation with the HDSB or a party that has in the past 10 years been in litigation with the HDSB; or

(c) intends to use a subcontractor in respect of a specific project who is, or has in the past 10 years been a party to litigation with the HDSB, or who is related to a party currently in litigation with the HDSB or a party that has in the past 10 years been in litigation with the HDSB.

For the purposes hereof, the phrase "litigation with the HDSB" includes cases in which the Bidder or prospective Bidder or any of the parties named above, has advised the HDSB in writing of their intention to commence litigation, or have commenced or have advised the HDSB of their intention to commence an arbitral proceeding against the HDSB (excepting only construction lien demands, notices or proceedings or arbitrations under O. Reg 444/98 of the Education Act).

In determining whether or not to exercise its discretion as set out herein, the HDSB will consider whether the litigation (past or current) is likely to affect a Bidder's ability to work with the HDSB, its consultants and representatives, and whether the HDSB's experience with the Bidder, the related party or subcontractor, as the case may be, in the matter giving rise to the litigation, indicates that the HDSB is likely to incur increased staff and legal costs in the administration of the Contract if it is awarded to the Bidder.

18. Accessibility for Ontarians with Disabilities (AODA)

The HDSB is committed to accessibility and preventing and removing barriers for persons with disabilities. Where practicable, the HDSB will incorporate accessibility features and criteria when procuring or acquiring goods, services and facilities, in which case, a Bidder must be capable of recommending and delivering same in an inclusive

and accessible manner, consistent with the Ontario Human Rights Code ("OHRC"), the Ontarians with Disabilities Act, 2005 ("AODA") and its Regulations, in order to achieve accessibility for Ontarians with disabilities. If the HDSB determines that it is impractical to do so an explanation will be provided upon request.

In accordance with Ontario Regulation 429-07 made under the AODA, the HDSB has established policies, practices and procedures governing the provisions of its services to persons with disabilities, which may be found at:

https://www.hdsb.ca/our-board/Pages/Accessibility.aspx

19. Ability to Negotiate/Contract Negotiations

The HDSB reserves the right to enter into negotiations with any Bidder as it sees fit, or with another Bidder concurrently. The HDSB will not incur liability to any Bidder as a result of these negotiations.

The HDSB may, prior to and after Contract award, negotiate changes to the specifications, the type of materials or any conditions with the successful or preferred Bidder or one or more of the Bidders without having any duty or obligation to advise any other Bidder or to allow them to vary their bid prices as a result of such changes, and the HDSB shall have no liability to any other Bidder as a result of such negotiations or modifications.

20. Agree to Abide by the Established Process

It is vital to the HDSB that the process leading to the recommendation of a bidder(s) and the conclusion of an agreement for the provision of these services be, and be seen to be, open and fair and that each of the respondents is treated equally.

No respondent can be seen to be deriving, intentionally or otherwise, an advantage or information, which is not equally available to all other respondents. Nor is it acceptable that any advantage or information be sought or obtained from any unauthorized staff or representative of the HDSB, or any benefit derived from any special or personal relationships or contacts.

All communications, including requests for information, between respondents to this RFT and the HDSB should be between only the representative(s) of the HDSB who has been authorized and designated for that particular purpose. Bidders must not rely on information from any other source.

21. Assignment

Unless otherwise stated in this document, it is mutually agreed and understood that the successful Bidder will not assign, transfer, convey, sublet or otherwise dispose of the Contract (in whole or in part) or the right, title or interest therein, or the Bidder's power to

execute such contract to any other person, firm, company or corporation without the previous written consent of the HDSB. Any act in derogation of the foregoing shall be null and void. For the purposes hereof, the transfer or issuance of shares by a Bidder of more than fifty (50%) percent of the voting securities of a Bidder to any third party other than to an affiliate (as such term is defined in the Business Corporations Act (Ontario)) or the shareholder or shareholders of the Bidder as of the Closing Date, whether or not such transfer or issuance of voting securities takes place in one or more transactions, shall, for the purposes of this Agreement, be deemed to be an assignment of the Contract requiring the consent of the HDSB, unless such transfer or issuance of shares is made pursuant to an initial public offering of common shares under the Securities Act (Ontario).

22. Award

The final award will be based on (but not limited to) the best value for money and quality service delivery from a Bidder who complies with the provisions of this Submission solicitation, including specifications, contractual terms and conditions, who can reasonably be expected to provide satisfactory performance on the proposed Contract based on reputation, references, performance on previous contracts, and sufficiency of financial and other resources, and provides a solution that is a fit with the HDSB's requirements. The lowest price or bid shall not be the sole, determinative factor.

23. Breaking a Tie

In the event of a tie score, the HDSB will resolve same based on the earlier date/time stamp of when the bid was received by HDSB in accordance with this RFT.

24. Change Orders

A change order results when unforeseen conditions are identified from the original scope of work (Contract or Purchase Order) and is inextricably tied to the original scope.

The following steps should occur prior to issuance of a change order that does not originate from HDSB senior management:

- appropriate HDSB approval must be acquired prior to modifying any Contract or Purchase Order
- appropriate written HDSB approval must be obtained prior to commencing the work.

All requests or recommendations for Change Orders shall include the impact to both price and schedule for the work to be performed. HDSB shall have the right to retain consultants or experts to help identify the need or to verify the impact of the change order on the project.

No change in the work shall proceed without the written approval of the Owner. Any change shall be initiated by Owners "WORK ORDERS" which shall bear the change cost and the Contractor's and Owner's representative's signatures as an instruction to proceed. All changes shall be restricted to five percent (5%) overhead and five percent (5%) profit applied to the labour and material cost.

25. Conflict of Interest

For the purposes hereof, “Conflict of Interest” includes:

(a) in relation to the Submission process, the Bidder has an unfair advantage or engaged in conduct, directly or indirectly, that may give the Bidder an unfair advantage, including:

(i) having or having access to information in the preparation of the Submission that is confidential to the HDSB and not available to other Bidders;

(ii) communicating with any person with a view to influencing preferred treatment in the Submission process; or

(iii) engaging in conduct that compromises or could be seen to compromise the integrity of the open and competitive process and render that process non-competitive and unfair; or

(b) in relation to the performance of the Work, services or contractual obligations, the Bidder’s other commitments, relationships or financial interests:

(i) could or could be perceived to exercise an improper influence over the objective, unbiased and impartial exercise of the Bidder’s independent judgments; or

(ii) could or could be perceived to compromise or impair or be incompatible with the effective performance of the Bidder’s work, services or contractual obligations.

The Bidder shall:

(a) avoid any Conflict of Interest in the Submission process and in the performance of its contractual obligations;

(b) disclose to the HDSB without delay any actual or potential Conflict of Interest that arises during the Submission process or during the performance of its contractual obligations; and

(c) comply with any requirements prescribed by the HDSB to resolve any Conflict of Interest.

In addition to all other contractual rights or rights available at law or in equity, the HDSB may immediately disqualify a Submission or terminate the Contract upon giving notice to the Bidder where:

i. the Bidder fails to disclose an actual or potential Conflict of Interest;

ii. the Bidder fails to comply with any requirements prescribed by the HDSB to resolve a Conflict of Interest; or

iii. the Bidder's Conflict of Interest cannot be resolved.

This paragraph shall survive any termination or expiry of the Contract.

26. HDSB Confidential Information

For the purposes hereof, "HDSB Confidential Information" means all information of the HDSB that is of a confidential nature, including all confidential information in the custody or control of the HDSB, regardless of whether it is identified as confidential or not, and whether recorded or not, and however fixed, stored, expressed or embodied, which comes into the knowledge, possession or control of the Bidder in connection with the Contract. For greater certainty, HDSB Confidential Information shall:

(a) include:

(i) all new information derived at any time from any such information whether created by the HDSB, the Bidder or any third party;

(ii) all information (including Personal Information) that the HDSB is obliged or has the discretion not to disclose under provincial or federal legislation or otherwise at law; but

(b) not include information that:

(i) is or becomes generally available to the public without fault or breach on the part of the Bidder of any duty of confidentiality owed by the Bidder to the HDSB or to any third party;

(ii) the Bidder can demonstrate to have been rightfully obtained by Bidder without any obligation of confidence, from a third party who had the right to transfer or disclose it to the Bidder free of any obligation of confidence;

(iii) the Bidder can demonstrate to have been rightfully known to or in the possession of the Bidder at the time of disclosure, free of any obligation of confidence when disclosed; or

(iv) is independently developed by the Bidder;

but the exclusions in this subparagraph shall in no way limit the meaning of Personal Information or the obligations attaching thereto under the Contract or at law.

During and following the term of the Contract, the Bidder shall:

(a) keep all HDSB Confidential Information confidential and secure;

(b) limit the disclosure of HDSB Confidential Information to only those of its directors, officer, employees, agents, partners, affiliates, volunteers or subcontractors who have a need to know it for the purpose of carrying out its obligations under the Contract and who have been specifically authorized to have such disclosure;

(c) not directly or indirectly disclose, destroy, exploit or use any HDSB Confidential Information (except for the purpose of carrying out its obligations under the Contract or except if required by order of a court or tribunal), without first obtaining:

(i) the written consent of the HDSB; and

(ii) in respect of any HDSB Confidential Information about any third party, the written consent of such third party;

(d) provide HDSB Confidential Information to the HDSB on demand; and

(e) return all HDSB Confidential Information to the HDSB before the end of the Term, with no copy or portion kept by the Bidder.

27. Criminal Background Checks

The Bidder acknowledges that the HDSB must be in compliance with Regulation 521/01 of the Education Act (Ontario) - Collection of Personal Information with respect to criminal background checks and offence declarations. The Bidder covenants and agrees to assist the HDSB in complying with same by providing the HDSB, or such other entity as the HDSB may designate, with a criminal background check covering offences under the Criminal Code, the Narcotics Control Act, and any other offences which would be revealed by a search of the automated Criminal Records Retrieval System maintained by the RCMP or, in instances where the Bidder will have access to or is responsible for minors or vulnerable persons, a Vulnerable Persons Clearance certificate in addition to the above (“Criminal Background Check”), together with an Offence Declaration in HDSB approved form, for every individual or employee of the

Bidder who may come into direct contact with students on a regular basis at a school site of the HDSB, or who may have access to student information.

For the purposes of this document, the HDSB shall determine in its sole and unfettered discretion whether an individual or employee of the Bidder may come into direct contact with students on a regular basis or may have access to student information. The Bidder agrees to indemnify and save harmless the HDSB from all claims, liabilities, expenses, and penalties to which it may be subjected on account of the Bidder's failure to provide a Criminal Background Check and an Offence Declaration, as aforesaid. This indemnity shall survive the expiration or sooner termination of the Contract. In addition, and notwithstanding anything else herein contained, if the Bidder fails to provide a Criminal Background Check and an Offence Declaration for an individual or employee of the Bidder who may come into direct contact with students on a regular basis at a school site of the HDSB or who may have access to student information, then the HDSB shall have the right to forthwith terminate the Contract without prejudice to any other rights which it may have in the Contract, in law or in equity.

28. Debrief

The HDSB, at the written request of a Bidder will conduct a debriefing. Bidders must submit their request within sixty (60) days of Contract award notification. The HDSB will only identify any weaknesses or strengths in the Bidder's submission. No information regarding other Bidders' submissions will be disclosed. The intent of the debriefing information session is to assist a Bidder in presenting a better Submission in subsequent procurement opportunities. Any debriefing provided is not for the purpose of providing any opportunity to challenge the procurement process.

29. Dispute Resolution

In the event that a Bidder wishes to review the decision of the HDSB in respect of any material aspect of the RFT process, and subject to having attended a debriefing, the Bidder shall submit a protest in writing to the RFT Authority within ten (10) days from such a debriefing.

Any request that is not received in a timely manner will not be considered, and the Bidder will be notified in writing.

A protest in writing shall include the following:

(a) a specific identification of the provision and/or procurement procedure that is alleged to have been breached;

(b) a specific description of each act alleged to have breached the procurement process;

(c) a precise statement of the relevant facts;

(d) an identification of the issues to be resolved; and

(e) the Bidder's requested remedy.

For the purpose of a protest, the HDSB will review and address any protest in a timely and appropriate manner. HDSB's decision in this regard is final.

30. Environmental Statement

The HDSB, when practically and financially feasible, will consider the acquisition of goods and services that will reduce the environmental footprint of the HDSB.

31. Force Majeure

Delays in or failure of performance by either party under the Contract shall not constitute default thereunder or give rise to any claim for damages if caused by occurrences beyond the control of the party affected, including but not limited to, decrees of Governments, acts of God, fires, floods, riots, wars, rebellion, sabotage, and atomic or nuclear incidents. Lack of finances, strikes, lockouts or other concerted acts by workers shall not be deemed to be a cause beyond a party's control.

In the event that performance of the Contract in the reasonable opinion of either party is made impossible by an occurrence beyond the control of the party affected, then either party shall notify the other in writing. The HDSB shall either terminate the Contract forthwith and without any further payments being made, or authorize the Bidder to continue the performance of the Contract with such adjustments as may be required by the occurrence in question and agreed upon by both parties. In the event that the parties cannot agree upon the aforementioned adjustment, it is agreed by the parties that the Contract shall be terminated.

32. Guarantees and Warranties

All Work shall be done in a good and workmanship like manner. All materials, goods and services must meet the applicable specifications, either by the HDSB, its consultant on the project or the manufacturer. The Bidder warrants and guarantees that all materials, Goods; Services and workmanship will be free from defects and fit for the purpose intended by the HDSB. All Goods delivered by the Bidder must be new, in good working order and of the latest model possessing all accessories standard to the manufacturer's stock model. The Goods and/or Services must be covered by written guarantees and warranties acceptable to the HDSB.

33. Health & Safety / WHMIS

Bidders and/or contractors must comply with the Occupational Health and Safety Act and its regulations. All Bidder's contractors and subcontractors and their respective employees will have received health and safety training appropriate to their trade, and will be able to provide proof thereof to the HDSB upon request. Contractors shall be

held responsible for any subcontractors where such are permissible by the HDSB. The HDSB may request and suppliers/contractors/subcontractors will provide evidence of such training at any time.

Suppliers/contractors/sub-contractors shall comply with the HDSB policies, programs and procedures at all times while on site. All suppliers/contractors/sub-contractors are required to sign in upon arrival/exit at a HDSB location prior to beginning and at completion of Work.

Suppliers and/or contractors/sub-contractors shall be held responsible for all fines and/or contraventions of legislation which have been incurred by the HDSB.

As per Ontario regulation 278/05 section 10 (5) the HDSB will provide contractors/sub-contractors performing work in HDSB buildings access to the site-specific asbestos inventory. Site specific asbestos inventories are available at each HDSB site. Contractors/sub-contractors shall review the site-specific asbestos inventory in relation to the scope of work they are undertaking, prior to the commencement of work. The requirements of the HDSB's Asbestos Management Administrative Procedure are to be adhered to at all times. A copy of the HDSB's Asbestos Management Administrative Procedure can be found at:

http://www.hdsb.ca/our-board/Policy/AsbestosManagementInFacilities.pdf.

All Work is subject to prior approval by the appropriate HDSB department.

Contractors shall examine carefully the HDSB's Asbestos Register for the Work site, in addition to examining existing conditions for suspected Asbestos Containing Materials (ACM), on which completion of Work is dependent.

Upon discovery of unforeseen suspected ACM affecting completion of the Work, the Contractor shall cease any operations that may disturb said materials and notify the Owner immediately.

The Contractor shall arrange for removal of ACM affecting completion of Work through a HDSB-approved ACM abatement contractor, and arrange for coordination of testing through HDSB Facility Services, if required.

Contractors shall be responsible for any sub-contractors in their employ with respect to the aforementioned requirements.

34. Indemnification and Liability

The Bidder hereby agrees to indemnify and hold harmless the HDSB, its directors, officers, trustees, employees and agents from and against all liability, loss, costs, damages and expenses (including legal, expert and consultant fees), causes of actions, actions, claims, demands, lawsuits or other proceedings, by whomever made, sustained, incurred, brought or prosecuted if:

(a) resulting from the Bidder's failure to observe and conform to the standards established by law or by any other association which has established standards recognized by the Province of Ontario;

(b) relating to labour and equipment furnished for the Work; and

(c) involving inventions, copyrights, trademarks or patents, and rights thereto, used in doing the Work and in the subsequent use and operation of the Work or any part thereof upon completion.

35. Insurance and Liability

The successful bidder must indemnify the HDSB from any and all manner of damage or injury, risk, claims, demands, actions, penalties, causes of action, damages and any and all costs arising out of, or incurred by reason of provision of goods and/or services by the bidder. The cost of such insurance will be the responsibility of the Bidder.

The successful bidder(s) will obtain and provide current proof of insurance upon the award, that the successful Bidder will be covered by:

at least Two Million Canadian Dollars (C$2,000,000.00) of comprehensive commercial general liability insurance for bodily injury, property damage, operations liability, contractual liability and tenant's legal liability, including umbrella liability insurance covering liability arising from premises, operations, independent contractors, products-completed operations, personal injury and liability assumed under the Contract;

at least One Million Canadian Dollars (C$1,000,000.00) of business automobile liability insurance and, if necessary, umbrella liability insurance for owned, hired and non-owned vehicles covering bodily injury and property damage: and with an insurer licensed to carry on business in the Province of Ontario.

In the case of multi-year contracts, a copy of a valid certificate must be provided to the Halton District School HDSB annually thereafter, at least thirty (30) days prior to the anniversary date of the contract commencement date. At commencement of the Contract and throughout the Contract duration, certification shall be submitted on a Certificate of Insurance form with the above-mentioned coverage, thereby protecting the Halton District School Board against claims for property damage and bodily injuries, including accidental death, caused by the successful Bidder(s) or its employees and/or Subcontractors during the performance of its obligations under the Contract.

The Halton District School Board must be named as additional insured, and the policy must contain a cross liability clause, and thirty (30) day prior notice clause of any cancellation, non-renewal or product change in coverage, terms or conditions.

As a condition precedent to contract award, Certificates of all such insurance policies shall be filed with the HDSB by the successful Bidder and shall be subject to the HDSB's approval as to the adequacy of protection.

All the above-mentioned insurance shall be maintained until the HDSB certifies that the work is complete.

36. Invoicing/Payment/EFT

To ensure that payment is not deferred, the following information shall be on all invoices:

- Bidder's Name or Business Number, Address, Telephone Number and HST registration number
- Invoice Date
- Invoice Number
- Purchase Order Number, Name of Requester, Shipment Destination
- Name of Halton District School Board staff that issued this order
- Complete Good/Service Description (including hourly rates, service/delivery dates, service location)
- Attach Copy of Service Report/Work Order Completed
- Terms of payment
- Total of HST where applicable
- Total Amount Payable

The HDSB's method of payment is by Electronic Funds Transfer (EFT). If the Bidder is a new vendor or current vendor who has not previously utilized the EFT payment service or has banking information which has changed, then an "Application of Vendor Direct Deposit" form is required to be completed, which is available through the Purchasing contact for this document. This form along with a voided cheque or letter from the Bidder's bank should be sent to:

Halton District School Board
Attention: Accounts Payable Department
J.W. Singleton Centre,
PO Box 5005 Stn LCD 1,
Burlington ON L7R 3Z2 or

electronically to: apeft@hdsb.ca before any invoices are submitted to the HDSB for payment. Payment terms are Net 28. Early payment discounts may be considered.

37. Irrevocability

The Submission will be open for acceptance by the HDSB and irrevocable by the Bidder for a period of ninety (90) calendar days from the Closing Date.

38. Municipal Freedom of Information and Protection of Privacy Act ("MFIPPA")

(a) The Bidder acknowledges and agrees that the HDSB is subject to MFIPPA. The Bidder further expressly acknowledges and agrees that, upon the acceptance of a successful Submission and conclusion of this process (including execution and delivery of the Contract between the HDSB and the successful Bidder), subject to subsection (b) below, the Submission shall not be considered confidential for the purposes of Section 10 of MFIPPA and, in the event of an access request or at the discretion of HDSB, shall be subject to release in its entirety without redaction.

(b) Notwithstanding paragraph (a) above, the Bidder and the HDSB acknowledge and agree that the information listed below is considered to be supplied by the Bidder to the HDSB in confidence:

1. For Services: Hourly rates/fees and information from which such rates/fees could be reasonably deduced.

2. For Goods: Unit costs and information from which such unit costs could be reasonably deduced.

(c) Notwithstanding the foregoing, the Bidder acknowledges and agrees that, because the HDSB is subject to MFIPPA, all or part of any Submission, including information supplied in confidence, may be subject to release in response to an access request submitted pursuant to MFIPPA. In the event that the HDSB receives a request for access to all or part of a Submission supplied in confidence, the HDSB shall deliver the relevant notice to the Bidder, who shall bare all costs, legal or otherwise, with respect to any objection the Bidder may have in respect of the release of any or all parts of the Submission pursuant to MFIPPA.

39. No Guarantee of Work or Exclusivity of Contract

The HDSB makes no guarantee of the value or quality of goods or services or volume of work to be assigned to the successful Bidder. Any Contract executed with a successful Bidder may not be an exclusive Contract for the provision of the requested Goods or Services. Quantity where specified more or less, are estimates of previous consumption and are furnished without liability to the HDSB.

40. Non-Performance/Termination of Contract

If the Bidder delivers substandard, unapproved or defective items, which are rejected by the HDSB, the Bidder agrees to replace these items at the Bidder's expense with items of a quality deemed acceptable to the HDSB within a 48-hour period of the mutual satisfactory agreement being reached. If the Bidder fails to replace the items within this

48-hour period, the parties agree that the HDSB may purchase substitutes for the rejected items in the open market at no additional cost or liability to the HDSB.

Where at any time the quality of the Goods or Service supplied by the successful Bidder is not of a satisfactory standard, the HDSB may issue a verbal warning outlining the deficiency in supply or other aspects of performance and requiring the successful Bidder to correct those deficiencies within such period of time as stated. If the deficiency is not corrected within the time specified, or having been corrected, there is a further instance of deficient performance, the HDSB may issue a written notice to the successful Bidder, identifying the deficiency in performance and setting a final date or time period for its correction, and advising that if corrective steps are not taken by that date or within that time, the HDSB may terminate the Contract and take corrective action itself.

Until the HDSB is satisfied that the unsatisfactory performance has been corrected, the HDSB may hold back from any payment an amount sufficient to rectify the unsatisfactory performance until its requirements have been met.

The HDSB reserves the right, in its absolute discretion, to terminate a Contract immediately without penalty, costs or damages of any kind whatsoever, where the Bidder has violated any laws or performed any of the following acts while performing work with the HDSB and further reserves the right to take that failure into account with respect to the award of any future contract.

a) over-billing or duplicate billing;

b) splitting of invoices;

c) charging for items not supplied;

d) charging for items not approved prior to invoicing;

e) charging for items of one grade, while supplying items of an inferior grade;

f) Misrepresentation as to the quality or origin of goods, their functionality or suitability for a purpose, or their performance characteristics;

g) not responding to the HDSB or, failure to complete contract.

41. Ownership

The Submission, along with all correspondence, documentation and information provided to the HDSB by any Bidder in connection with or arising out of the Submission, once received by the HDSB, shall become the property of the HDSB and may be appended to any Contract and/or purchase order with the successful Bidder.

42. Permits, Licenses and Approvals

Bidders shall obtain all permits, licences and approvals required in connection with the supply of the Goods and/or Services. The costs of obtaining such permits, licences and approvals shall be the responsibility of, and shall be paid for by the Bidder.

Where a Bidder is required by any Applicable Law to hold or obtain any such licence, permit, or approval to carry on an activity contemplated in its Submission or in the Contract, neither the acceptance of the Submission nor the execution of the Contract by the HDSB shall be considered an approval by the HDSB for the Bidder to carry on such activity without the requite licence, permit, consent or authorization.
Without in any way limiting the generality of the foregoing, any electrical Goods being proposed for consideration pursuant to this RFT must be authorized or approved in accordance with the Electrical Safety Code or by a certification organization accredited with the Standards Council of Canada Act (Canada), and shall bear the certification organization's mark identifying the Goods certified for use in Canada. Certification shall be to the standard that is appropriate for the intended use of the electrical Goods at any of the HDSB's schools or facilities.

43. Co-operative Purchasing Provisions

This document is being issued by the HDSB to meet the HDSB's requirements. The successful Bidder acknowledges that the Provincial Government encourages cooperative procurement initiatives by School HDSBs. Bidders shall indicate on the Form of Quotation if they are willing to extend pricing and submission terms to other District School Boards in the province of Ontario where the scope of work is deemed similar or the same and where both parties are in agreement, in which case they shall be deemed to have granted consent to the HDSB to share the Submission with such HDSBs, subject to such HDSBs agreeing to receive the Submission in confidence on the understanding that the Submission contains financial, commercial, technical and other sensitive information of the Bidder. The Bidder will not be penalized if it does not agree to this provision. The HDSB will not incur any financial responsibility in connection with any purchase by another School Board. Each School Board shall accept sole responsibility for its own contract management such as placing orders and making payments to the successful Bidder.

44. Proof of WSIB Coverage

If the Bidder is subject to the Workplace Safety and Insurance Act ("WSIA") or the Workplace Safety and Insurance Amendment Act, 2008 ("WSIAA"), the Bidder shall submit a valid clearance certificate of Workplace Safety and Insurance Board ("WSIB") coverage to the HDSB before commencing the performance of any work or services. In addition, the Bidder shall, from time to time during the term of the Contract and at the request of the HDSB, provide additional WSIB clearance certificates. The Bidder covenants and agrees to pay when due, and to ensure that each of its subcontractors pays when due, all amounts required to be paid by it or its subcontractors, from time to

time during the term of the Contract, under the WSIA and/or the WSIAA, failing which the HDSB shall have the right, in addition to and not in substitution for any other right it may have pursuant to the Contract or otherwise at law or in equity, to pay to the WSIB any amount due pursuant to the WSIA or the WSIAA unpaid by the Bidder or its subcontractors and to deduct such amount from any amount due and owing from time to time to the Bidder pursuant to the Contract together with all costs incurred by the HDSB in connection therewith.

45. Right to Withdraw

Submissions may be withdrawn prior to the Closing Time. Following Closing, no Submission may be withdrawn. Any Bidder who attempts to do so may have a negative Performance Evaluation placed on record with the HDSB in accordance with the Vendor Performance Management Administrative Procedure

(www.hdsb.ca/our-board/Policy/VendorPerformanceManagement.pdf)

46. Smoking on HDSB Property

Smoking of any substance and in any manner is prohibited in all HDSB buildings and on all HDSB property. This includes, without limitation, tobacco, cannabis in any form and vaping.

47. Vehicle Operation on HDSB Property

The successful Bidder shall use due care and caution when motorized vehicles are in operation on school property while students are expected to enter or exit the school building and/or are visible outside the school building on school property or adjacent property, particularly during recess, lunch period and preceding and following the end of the school day. Vehicles operated in parking lot and driveway areas shall not be driven at a speed in excess of 8-kilometers/per hour.

Further, on school property drivers must turn off vehicles and remove the keys during any stop. At no time are vehicles to be left running while unattended. It is recommended that the vehicle be locked when left unsupervised. The HDSB will not be responsible for any theft of, or any theft from, vehicles operated by the successful Bidder.

Asphalt play areas around the exterior of the school building are not constructed to handle heavy vehicles. Bidders will be held responsible for any damage to HDSB property including but not limited to asphalt or natural surfaces as a result of using them for access of heavy vehicles. Making good of natural surfaces or asphalt areas that are damaged in the course of the work shall be to the original (new) condition irrespective of their condition prior to commencement of the work, or the condition of the adjacent unaffected areas. Vehicles are only permitted to access, stand or be parked in areas designated by administrative staff of HDSB, which for the purposes of this provision does not include principals of schools.

48. Bidder Conduct

When on HDSB property, the Bidder and its employees must:

- have proper identification (name badge, uniform with logo, photo I.D. etc.).
- be dressed appropriately (the following are not appropriate: clothing that fails to contain the anatomy when the person is carrying out normal duties; clothing with printed slogans, advertising or designs that are obscene or could have a double meaning).
- use appropriate language.
- refrain from wearing scented products or fragrances such as perfume, cologne, after shave, shampoos (as required).
- work with dignity, courtesy and respect for self and others.
- not make noise or move in corridors during morning announcements, and playing of the national anthem.
- observe procedures during fire evacuation and lockdowns, whether they are actual or test (drills).
- park in spots designated by the Principal.

The Bidder must observe all HDSB policies and procedures including but not limited to: Smoke-Free Environment; Sexual, Racial and Ethno Cultural Harassment, etc.

The Bidder will ensure that the education program is not interrupted and that the health and safety of the students and staff is not compromised.

No person who is impaired by alcohol or drugs will enter and/or remain on HDSB property.

The Bidder agrees that its employees and subcontractors will observe and comply with all standards, procedures, policies, rules and regulations of the HDSB, including but not limited to privacy, use of facilities, equipment, building security and computer technology.

Halton District School Board

FORM OF TENDER

Project: Elevator Upgrades – White Oaks SS South
Project Reference #: RFT 23-078

From (Bidder):_____
Company Name

Street Address

City, Province and postal code

Phone Number Email Address

To (Owner): Halton District School Board
2050 Guelph Line
Burlington, Ontario L7P 5A8

We, the undersigned, having examined the Tender Documents for the above-named Project, including Addenda, hereby offer to perform the Work in accordance with the Tender Documents, for the Stipulated Price of:

Base Bid Amounts:

A - Base Bid Amount	$
B – Cash Allowance – Permits & Testing outside scope	$ 10,000
C – Contingency 15% (A+B) X 15%	$
Sub-Total A+B+C (Exclusive of Taxes)	$

Sub-Contractors

Electrical _____

Mechanical _____

Roofing _____

Asbestos _____

We, the undersigned, declare that:

a. We agree to perform the Work within the required completion time specified in the Tender Documents,
b. We have arrived at the Tender without collusion with any competitor,
c. This Tender is open to acceptance by the Owner for a period of 90 days from the date of Tender Closing,
d. All Form of Tender supplements called for by the Tender Documents from an integral part of this Tender.

Signature: _____ _____
LEGAL NAME OF BIDDER DATE

_____ _____ _____
AUTHORIZED SIGNATURE OF BIDDER & TITLE PRINTED NAME
I have the authority to bind the Bidder

Halton District School Board

APPENDIX A - DECLARATION SIGNATURE SHEET

1. I/WE DECLARE that this Submission is made without collusion, knowledge, and comparison of figures or arrangement with any other company, firm or person submitting a Submission for the same work.

2. I/WE DECLARE that to our knowledge no member of Halton District School Board is, will be or has become financially interested, directly or indirectly, in any aspect of the Contract other than in the appropriate discharge of his/her obligations as an employee/officer of Halton District School Board.

3. I/WE HAVE READ, Understood and agree to abide by the Agreement to Abide by the Established Process.

4. I/WE HAVE CAREFULLY examined the RFT documents, and have a clear and comprehensive knowledge of what is being requested hereunder. By submitting the Submission, the Bidder agrees and consents to the administrative procedures of the Board, as well as the procedures, terms, conditions and provisions of the RFT, including the Form of Tender.

5. I/WE have carefully examined all of the Proposal Documents, and that we have thoroughly reviewed all proposal documentation and addenda number _____to_____, and hereby accept and agree to same as forming part and parcel of the proposed Contract.

6. I/WE ARE AUTHORIZED BY and have the authority to bind the Bidder.

DATE:_____

NAME:_____
Please Print

SIGNATURE:_____

TITLE:_____

COMPANY NAME:_____

ADDRESS:_____

PHONE NUMBER: _____

E-MAIL ADDRESS:_____

E-MAIL to Send PO: _____

APPENDIX B – HDSB LIST OF PRE-QUALIFIED SUB-CONTRACTORS

Asbestos

Vendor Name	Contact Name	Email Address	Telephone Number
A&O Contracting Inc.	Nikhil Thilakan	anthony@aandocontracting.com	905 828 6868
All Clear Environmental	Sidnei Casimiro	sidnei@allclearenvironmental.ca susan@allclearenvironmental.ca	(519) 577-0013
Alliance Environmental & Abatement Contractors Inc.	Robert Lewis	info@allianceenvironmental.com	416-298-4500
Caliber Environmental Construction Services Inc.	James Ball	jball@caliberenv.com mball@caliberenv.com	905 884 5500
Environmental Response Team	David Bremner	info@erthazmat.com	416-255-6745
FPR Environmental	Nelson Multari	info@asbestosmouldexperts.com nelson.multari@asbestosmouldexperts.com	1-855-868-8222
Furcon Environmental Inc.	Sherry-Lynn Proulx	sherry@furconenviro.com	905-569-8311
Healthy Environmental & Insualation	Henry Kwasniak	henry@healthyenvironmental.ca	289-837-0444
Highpoint Environmental Services Inc.	Wei Xu	info@highpointenv.ca	416-279-0363
I&I Construction Services Limited	Jason Ward	jward@iandi.ca	905-884-1290
McGowan Insulations Ltd.	Robert McGowan	info@mcgowan.on.ca dfoley@mcgowan.on.ca	905 549 1844
QM Environmental	Mark Reinhardt	mark.reinhardt@QMenv.com	800.251.7773
Schouten Environmental	Brant Nicolson	Brant@schouten.ca	226.678.4715
Zero Environmental	Joel Van Es	info@zeroenvironmental.com	519-772-5500

Electrical

Vendor Name	Contact Name	Email Address	Telephone Number
Arc Electrical	Brian Leiper	office@arcelectrical.ca	905-816-0234
Atlas Electric Corp.	Emre Ates	atlaselectricgta@gmail.com	289-386-3601
B-Safe Electric	Dan More	dan@b-safe.ca brian@b-safe.ca	905-872-7233
Best Electric	Gurmukh Sehmbi	gsehmbi@bestelectric.ca	416-677-3851
Black & McDonald Limited	Brian Mino	swatson@blackandmcdonald.com	905-560-3100
Brant Electric Limited	John Phelps	johnphelps@brantelectriclimited.ca info@brantelectriclimited.ca	905-634-5577
Cahill Electr Inc.	Chris Cahill	chris@cahillelectric.ca	905-388-0515
CEC Services Ltd.	Kyle Feinstein	estimating@beswickgroup.com	905-716-3711
Ellisdon Facilities Services Inc.	Don Frederickson	donfred@currenttechnologies.ca	416-240-7691
Dorval Electric Inc.	Pat Folino	dorvalelectric@bellnet.ca	905-845-4341
EEL Line Corporation	Majeed Wraich	majeed@eelline.ca	416-540-8894
Electrobauer Systems Limited	Michael Bauer	michaelbauer@rogers.com	416-389-6804
Elite Electrical Solutions	Amar Taneja	estimate@eliteelectrical.ca	905-789-5511
Gremar Electric Ltd.	Gennaro Di Gregorio	gennaro@gremar.ca	905-652-2641
Halton Electric	Paul Woods	office@haltonelectri.com	905-335-2104
Indcon Inc.	Nitesh Patel	indcon74@gmail.com	416-677-3303
JD Electrical Services	Dave De Ciantis Matthew De Ciantis	dave@jdelectric.com	416-803-7689 416-896-6393
LJ Barton Mechanical Inc.	Mike Van den Heuvel	estimating@ljbarton.com	905-304-1976
Kraun Electric Inc.	Kevin Krause	estimating@kraun.ca	905-684-6895
Nadelec Contracting Inc.	John Nadalin	john.nadelec@gmail.com	905-875-5239
North Star Electric	Greg Harris	gharris@northstarelectric.ca	905-845-9063
Ozz Electric	Dave Burlo	estimating@ozzelectric.com	416-637-7237
PRL - Guite Electric Ltd.	Kyle Leaker	estimating@prlguite.ca	905-549-6711
R.A. Hillmer Electric Corp.	Robert Hillmer	rahillmerelectric@outlook.com	289-736-1000
Smith & Long	Vince Ambrico	vambrico@smithandlong.com	416-391-0443
Star Electrical Services Inc.	Harvinder Kahlon	info@starelectrical.ca	905-799-3883

Mechanical

Vendor Name	Contact Name	Email Address	Telephone Number
Ainsworth Inc.	Michael Karmazyn	Kari.Cordeau@ainsworth.com	416-751-4420
Anvi Services Ltd.	Amit Bamba	amit@anviservices.com	905-660-6595
BAS Mechanical Inc.	Riaz Ahmad	estimator@basmechanical.ca	905-669-1126
Black & McDonald Limited	Jordan Anderson	swatson@blackandmcdonald.com	289-919-1166
Black Creek Mechanical Ltd.	Nelson Pedreira	estimating@blackcreekmechanical.ca	416-604-7558
Brenner Mechanical Inc.	Michael Brenner	mbrenner@brenner.ca	519-746-0439
Canadian Air Tech Systems Inc.	Joan Blakeley	mail@ctas.ca	416-291-1296
Canem Systems Ltd.	Scott Carnegie	scarnegie@canem.com	226-566-9652
CEC Mechanical Ltd.	Devin Brown	dbrown@beswickgroup.com	905-266-1500
Chamberlain Building Systems Inc.	Alex Skaljac	a.skaljac@chbs.ca	905-329-8936
CJ's Express Plumbing & Electrical Ltd.	Nelson Oliveira	noliveira@cjsexpress.ca	519-621-3111
Glenn Richardson Plumbing & Heating Ltd.	Kyle Richardson	kyle@glennrichardsonplumbing.com	905-335-2945
Kirk Mechanical Limited	Robert Kirk	kirkmech@bellnet.ca	905-681-0140
LJ Barton Mechanical Inc.	Bruce Hunter	estimating@ljbarton.com	905-304-1976
Mattina Mechanical Limited	Domenic Mattina	dmattina@mattina.ca	905-544-6380
Mechfield Canada Inc.	Kaleem Ahmad Bhatti	salman@mechfield.com	289-597-7555
Mekcon Ltd.	Inaam Cheema	info@mekcon.ca	905-918-1899
Modern Niagara Southwestern Ontario Inc.	Rachel McGowan	rmcgowan@modernniagara.com rfqswo@modernniagara.com	289-768-1951
SFB Plumbgin and Heating Inc.	Stan Bliszczuk	stan@sfbplumbing.com	289-527-1499
SE Canada Inc. o/a Service Experts Commerical HVAC	Saadia Ashraf	saadia.ashraf@serviceexperts.com	905-453-6700
Superior Boiler Works & Welding Ltd.	Domenic Settimi	info@sbww.com	(905) 643-6628
VCI Controls Inc.	Jeff Morneau	jmorneau@vcicontrols.ca	905-850-4464
Velocity Mechanical Inc.	Peter Linseman	quotes@velocitymechanical.com	519-896-1119

Roofing

CONTRACT NAME	CONTACT	EMAIL	PHONE
Atlantic Roofers Ontario Ltd.	Tony Pocobene	tpocobene@on.aibn.com	905-573-6202
Atlas-Apex Roofing	John McDowell	inquiries@atlas-apex.com	416 421 6244
Bothwell Accurate	Lenny Baptista	LBaptista@bothwell-accurate.com	905-673-0615
Crawford Roofing Corporation	Nelson Rites	nelson.rites@crawfordroofing.ca	416.787.0649
Dean-Chandler Roofin Limited	Ken Goodale	kengoodale@deanchandler.ca	416.751.7840
ED Roofing Limited	Kyle MacLean	k.maclean@edroofing.com	905-2733190
Eileen Roofing Inc.	Dianne Cabral	dianne@eileenroofing.com	416-762-1819
Flynn Canada Ltd.	Joseph Raposo	Joseph.Raposo@flynncompanies.com	905-643-9515
GRRC Roofing	George Roque	george@grrc.ca	905-393-7989
King Koating Roofing Inc.	Kevin Lawrie	sales@kingkoating.com	905-669-1771
Maxim Roofing	Josh Macedo	estimating@maximroofing.ca jmacedo@maximroofing.ca	416-452-5218
Nedlaw Roofing	Adam Duke	adam@nedlawroofing.com	519-648-2218
Nortex Roofing Ltd.	Sandra Furtado	sandra@notexroofing.com	416-236-6090
Semple Gooder Roofin Corporation	Mark Baxter	rcapretta@semplegooder.com	416-743-5370
Solar Roofing & Sheet Metal Ltd.	Sonia Gaio-Francisco	sonia@solarroofing.ca solarroofing@bellnet.ca	(416) 658 6045
T.Hamilton & Sons Roofing Inc.	Irina Valodzina	ivalodzina@thrtoronto.com	416-755-5522
Top-Line Roofing & Sheet Metal	Jason Bras	jason.bras@top-lineroofing.com a.kumar@top-lineroofing.com	905.602.0760
Trio Roofing Systems Inc.	Paulo Vieira	paulo@trioroofing.ca	905.456.1688
Triumph Roofing	Marco Peneda	info@triumphinc.ca	416-534-8877

Scope of Work

GENERAL

The Scope of Work is to be completed in accordance with the drawings and specification detailed herein.

1. The Scope of work detailed herein shall commence no later than July 4th, 2023. All works associated with the shaft, roofing, corridor finishes, or works determined by the Authority Having Jurisdiction, must be completed no later than August 25th, 2023.

2. Equipment and goods including all equipment shall be ordered within 5 business days of Shop Drawing Approvals. Shop Drawings shall be requested from suppliers within 10 days calendar days from Award of Contract.

3. The General Contractor shall be responsible to burden any and all advanced costs associated with the elevator through to and including delivery.

4. All work, **MUST** be completed outside of school operating hours. Work can be completed during daytime hours on PA Days, Summer Break, Holidays, or March Break.

1. GENERAL PROVISIONS

1.1 CASH AND CONTINGENCY ALLOWANCES

1. Include with your bid, a cash allowance in the sum of $5,000 CAD, exclusive of HST, for the following testing, balancing, commissioning, survey's requested by the Owner or Consultant which are outside of the scope of work detailed herein etc.
2. Include with your bid, a contingency allowance in the sum of 15% of the Total Base Bid including the Cash Allowance noted above in CAD, exclusive of HST due to unforeseen circumstances that may have to be undertaken during the execution of this Contract.
3. The value of a change shall be determined in one or more of the following methods as directed by the Consultant or Owner:
    a. by estimate and acceptance of a lump sum;
    b. by negotiated unit prices which include the Contractor's Overhead and profit, or;
    c. by the actual cost to the Owner, such costs to be the actual cost after all credits included in the change have been deducted, plus the following mark-up on such costs per details contained herein.
4. The adjustment in the Contract Price shall include an adjustment, if any, for delay or for the impact that the change in the Work has on the Work of the Contractor, and once such adjustment is made, the Contractor shall be precluded from making any further claims for delay or impact with respect to the change in the Work
5. The Owner reserves the right to call, or to have the Contractor call, for competitive bids for portions of the Work, which are to be paid for from cash allowances.

1.2 WORK INCLUDED

1. Provide complete, fully tested, balanced, and operational mechanical and electrical systems to meet requirements described herein, in complete accordance with applicable Codes and ordinances.
2. "Provide" shall mean "Supply and Install" products and services specified.
3. Provide materials, equipment and plant, of specified performance and quality, with current models with published, certified ratings for which replacement parts are readily available.
4. Provide project management and on-site supervision to undertake administration, meet schedules, ensure performances, coordination, and establish orderly completion and delivery of fully commissioned installation.

5. Contractor shall act as General Constructor of record for the site, for all projects by other trades on the same site.
6. The Contractor, appointed to perform the work detailed herein, is wholly responsible for ensuring the health and safety as a result of the work, for all individuals on-site during work activities, and taking all necessary actions and precautions to protect the community and property outside of work activities.
7. Contractors must have a safety program and ensure they are hiring competent workers and sub-contractors that follow all applicable health and safety legislation and standards, are trained and qualified in the work they perform, are instructed in the safety procedures to be followed, and are working safely.
8. Follow manufacturer's recommendations for installation, safety, access for inspection, maintenance and repairs. Provide access and Install equipment to permit maintenance and disassembly with minimum disturbance.
9. Work shall be in accordance with the Drawings and Specifications and their intent, complete with necessary components, including those not shown or specified, but required for complete installation which meets all obligatory requirements.
10. Connect mechanical services to equipment furnished by Owner or other trades, including start-up and test.

1.3 ADDITIONAL WORK AND/OR SCOPE TO BE UNDERTAKEN UPON OWNER REQUEST

1. The Board reserves the right to negotiate additional services of a similar functional or technological nature from the successful Proponent without further competitive procurements.

1.4 SEQUENCE OF WORK

1. Before interrupting major services, notify Owner and arrange acceptable schedule for interruptions.
2. Before interrupting services, complete preparatory work as far as possible and have materials on site and prefabricated (where practical) and work continuously to keep length of interruption to minimum.
3. Include for cost of work that may be required out of regular hours, to minimize period of service interruption when connecting into existing systems.

1.5 BUILDING OPERATION DURING CONSTRUCTION

1. In order to minimize operation difficulties for building staff, trades must cooperate with Owner and Owner's Representatives throughout construction period and particularly ensure that noise is minimized.
2. Convenient access for staff and students to building must be maintained. Minor inconveniences and interruption of services will be tolerated, provided advance notice is given, but Contractor shall to coordinate his Work, in consultation with Owner's Representatives, so operation of facility can be maintained as nearly normal as possible.

1.6 PERFORMANCE

1. Upon completion of each site and/or project a review of performance, based on the requirements detailed herein will be completed by the Board's project lead.
2. A Performance Review considered poor will be reviewed with the contractor. Areas which require improvement will be documented and a mutually agreed upon procedure for improvement will be detailed and applied to subsequent projects.
3. Subsequent Reviews deemed poor may result in the Contractor no longer approved to complete work on the Board's sites.
4. The project will be evaluated as a whole, the Contractor is responsible for all of his employees, sub-trades and, sub-contractors.

1.7 PRE-QUALIFIED SUBCONTRACTORS

1. At the discretion of the Owner, subcontracted forces shall be pre-qualified by, and in good standing with, the HDSB, and identified on the HDSB's Vendor of Record (VOR).

Subcontractors and trades retained to provide Work or services not specifically identified by the HDSB, shall be at the discretion of the prime contractor.

2. A list of pre-qualified contractors in the disciplines identified, and required to complete the Scope of Work, will be provided by the Owner.
3. All roofing shall be undertaken exclusively by pre-qualified roofing contractors identified by the HDSB, and in accordance with the most current edition of the “Halton District School Board Mechanical Upgrade Handbook for Roofing Contractors”.

1.8 ACCESS TO SITE

1. There will be no interior access to the site during the Tender period.
2. For the purposes of this Contract, “Regular Hours” are considered to be between 8:00 A.M. and 4:00 P.M., Monday to Friday.
3. Schedule must be coordinated with the Contractor, School Administration Staff, and the appropriate Area Field Supervisor and/or Head Caretaker.
4. The Contractor shall include in the total stipulated tender price, all costs for overtime work which may be necessary to complete the various portions of Work, in accordance with the completion dates specified on the Form of Tender. Any additional payments requested in connection with overtime work that have not been authorized by the Owner or Owners Representative in writing, will be rejected.
5. In all cases, Contractors working on school board premises are required to inform either the Caretaker and/or the main office, of their presence on site, and sign-in on the appropriate log book.

1.9 RESPONSIBILITIES

1. Responsibility for provision of equipment or materials rests solely with the Contractor. Extras shall not be considered based on difference in interpretation of Specifications as to which trade provides certain equipment or materials.
2. Each Bidder is required to attend at the school during the Tender Period to review the site and to familiarize with the scope of Work and logistical matters of the Work. Please note review of the school shall be with Board escort and may be done at each Bidders' convenience. It remains the responsibility of each Bidder to satisfy themselves of existing visual conditions of the project. Any questions regarding the Work and clarification as required regarding the videos or photographs as provided are to be submitted during the Tender Period in accordance with the details contained herein. No consideration will be granted for any misunderstanding of Work to be done resulting from failure of the Contractor or the Contractor’s Agents to review information or request information and/or clarification.
3. Ensure equipment does not transmit noise and/or vibration to other parts of building, as a result of poor installation practice.
4. Where Contract Documents do not contain sufficient information for proper selection of equipment for bidding, notify Owner during tendering period.
5. Conflicts or additional Work not covered by Drawings and Specifications shall be brought to attention of the HDSB before start of Work.
6. On completion of Work, tools and surplus waste materials shall be removed and work left in clean and operating correctly.
7. Advise HDSB of specified equipment, material or installation, which violates laws, ordinances or regulations.
8. Contractor shall be responsible to remove any access materials and debris from the site. School waste bins shall not be used. Environmental disposal (recycling) shall be the responsibility of the contractor. Do not use existing school dumpsters.

1.10 COORDINATION AND SUPERVISION

1. Coordinate Work with trades and make changes to facilitate satisfactory installation.
2. Install distribution systems and equipment close to building structure and parallel to building lines, avoiding interference with other services or free space.

3. Work out interference problems on site with other trades and coordinate work before fabricating, or installing any material or equipment. Where necessary, produce interference drawings. Ensure materials and equipment fit into allotted spaces and equipment can be properly serviced and replaced. Extras for improper coordination and removal of equipment to permit remedial work shall not be considered.
4. The Contractor shall provide following services:
    1. Coordinate all supply, installation, delivery, removal, electrical, controls, builder's work, and all additional services, as described in the Contract Documents.
    2. Follow up on material and equipment deliveries, review shop drawings and produce interference drawings.
    3. Ensure sub-trades are installing Work properly.
    4. Resolve and direct responsibility for warranty.
5. Supply and locate refuse bins in areas approved by the Owner or Owner's Representative. Bins shall not interfere with playground areas, parking, fire access or vehicle circulation.

1.11 CODES AND STANDARDS

1. In this document, all references to Codes shall mean "Latest Edition"

1.12 PERMITS AND INSPECTIONS

1. Obtain required permits and pay fees and comply with Provincial, Municipal and other legal regulations and bylaws applicable to work.
2. **The contractor identified as the prime Electrical Contractor must have an Electrical Contractor's / ESA License in good standing, and shall be the Electrical Permit (Application for Inspection) Holder.**
3. **The contractor identified as the prime Contractor must have a valid TSSA Elevating Devices Mechanic Certificate in good standing and shall be the Contractor of record responsible to ensure appliances installed under the scope of work detailed herein, are done so in accordance with the respective codes and regulations.**
4. Arrange for all required inspections of Work by Authorities Having Jurisdiction. On completion of Work, furnish final unconditional certificates of approval by inspecting Authorities.
5. This contractor shall make application, arrange, and pay for inspection of all piping and equipment systems, including, but not limited to refrigeration, fuel piping, heating and cooling plant, and associated equipment installed under this Contract. Provide a copy of the report(s) and certificates in the Operation & Maintenance manuals for each system inspected.
6. The Contractor shall notify the Chief Building Official or the registered code agency where applicable, of the readiness, substantial completion and completion of the stages of construction set out in the Ontario Building Code 2012 O.Reg. 332/12 Division C Article 1.3.5.1.(2) and 1.3.5.2 as amended. The Contractor shall be present at each site inspection by an inspector or registered code agency as applicable under Sentence 1.3.5.3 of the Building Code and shall provide to the Consultant any documents provided by the inspector, and a written report on matters discussed and reviewed during the inspection(s).

1.13 WORKMANSHIP

1. Tradesmen engaged in installation of Work covered herein shall be qualified in accordance with the Ontario College of Trades and Apprenticeship Act, 2009.
2. Workmanship shall be in accordance with the respective Regulations, Code(s), local, provincial or federal authorities, and, established practice and standards accepted and recognized by Owner, Owner's Representative and Contractor.

1.14 INSPECTION OF WORK

1. Owner, or Owner's Representative, shall be permitted to inspect Work prior to being concealed upon request.
2. Prior to any concealment, Authorities Having Jurisdiction shall approve Work.

1.15 SUBSTANTIAL COMPLETION REQUIREMENTS

1. Contractor shall provide checklist for completion before Substantial Completion Field Review. Provide written declaration that work is complete. The following items shall be complete before Substantial Completion Field Review:
    1. Mechanical and Electrical systems capable of operation with Building Automation System, in operation with alarms functional.
    2. Tests on systems and equipment completed and certificates of approval obtained from regulating Authorities.
    3. Fire stopping completed, if required.
    4. Valve tagging completed and equipment, ductwork and piping identified.
    5. Escutcheons installed.
    6. Equipment lubricated in accordance with manufacturer's data.
    7. Extended warranty form mailed to manufacturer and copy provided to Owner.
    8. Systems chemically cleaned and flushed, strainers cleaned and water treatment initiated.
    9. Equipment drains installed.
    10. Manufacturer's report on acceptability of treatment obtained.
    11. Submit Operating and Maintenance Manuals.
    12. Submit Record Drawings.
    13. Ensure access doors suitable located and equipment accessible.
    14. Ensure electrical connections to mechanical equipment are complete and motor rotation correct.
    15. All testing, balancing, chemical treatments, and start-up reports.

SPECIFICATIONS

SECTION NUMBER		# PAGES
	HALTON DISTRICT SCHOOL BOARD - Front End Documents	
	DIVISION 1 – GENERAL REQUIREMENTS	
00010	List of Contract Documents	1-2
01005	General Instructions	1-8
01200	Meeting and Progress Records	1-2
01340	Shop Drawings, Product Data & Samples	1-2
01545	Safety Requirements	1-3
01570	Health & Environmental Specifications	1-4
01575	Environmental Protection	1-1
01710	Cleaning	1-2
01720	Project Record Documents	1-5
01730	Operations and Maintenance Data	1-1
01740	Warranties	1-1
	DIVISION 2 – SITE WORK	
02050	Demolition	1-3
	DIVISION 4 – MASONRY	
04200	Masonry	1-9
	DIVISION 5 – MISCELLANEOUS METALS	
05500	Miscellaneous Metal Fabrications	1-5
	DIVISION 6 – WOOD AND PLASTICS	
06100	Rough Carpentry	1-3
06110	Rough Carpentry for Roofing	1-5
06400	Architectural Woodwork	1-3
	DIVISION 7 - THERMAL & MOISTURE PROTECTION	
07100	Waterproofing	1-2
07270	Firestopping and Smoke Seals	1-4
07520	Built Up Roofing	1-18
07521	SBS Modified Bituminous Membrane Roofing	1-19
07620	Sheet Metal Flashing and Trim	1-5
07900	Sealants	1-3
07901	Joint Sealers for Roofing	1-4
	DIVISION 8 – DOORS	
08100	Commercial Steel Doors and Frames	1-14
	DIVISION 9 - FINISHES	
09000	Finishes and Colour Notes	1-2
09330	Floor Porcelain Tiles	1-3
09510	Acoustic Unit Ceiling	1-2
09660	Resilient Tile Flooring and Rubber Base	1-3

09900	Painting	1-4
	DIVISION 10 - SPECIALTIES	
10001	Manufactured Specialties	1-1
	DIVISION 14 – CONVEYING SYSTEMS	
14240	Hydraulic Passenger Elevator	1-8

DRAWINGS

NO.	**DESCRIPTION**
	ARCHITECTURAL DRAWINGS
A0.00	Cover Sheet & OBC Matrix
A1.00	Demolition Floor Plans
A1.01	Demolition Reflected Ceiling Plans
A2.00	Floor Plans
A2.01	Reflected Ceiling and Floor / Wall Finish Floor Plans
A3.00	Wall Sections
A3.01	Wall Sections and Details
	STRUCTURAL DRAWINGS
S1.00	General Notes
S1.01	General Notes and Typical Details
S2.00	Floor Framing Plans
S3.00	Sections
	MECHANICAL DRAWINGS
M0.01	Mechanical Specifications
M0.02	Mechanical Schedules, Keyplan, Legends, and Drawings List
M0.03	Mechanical Site References
M1.01	Mechanical Demolition Plan
M2.01	Mechanical New Plan
	ELECTRICAL DRAWINGS
E0.1	Specifications and Drawing List Sheet 1 of 2
E0.2	Specifications Sheet 2 of 2
E0.3	Legends, Abbreviations and Schedules
E0.4	Device Schedules and Details
E0.5	Reference Photos - Demo
E1.1	Electrical Demo Plans
E2.1	Electrical New Plans
E3.1	Fire Alarm Riser Diagram - New

End of Section

1. Definitions

1. The following Section of this Specification are of the abbreviated type and include incomplete sentences. Definite and indefinite articles have often been omitted and sentences are written in the form of direct instructions to the Contractor without using the phrase `the Contractor shall.' Standard specifications and other quality references inserted govern materials and workmanship without using phrases `conform with,' `conformity therewith,' etc. Omitted words and phrases to be supplied in the same manner as they are when a note appears on the Drawings.

2. The Specifications are separated into Sections for reference convenience only. Such separation must in no instance make Owner or his Consultants arbiter to establish subcontract limits between Contractor and Subcontractor.

3. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on Drawings and/or in Specifications, including all labour, materials, equipment, tools, services, and incidentals necessary and required to complete the work. Responsibility for breakdown into and extension of subcontracts, including co-ordination of same, rests entirely with the Contractor.

4. Standard Specifications referred to are editions in force at Tender Closing Date.

2. Terminology

1. Consultants are the team of Architects, Engineers and other experts commissioned by the Owner, directly or indirectly, to execute design, contract documents and supervision for the project, including any of their agents or employees.

2. Prime Consultant is the Architect.

3. Contractor is the Firm or Corporation who, having signed the Agreement, has the sole legal responsibility to carry out the work shown or described in the Contract Documents for the Owner, whether contractually assigned to a Subcontractor or supplier, or not.

3. Minimum Standards

1. Unless otherwise specified, work and material to conform or exceed the minimum standards set out in the editions of the Canadian Government Specification Board, Canadian Standards Associations, the Ontario Building Code, Underwriters' Laboratories of Canada, the Canadian Electrical Code, the Local Building Code in force, whichever is applicable.

2. Copies of Standard Specifications referred to in this Specification to be kept on the site.

3. The use of the name (or its abbreviation) of any of the following bodies, accompanied by the reference number of a specification of that body to mean that the entire specification of the body to apply as noted:

AISC: American Institute of Steel Construction;
ASTM: American Society for Testing Materials;
CEC: Canadian Electric Code;
CGSB: Canadian Government Specification Board;
CISC: Canadian Institute of Steel Construction;
CRCA: Canadian Roofing Contractors' Association;
CSA: Canadian Standards Association;
OBC: Ontario Building Code;
ULC: Underwriters' Laboratories of Canada;
CLA: Canadian Lumbermen's Association.

4. Cooperation

1. Each trade to cooperate with the trades of adjacent or affected work. Supply in good time requirements effecting adjacent and underlying work in writing and items to be set or built in. Similarly, heed requirements and build-in items provided by other trades.

2. Take necessary precautions to protect work of other trades from contamination, marring or other damage due to application or installation processes, methods and activities.

3. General Contractor and each trade to cooperate with Contractors which may be assigned or selected by the Owner to perform work under Cash Allowances. Owner reserves the right to assign nonunionized labour to perform work under Cash Allowances, at Owners discretion.

5. Coordination

1. Coordinate the work of all trades in such a manner that each trade co-operates with the trade of adjacent work.

2. Organize weekly job site meetings and send out notices stating time and place to Consultants, subcontractors, Suppliers and all others whose presence is required at the meetings.

3. Take note of all persons attending these meetings and submit to Consultants and Owner, Minutes of these Meetings showing any major decisions made and instructions or information required.

4. Coordinate the Work in this Contract with the work of others awarded work under Cash Allowances.

6. Building Dimensions and Co-ordination

1. Ensure that all necessary job dimensions are taken and all trades are coordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for coordination.

2. Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by

requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.

3. Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions, with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades co-operate for the proper performance of the Work.

4. Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.

5. All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.

6. Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.

7. Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.

8. Prepare interference drawings to properly co-ordinate the work where necessitated. Refer to Section 01340.

7. Use of Premises Before Substantial Performance

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings and equipment, or for other use, before completion of the Contract if, in the opinion of the Consultant, such entry and occupancy does not prevent or interfere with the Contractor in the performance of the Contract. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.

8. Layout of Work

1. Layout work with respect to the work of all trades. Arrange mechanical and electrical work such as piping, ducts, conduits, panels, equipment and the like to suit the architectural and structural details.

2. Alterations necessary due to conflict and interference between trades, to be executed at no cost to the Owner unless notification is given in writing before Tender Closing Date.

9. By-Laws and Regulations

1. Nothing contained in the Drawings and Specifications are to be so construed as to be knowingly in conflict with any law, by-law or regulation of municipal, provincial or other authorities having jurisdiction.

2. Perform work in conformity with such laws, by-laws and regulations and make any necessary changes or deviations from the Drawings and Specifications subsequently required as directed and at no cost to the Owner unless notification is given in writing before Tender Closing Date.

3. Furnish inspection certificates and/or permits as may be applicable as evidence, that installed work conforms with laws, by-laws, and regulations of authorities having jurisdiction.

10. Protection

1. Take necessary precautions and provide and install required coverings to protect material, work and finishes from contamination, damage, the elements, water and frost.

2. Make good any damage or replace damaged materials, as directed. Repairs to be made by the trade having originally installed or fabricated the damaged material, finish or item. Protect electrical equipment from water and the elements.

3. Protect adjacent private and public property from damage and contamination.

4. Protect curbs and sidewalks from damage from trucking by means of boards and the like. Repair, or pay or repair of damage to existing roads and sidewalks.

5. Mark glass after glazing in an acceptable manner, and leave in place until final clean-up.

6. Protect floor finishes from construction traffic and transport of construction materials and equipment by means of 6 mm plywood panels.

11. Delivery, Handling and Storage of Materials

1. Schedule material delivery so as to keep storage at site to the absolute minimum, but without causing delays due to late delivery.

2. Store materials which will be damaged by weather in suitable dry accommodation. Provide heat, as required, to maintain temperatures recommended by material manufacturer.

3. Store highly combustible or volatile materials separately from other materials, and under no circumstances, within the building. Protect against open flame and other fire hazards. Limit volume of supply on the site to minimum required for one day's operations.

4. Handle and store material so as to prevent damage to material, structure and finishes. Avoid undue loading stresses in materials or overloading of floors.

5. Do not store material and equipment detrimental to finished surfaces within areas of the building where finishing has commenced or has been completed. All material storage within the building is subject to relocation, as directed.

6. Deliver package material in original, and Storage of unopened and undamaged containers with manufacturer's labels and seals intact.

12. Debris

1. Assign clean-up duties to a crew with own Foremen which will be of sufficient size to prevent accumulation of debris and dirt in any part of the structure or on the site.

2. Remove construction debris on a daily basis and legally dispose of same.

3. Under no circumstances, should debris, rubbish or trash be burned or buried on the site.

13. Cutting, Fitting and Patching

1. Required cutting to be done by General Contractor. Patching and painting of work to be executed by the General Contractor.

2. All sub-trades are to notify the General Contractors bidding as to the extent of the cutting, patching, and painting of their respective trades.

3. Drilling, cutting, fitting and patching necessary due to failure to deliver items to be built-in time, or installation in wrong location to be executed, as directed, at no cost to the Owner.

4. Give written notification prior to commencement of drilling and cutting of load bearing structural members and finished surfaces.

5. Cut holes with smooth, true, clean edges, after they are approved by applicable trade. Size holes and openings for hot water and steam pipes, so as to allow for expansion and contraction of such pipes.

14. Fastenings

1. Supply all fastenings, anchors and accessories required for fabrication and erection or work.

2. Metal fastenings to be of the same material as the metal component they are anchoring, or of a metal which will not set up an electrolysis action which would cause damage to the fastening or metal component under moist conditions.

3. Exposed metal fastenings and accessories to be of the same texture, color, and finish as base metal on which they occur. Keep to a minimum; evenly space and lay out.

4. Fastenings to be permanent, of such a type and size and installed in such a manner to provide positive anchorage of the unit to be secured. Wood plugs are not acceptable. Install anchors at required spacing to provide required load bearing or shear capacity.

5. Power actuated fastenings not to be used without prior written approval for specific use.

15. Surplus Materials

1. Surplus materials specifically so specified, to remain property of the Owner and be neatly stockpiled or stored, as directed.

2. All other surplus materials to become property of the Contractor; to be removed from the site and legally disposed of.

16. Documents Required and General Duties

1. **At Commencement of Contract**

   .1 Supply Public Liability and Property Damage Insurance Certificates.
   .2 Supply Certificates of good standing from Workers' Compensation Board for the General Contractor and all Subcontractors.
   .3 Supply Contract Sum Breakdown of all sub-trades or parts of work and general expense items.
   .4 Supply Construction Schedule.
   .5 Supply Schedule of Shop Drawing Submissions.
   .6 The Owner has paid for the cost of the Building Permit. Mechanical Subcontractor will pay the cost of other Fees related to the Work Specified under Division 15. Electrical Subcontractor will pay the cost of all permits and fees related to the Work Specified under Division 16.
   .7 The General Contractor is to pay all other fees and refundable deposits if applicable.

2. **During Construction**

   .1 Adjust Allowances, as required.
   .2 Organize Job Meetings.
   .3 Supply Monthly Progress Reports and Construction Schedule.
   .4 Confirm that payments are being made to subcontractors and suppliers by submission of receipts with the second and subsequent Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

3. **Upon Completion**

   .1 Upon completion of work before the Final Certificate of Payment is issued, the following to be observed, executed and submitted:
      .1 All deficiencies to have been completed in a satisfactory manner.
      .2 All final clean-up to have been executed.
      .3 Finishing Hardware, Inspection and Verification.
      .4 Organize a Final Inspection tour at which to be present:
         - the Owner's authorized representative;
         - the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any;
         - the Contractor and his superintendent.

.5 Where the above procedure is impossible or where any deficiencies remain outstanding, the Owner's representative and the Consultant concerned, to inspect and accept the affected work and/or material upon notification by the Contractor, that all deficiencies involving this Consultant have been made good.
.6 A complete release of all liens arising out of this Contract, other than his own. If a subcontractor or supplier refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such a lien.
.7 Certificates of good standing from the Workers' Compensation board, for the General Contractor and all Subcontractors.
.8 Certificate of Inspection from Mechanical and Electrical Engineers.
.9 Copies of all Lists of Deficiencies with each Deficiency verified when complete by only this project's job Superintendent. The Final List of Deficiencies to be signed, completed by all concerned, if accepted.
.10 Statement of Completion from General Contractor.
.11 Final adjustment of all Allowances.
.12 H.E.P.C. Inspection Certificate and all other Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.
.13 Balancing Reports.
.14 As-Built Drawings - Hardcopy mark ups and digital pdf.
.15 Two hard copies of Operation and Maintenance Manuals. A digital copy (pdf file) of all closeout documents to be provided on a CD or USB memory stick format.

17. Progress Reports

1. Submit to the Architect, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims.

2. Keep permanent written daily records on the site on the progress of work. Record to be open to inspection at reasonable times and copies to be furnished upon request. Records to show notes of commencement and completion of different trades and parts of work; daily high and low temperatures and other weather particulars; number of men engaged on the site (including sub-trades) broken down in groups for each type of construction work, and particulars about excavation and shoring; erection and removal of form work; pouring and curing of concrete; floor finishing; placing and compaction of backfill, masonry work; roofing;

3. Daily progress to give particulars on commencement and completion of each trade or part of work; form work erections and removal; concrete pouring and curing; floor finishing; masonry work; roofing; waterproofing; finishing trades, tests and inspection and the like.

19. Inspection and Testing

1. The Owner will retain the services of Inspection and Testing Companies. The cost of inspection and testing will be deducted from the Inspection and Testing Allowance noted on the Tender Form.

2. Where tests or inspections reveal work not in accordance with Contract requirements, the Contractor shall pay costs for additional tests or inspections as the Architect may require to verify acceptability of corrected work.

3. The Inspection and Testing by the Owner's Testing Company does not relieve the Contractor of his responsibility to provide his own quality control in order to meet or exceed the requirements of specified standards, codes, design criteria and referenced documents.

End of Section

1. Project Meetings for Coordination

1. In consultation with the Consultant during the second week of construction, arrange for site meetings weekly or every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled.

2. Responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obliged to attend.

3. Inform the Owner, Consultant, and those others whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.

4. Provide physical space for meetings, prepare an agenda, chair and record the minutes of each meeting. Relevant information must be made available to all concerned, in order that problems to be discussed may be expeditiously resolved. Identify "action by: _____".

5. Within three days after each meeting, distribute two copies of the minutes to each invited person.

2. Pre-construction Meeting

1. Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

2. Include in the agenda the following:

    .1 Appointment of official representative of participants in the Work.
    .2 Scheduling of Work. Schedule to include a detailed breakdown of mechanical and electrical works.
    .3 Interference with ongoing business.
    .4 Work by other Contractors.
    .5 Schedule of submission of shop drawings and samples.
    .6 Requirements for temporary facilities, site sign, offices, storage sheds, utilities.
    .7 Delivery schedule of specified equipment.
    .8 Site security.
    .9 Contemplated change notices, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
    .10 Record drawings.
    .11 Maintenance manuals.
    .12 Take-over procedures, acceptance, warranties.
    .13 Monthly progress claims, administrative procedures, photographs, holdbacks.
    .14 Appointments of inspection and testing agencies or firms.
    .15 Insurance, transcript of policies.
    .16 Schedule for progress meetings.

3. Project Meetings for Progress of Work

1. Conduct progress meetings in accordance with the schedule and/or decisions made at Pre-construction meeting.

2. Inform the Owner, Consultant, project consultants, Subcontractors and suppliers and those whose attendance is obligatory, of the date of the meeting, in sufficient time to ensure their attendance.

3. Include in the agenda the following:

   .1 Review, approval of minutes of previous meeting.
   .2 Review of Work progress since previous meeting.
   .3 Field observations, problems, conflicts.
   .4 Problems which impede construction schedule.
   .5 Review of off-site fabrication delivery schedules.
   .6 Corrective measures and procedures to regain projected schedule.
   .7 Revisions to construction schedule.
   .8 Progress during succeeding work period.
   .9 Review submittal schedules: expedite as required.
   .10 Maintenance of quality standards.
   .11 Pending changes and substitutions.
   .12 Review proposed changes for effect on construction schedule and on completion date.
   .13 Other business.

4. Progress Records

1. Maintain a permanent written record on the site of the progress of the work using standard OGCA form. This record shall be available to the Consultant at the site, and a copy shall be furnished to same on request. The record shall contain:

   .1 Daily weather conditions, including maximum and minimum temperatures.
   .2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.
   .3 Conditions encountered during excavation.
   .4 Dates of erection and removal of formwork, in each area of the project.
   .5 Dates of pouring the concrete in each area of the project, with quantity and particulars of the concrete.
   .6 Work force on project daily per trade.
   .7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

End of Section

1. General

1. Submit to Architect, for review, shop drawings, product data and samples specified.

2. Until submission is reviewed, work involving relevant product must not proceed.

2. Shop Drawings

1. Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.

2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

3. Maximum sheet size 24” x 36” as PDF.

3. Project Data

1. Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.

2. Above will only be accepted if they conform to following:
   .1 Delete information which is not applicable to project.
   .2 Supplement standard information to provide additional information applicable to project.
   .3 Show dimensions and clearances required.
   .4 Show performance characteristics and capacities.
   .5 Show wiring diagrams (when requested) and controls.

4. Coordination of Submissions

1. Review shop drawings, product data and samples prior to submission.

2. Verify:
   .1 Field measurements.
   .2 Field construction criteria.
   .3 Catalogue numbers and similar data.

3. Coordinate each submission with requirement of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.

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

5. Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.

6. Notify Architect, in writing at time of submission, of deviations from requirements of Contract documents.

7. After Architect's review, distribute copies.

5. Submission Requirements

1. Schedule submissions at least fourteen (14) days before dates that reviewed submissions will be required to be returned.

2. Submit a digital copy (PDF) of shop drawings, product data to Architect for review.

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

4. Submissions must include:
   .1 Date and revision dates.
   .2 Project title and number.
   .3 Name of:
      .1 Contractor.
      .2 Subcontractor.
      .3 Supplier.
      .4 Manufacturer.
      .5 Separate detailer when pertinent.

5. Identification of product or material.
   .1 Relation to adjacent structure or materials.
   .2 Field dimensions, clearly identified as such.
   .3 Specification Section number.
   .4 Applicable standards, such as CSA or CGSB numbers.
   .5 Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.

6. Interference Drawings
   .1 Prepare interference drawings for all work in confined space ie: ceiling space.

End of Section

1. Construction Safety Measures

1. Observe and enforce construction safety measures required by the National Building Code; the O.B.C.; The Provincial Government; Workers' Compensation Board; and, Municipal authorities.

2. In particular, the Occupational Health and Safety Act (Ont. Re. 213/91), the Occupational Health and Safety Act, the regulations of the Ontario Ministry of Labour and Ontario Hydro Safety requirements shall be strictly enforced.

3. Contractor shall ensure that copies of all applicable construction safety regulations, codes and standards are available on the jobsite throughout the period of construction. All workers are to be informed that these documents are available for reference at any time.

4. The Contractor shall ensure that all supervisory personnel on the job-site are fully aware of the contents of the Occupational Health and safety Act (Ontario Regulation 213/91 - Construction Projects) the Workers' Compensation Act" and, Bill 208 (Chapter 7, Standards of Ontario) “An Act to Amend the Occupational Health & Safety Act and the Workers’ Compensation Act”, and, that they comply with all requirements and procedures prescribed therein. These documents include, but are not limited to, the following construction safety requirements:

    .1 Contractor to register with the Director of the Occupational Health and Safety Division before or within 30 days of the commencement of the project, (O.Reg. 213/91, sec 5).
    .2 File a notice of project with a Director before beginning work on the project, (O.Reg 313/91, sec 6).
    .3 Notification prior to trenching deeper than 1.2m, (O.Reg. 213/91, sec 7).
    .4 Accident Notices and Reports, (O.Reg. 213/91, sec 8 through sec 12).
    .5 General Safety Requirements, (O.Reg. 213/91, sec 13 through sec 19).
    .6 General Construction Requirements, e.g. protective clothing, hygiene practices, housekeeping, temporary heat, fire safety, access to the job-site, machine and equipment guarding and coverings, scaffolds and platforms, electrical hazards, roofing, et al, (O.Reg. 213/91, sec 20 through sec 221).
    .7 Establish a Joint Health and Safety Committee where more than 19 workers are employed for more than 3 months, (Bill 208, S.8(2) to S.8(14).
    .8 Establish a Worker Trades Committee for all projects employing more than 49 workers for more than 3 months, (Bill 208, S-8a(1) to S.8b(4).
    .9 Ensure that all activities arising out of (.07) and (.08) above are recorded and that minutes are available to an inspector of the Ontario Ministry of Labour.

5. The Contractor shall be considered as the "Constructor" in consideration of the rights and responsibilities for all construction safety requirements, procedures, facilities and inspection of all work performed by the Contractor, Subcontractors/Sub-trades and other Contractors engaged on this project.

6. In the event of a conflict between any of the provisions of the above authorities the most stringent provisions are to be applied.

2. Material Safety Data Sheet

1. Material safety Data Sheets (MSDS) must be available at the jobsite for any product listed on the Hazardous Ingredients List prior to being used, installed or applied inside of the building.

2. A Material Safety Data Sheet is to be submitted to the Architect for any product which is known to create, or suspected of creating, a health hazard or discomfort during construction or upon commissioning of the project including, but not limited to, the following:
   .1 adhesives
   .2 solvents
   .3 sealants, (caulking, vapour seals, etc.)
   .4 sprayed-on fireproofing
   .5 resilient flooring
   .6 carpet, paint, varnish or other coatings
   .7 exposed membrane waterproofing
   .8 special coatings, (terrazo sealants, chafing coatings, etc.)
   .9 solder, brazing and welding and other filler metal
   .10 other products whose particles or vapours may become air borne after installation.
   .11 any other product as directed by the Consultant.

3. Comply with WHMIS regulation, Workplace Hazardous Material Information System.

3. Fire Safety Requirements

1. Comply with requirements for Building Construction, the Ontario Building Code, the Ontario Fire Code, the requirements of Local Fire Authorities and of the requirements of the Office of the Fire Marshal.

4. Overloading

1. Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

5. Falsework

1. Design and construct falsework in accordance with CSA S269.1-1975.

6. Scaffolding

1. Design and construct scaffolding in accordance with CSA S269.2-M1980.

2. Scaffolding to be designed by a Professional Engineer when required under the Occupational Health and Safety Act.

7. Materials Specifically Excluded

1. Asbestos and/or asbestos-containing products are not permitted. Submit Material Safety Data Sheets for any product suspected of containing asbestos if so requested by

Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:

.1 Transite drainage pipe - whether buried or above grade - not permitted.
.2 Composite floor tile containing asbestos - not permitted.
.3 Lay-in ceiling tiles containing asbestos - not permitted.
.4 Insulation and/or jacketing for pies, ducts, motors, pumps, etc. - not permitted if any asbestos is present.

2. Solder for all piping is to be lead-free.
   .1 "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. "Steelbond 281" and "Silverbrite" are acceptable solder products.
   .2 The mechanical contractor shall provide an affidavit signed by the Principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.
   .3 The Owner shall undertake random testing of the soldered joints. Should testing prove that the solder used was not as specified, the Owner shall take action against the contractor to the full extent of the law.

3. All paint and finish coatings are to be lead and mercury-free. Submit Material Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. These specifications apply to all 16 divisions of the 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. It is recognized that currently specified materials and methods may conflict with the basic intention of this section. Where reasonable alternate materials and methods exist that are not specified here, and that do not compromise quality or create additional cost for the owner, notify the Architect of such alternate materials or methods. Do not proceed to use alternate materials or methods to those specified without the express approval of the Architect.

3. Elsewhere, apply the provisions of this section to all work. Exceptions can only be made when signed off by the Architect. Suitability of all products used is the responsibility of the contractor.

1.2 Compliance Specifications

1. The contractor must comply with all applicable health, safety and environmental regulations.

1.3 Beyond Compliance Specifications

1. These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Owner's intention to develop a specification which maximizes environmentally "friendly" materials and methods wherever possible within current technical and budget limitations.

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. The primary goal of beyond compliance specification is to reduce the use of products or methods which have negative health and environmental impacts both during and after construction. These considerations may include full life cycle impacts, associated with raw materials, manufacturing, transport, deconstruction and their eventual fate.

4. These specifications will specifically address primary categories of readily identifiable products, ingredients and methods.

5. These provisions apply to both indoor and outdoor applications equally.

1.4 Exceptions

1. These specifications recognize that not all substitutes are equal and therefore exceptions can be made based on substantive evidence of necessary and superior performance. Special considerations may be given to restricted substances when secondary provisions are made such as sealed in place (contained) applications. All such exceptions must be approved in writing by the Architect.

PART 2 - MATERIALS

2.1 Products or Substances to be Avoided or Limited in Use

1. No product containing the following substances may be used on this project when an equivalent product without or with a lower concentration of this substance is suitable and available. All products containing substances which are known to cause health effects including but not limited to cancer, mutagenic, neurological, or behavioral effects should be avoided if suitable substitutes not containing or containing lower concentrations are available. This provision shall be limited to information contained on Material Safety Data Sheets, therefore MSDS sheets must be reviewed for all products for which such sheets are required. Applications for exceptions must be accompanied by related MSDS and product application and performance sheets, clearly showing a need for the exception.

2.2 Volatile Organic Compounds

1. No product containing volatile organic compounds (in over simplified terms volatile petro chemical or similar plant derived solvents) may be used on this project when a suitable non-VOC or failing that a low VOC substitute is available. Manufacturers may refer to the U.S. EPA definition of VOC's for guidance or alternatively use the low molecular weight organic compound descriptor.

   Example: Paints, Coatings, Primer, Adhesives, Chalks, Firestops, etc.

2. Waterborne equivalents are available for most of the solvent borne products used in construction and in most cases would be the preferred alternative. Waterborne products may in some instances have high VOC contents, therefore the fact that a product is waterborne does not automatically make it acceptable.

2.3 Chlorinated Substances

1. Poly Vinyl Chloride (vinyl) and other chlorinated products should be avoided if suitable substitutes are available.

2.4 Plasticizers

1. Plasticisers which offgass (low molecular weight) should be avoided.

2.5 Man Made Mineral Fibres

1. Products containing mineral fibres which can be emitted or abraded should be avoided.

   Examples: duct liner, mineral fibre ceiling tiles, etc.

2.6 Radiation

1. Products or methods which result in the lowest emission of Electro Magnetic Fields are preferred.

2.7 Biocides

1. Products containing biocides (pesticides, miticides, mildeweides. fungicides, rodenticides, etc.) are not to be used if suitable alternatives are available. Highly stable, low human toxicity biocides such as Portercept may be acceptable substitutes. Biocide formulas which break down, emit powders of offgass should be avoided.

2.8 Heavy Metals

1. Heavy metals such as lead, cadmium, mercury etc. should be avoided.

2.9 Aluminum

1. Raw aluminum should be avoided, anodized or factory painted aluminum is acceptable. This is particularly applicable to surfaces which people can touch.

2.10 Ozone Depleting Substances

1. Products which contain, or which use Ozone Depleting Substances such as Bromide, Chlorofluorocarbons (CFC) or Hydrofluorocarbons (HFC) etc. should be avoided if suitable substitutes are available.

2.11 Greenhouse Gasses

1. Products which contain, use or generate Greenhouse gasses such as CO2 should be avoided if suitable substitutes are available.

2.12 Bituminous (tar) Products

1. Products containing tar compounds should not be used if suitable substitutes are available.

2.13 Chemical Compounds

1. Products containing the following chemical compounds should not be used if suitable substitutes are available: Neoprene, Latex, Butyl, ABS, Formaldehyde.

2.14 Adhesives

1. Adhesives containing solvents or other non preferred ingredients should be avoided if suitable substitutes are available, including systems designs which do not need adhesives or can use mechanical etc. fastening alternatives

2.15 Composite Products

1. Some composite products contain adhesives such as formaldehyde which are not preferred, and some composites such as Fibre Reinforced Plastics are not practical for recycling. These products should be avoided if suitable substitutes are available.

2.16 Cleaners and Solvents

1. Products, equipment, and methods which require the use of cleaners and solvents are not preferred if suitable substitutes are available. Examples of preferred products would include No Wax floors, or primerless caulks and adhesives, or products not requiring caulks and adhesives.

End of Section

1. Fires

1. Fires and burning of rubbish on site is not permitted.

2. Disposal of Wastes

1. Do not bury rubbish and waste materials on site.

2. Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

3. Asbestos and Hazardous Substances

1. General Contractor is to inform Architect in the event of encountering material suspected of containing asbestos or hazardous substances.

2. Architect will notify owner of such findings and owner to engage directly a certified Asbestos Abatement Contractor.

End of Section

1. General

1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

2. Store volatile wastes in covered metal containers and remove from premises daily.

3. Prevent accumulation of wastes which create hazardous conditions.

4. Provide adequate ventilation during use of volatile or noxious substances.

2. Materials

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

2. Provide on-site dump containers for collection of waste materials, and rubbish.

3. Cleaning During Construction

1. Maintain project grounds, and public properties free from accumulations of waste materials and rubbish.

2. Remove waste materials, and rubbish from site.

3. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

4. Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

4. Final Cleaning

1. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces exposed to view; leave project clean and ready for occupancy.

2. Employ experienced workers, or professional cleaners, for final cleaning.

3. In preparation for Substantial Performance or Fitness for Occupancy status, whichever occurs first, conduct final inspection of interior and exterior surfaces exposed to view, and of concealed spaces.

4. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all sight-exposed interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.

5. Clean and polish glass and mirrors.

6. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.

7. Broom-clean paved surfaces; rake clean other surfaces of grounds.

8. Clean exposed ductwork and structure.

9. Replace filters.

10. Clean bulbs and lamps and replace those burned out.

11. Clean diffusers and grilles.

12. Clean sinks, faucets, and water closets and controls.

13. Maintain cleaning until project, or portion thereof, is occupied by Owner.

End of Section

1. Requirements Included

1. Record documents, samples, and specifications.

2. Equipment and systems.

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

2. Quality Assurance

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

3. Format

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

2. Binders: commercial quality, 8½" x 11" maximum 2½" ring size.

3. When multiple binders are used, correlate data into related consistent groupings.

4. Cover: Identify each binder with type or printed title "Project Record Documents", list title of Project, identify subject matter of contents.

5. Arrange content under Section numbers and sequence of Table of Contents.

6. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

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

4. Contents, Each Volume

1. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

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

3. Product Data: mark sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

4. Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

5. Typed Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

5. Submission

1. Submit one copy of completed volumes in final form 15 days prior to substantial performance. For equipment put into use with Owner's permission during construction, submit Operating and Maintenance Manuals within 10 days after start-up. For items of Work delayed materially beyond date of Substantial Performance, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

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

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

4. Submit two copies of revised volumes of data in final form within ten days after final inspection.

5. For contract drawings (architectural, landscaping, structural, mechanical, electrical), transfer neatly as-built notations onto second set and submit both sets.

6. Prepare digital pdf file for submission on CD or USB of completed closeout documents.

6. Record Documents and Samples

1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
   - .1 Contract Drawings.
   - .2 Specifications.
   - .3 Addenda
   - .4 Change Orders and other modifications to the Contract.
   - .5 Reviewed shop drawings, product data and samples.
   - .6 Field test records.
   - .7 Inspection certificates.
   - .8 Manufacturer's certificates.

2. Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.

3. Label and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "Project Record" in neat, large, printed letters.

4. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.

5. Keep Record Documents and samples available for inspection by Consultant.

7. Recording As-Built Conditions

1. Consultant will provide two (2) complete sets of white prints of project drawings and two (2) complete sets of specifications for the purpose of recording as-built conditions. Mark and record one set on an on-going basis as construction proceeds. **Near the end of the construction period transfer all marks neatly to second set for submission as project record documents.**

2. Refer to drawings/specifications for additional mechanical and electrical requirements.

3. Record information concurrently with construction progress. Do not conceal work until required information is recorded.

4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
   .1 Measure 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 catalog number of each project actually installed, particularly optional items and substitute items.
   .2 Changes made by Addenda and Change Orders.

6. Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

8. Digital As-Built Drawings

1. Retain the services of a CAD drafting company acceptable to the consultant to prepare digital CAD As-Built documents for all Architectural and Engineering drawings.

2. After the consultant has found the Redlined As-Built drawings to be acceptable, transfer to digital file all information recorded on As-Built drawings. Layering of information as per consultant's instructions.

9. Equipment and Systems

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

2. Panelboard 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 instruction. Include summer, winter, and any special operating instructions.

5. Maintain Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair and reassemble 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 lists, illustrations, assembly drawings, and diagrams required for maintenance.

10. Provide installed control diagrams by controls manufacturer.

11. Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

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

14. Include test balancing reports as specified in mechanical specifications.

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

10. Materials and Finishes

1. Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

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 recommend schedule for cleaning and maintenance.

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

11. Guarantees, Warranties and Bonds

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

2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 01721 whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available.

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

4. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

5. Verify that documents are in proper form, contain full information, and are notarized.

6. Co-execute submittals when required.

7. Retain warranties and bonds until time specified for submittal.

End of Section

1. Maintenance Manual

1. On completion of project, submit to Owner two (2) copies of Operations Data and Maintenance Manual in English, made up as follows:

    .1 Bind data in vinyl hard covered, 3 ring loose leaf binder for 8½" x 11" size paper.
    .2 Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.
    .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs protected with celluloid covers fastened to hard paper dividing sheets.
    .4 A digital copy of all documents in the operations and manuals must be provided on a USB format to be PDF.

2. Include following information, plus data specified.

    .1 Maintenance instructions for finished surface and materials.
    .2 Copy of hardware and paint schedules.
    .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
    .4 Names, addresses and phone numbers of sub-contractors and suppliers.
    .5 Guarantees, Warranties and bonds showing:
        .1 Name and address of project.
        .2 Guarantee commencement date (date of Final Certificate of Completion).
        .3 Duration of guarantee.
        .4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
        .5 Signature and seal of Contractor.
        .6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

3. Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

4. Include in the Manuals a complete set of final shop drawings indicating corrections and changes made during fabrication and installation.

End of Section

1. Standard Warranty

1. Refer to HDSB Supplementary Conditions and to Standard Contract Document CCDC for warranty requirements and conditions for the standard warranty which is required for the work of this contract.

2. Extended Warranties

1. Refer to individual specifications sections for requirements of extended warranties required for particular sections or items of work.

2. Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested.

3. Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.

4. Listed below is a summary of extended warranties required for individual Sections. This list, if inconsistent with the specified requirements of individual extended warranties, shall be deemed correct with respect to length of extended warranties. Extended warranties required shall include, but not be limited to, the following:

   Extended warranties (total warranty period listed, including entire building warranty)

Built Up Roofing (Section 07520)	refer to section
SBS Modified Bituminous Membrane Roofing (07521)	refer to section
Sheet Metal Flashing and Trim (Section 07620)	2 years
Caulking (Section 07900)	5 years
Joint Sealers for Roofing (Section 07901)	2 years
Commercial Steel Doors and Frames (Section 08100)	refer to section
Floor Porcelain Tiles (Section 09330)	3 years
Acoustic Unit Ceiling (Section 09510)	2 years
Painting (Section 09900)	2 years

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Not applicable

1.2 Existing Conditions

1. Take over structures to be demolished based on their conditions (on date that tender is accepted).

1.3 Demolition Drawings

1. Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work or supporting structures.

1.4 Protection

1. Prevent movement, settlement or damage of adjacent grades. Provide bracing, shoring as required.

2. Prevent debris from blocking surface drainage inlets which must remain in operation.

3. Protect existing items designated to remain and materials designated for salvage. In the event of damage to such items, immediately replace or make repairs to approval of Owner and at not cost to Owner.

PART 2 - PRODUCTS

1. Not applicable.

PART 3 - EXECUTION

3.1 Work

1. Dispose of demolished materials except where noted otherwise.

3.2 Safety Code

1. Unless otherwise specified, carry out demolition work in accordance with Canadian Construction Safety Code 1980.

2. Should material resembling spray or trowel-applied asbestos be encountered, notify Architect. Any asbestos encountered will be removed by the Owner's Contractor.

3.3 Preparation

1. Disconnect electrical and telephone service lines entering areas to be demolished as per rules and regulations of authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized to serve other areas during period of demolition.

2. Inspect site and rectify with Architect items designated for removal and items to remain.

3. Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction.

4. Natural gas supply lines to be removed by gas company or by qualified tradesman in accordance with gas company instructions.

3.4 Demolition & Field Work

1. Demolish areas as indicated on the drawings.

2. Remove existing equipment, services and obstacles, where required, for refinishing or making good of existing surfaces, and replace same as work progresses.

3. 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).

4. Demolish in a manner to minimize dusting. Keep dusty materials wetted.

5. Demolish masonry and concrete walls in small sections. Carefully remove and lower structural framing and other heavy or large objects.

6. Burning materials on site is not permitted.

7. Remove contaminated or dangerous materials from site and dispose of in safe manner.

8. Employ rodent and vermin exterminators to comply with health regulations.

3.5 Salvage

1. Carefully dismantle items containing materials for salvage and stock pile salvaged materials at locations as directed by Architect.

3.6 Restoration

1. Upon completion of work, remove debris, trim services and leave work site clean.

2. Reinstall areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

3.7 Scheduling

1. Demolition of areas adjacent to occupied spaces may not occur during occupancy of these spaces. Contractor to schedule the demolition of these areas to occur after school hours or weekends.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Structural Steel Framing — refer to Structural Drawings
2. Steel Joist Framing: — refer to Structural Drawings
3. Miscellaneous Metal Fabrication: — Section 05500

1.2 Reference Standards

1.	CSA-S304.1-04	Design of Masonry Structures
2.	CSA- A370-04 (R2009)	Connectors to Masonry.
3.	CAN/CSA-A371-04 (R2009)	Masonry Construction for Buildings.
4.	CSA A179-04 (R2009)	Mortar and Grout for Unit Masonry
5.	CSA-A82-06	Fired Masonry Brick From Clay or Shale
6.	CSA A165 Series-04	CSA Standards for Concrete Masonry Units.
7.	CSA G30.18-09	Carbon Steel Bars for Concrete Reinforcement
8.	CAN/CSA-A3000-08	Cementitious Materials Compendium
9.	ASTM A951/A951M-06	Standard Specification for Steel Wire for Masonry Joint Reinforcement
10.	ASTM C216-07a	Standard Specification for Facing Brick (Solid Masonry Units Made from Clay of Shale)
11.	ASTM C568-08a	Standard Specification for Limestone Dimension Stone
12.	ASTM A1064/A1064	Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
13.	ASTM C331-05	Standard Specification for Lightweight Aggregates for Concrete Masonry Units
14.	ASTM A153/A153M-09	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

1.3 Source Quality Control

1. Submit laboratory test reports certifying compliance of masonry units (and mortar ingredients) with specification requirements.

2. For clay units, in addition to requirements set out in referenced CSA and ASTM Standards include data indicating initial rate of absorption for units proposed for use.

3. All masonry: mortar and grout is to be tested in accordance with CSA-S304.

1.4 Product Delivery, Storage and Handling

1. Ensure that materials are delivered to job site in dry condition.

2. Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

3. Store cement under cover. Keep dry and unfrozen.

4. Pile sand on platforms. Exclude foreign matter.

5. Materials stacked on floors of building shall not exceed structural design loads.

1.5 Cold Weather Requirements

1. Comply with Clause 6.7.2 of CSA-A371.

1.6 Hot Weather Requirements

1. Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

1.7 Protection

1. Until completed and protected by flashings or other permanent construction, keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain.

2. Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

3. Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

4. When air temperature has dropped below 0 degrees C (eg. Overnight), ensure that materials are above freezing and free from ice when installed.

5. Prevent work from freezing for at least 48 hours by enclosure, artificial heat, or other acceptable method.

6. Provide adequate bracing to walls during erection to prevent damage due to winds or other lateral loads.

7. Make good any damage to masonry work until completion of the work.

8. Build masonry in enclosures heated by approved smokeless means, when temperature remains below 0 degrees C. All materials shall be above 4 degrees when installed.

9. Demolish and replace masonry work damaged by freezing.

10. Supplement CSA-A371 as follows:

    .1 Maintain temperature of mortar between 5° C and 50° C until used.

1.8 Job Mock-up

1. Construct mock-up panel of exterior and interior masonry wall construction 2 m x 2 m showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar, application of membrane air vapour barrier, insulation and workmanship. Mock-up may be part of construction.

1.9 Submittals

1. Make submittals in accordance with Section 01340.

2. Submit samples of:

    .1 Masonry units (each type).
    .2 Veneer anchors.
    .3 Masonry reinforcement.
    .4 Mortar Colours.
    .5 Each masonry accessory.

PART 2 - PRODUCTS

2.1 Materials

1. **Concrete Masonry Units:**

    Must be "Bubble Cure" or autoclave process, modular metric size conforming to CSA Standard A165 series.
    Normal Weight - H/20/A/M, S/20/A/M.
    Lightweight - H/20/C/M, S/20/C/M.
    Use normal weight in below ground floor elevation. Use light weight for all above grade walls. All exposed corners to have bullnose units. All block to be uniform in color, shade and texture. Special shapes as required.

2. **Portland Cement:**

    .1 Type 10, in accordance with CSA A3001.

3. **Masonry Cement:**

    .1 Type “S” and shall comply with CSA A3002.

4. **Hydrated Lime**:

    .1 Type “S”, in accordance with CSA A179.

5. **Aggregate:**

   .1 Fine grain aggregate, grading in accordance with CSA A179. When 6mm joints are specified, grain shall pass through a 1.18 mm sieve.

6. **Water:**
   .1 Ensure that water contains no salts which may cause efflorescence.

7. **Horizontal Masonry Reinforcing:**
   Welded truss type or ladder type, as specified from wire to ASTM A951, hot dipped galvanized after fabrication to ASTM A153-05, Class B2, minimum coating 457 G/m2, wire size 4.76 mm diameter. Reinforcing as per the following:
   - Single wythe walls Dur-O-Wal DW 100;
   - Double wythe walls (up to 390 in width) Dur-O-Wal DW 120;
   - Double wythe walls (greater than 390) Dur-O-Wal DW 220;
   - Cavity Walls Blok-Lok- Blok truss II - BL37 to accommodate 95 mm cavity with 64 mm thick insulation. Use Blok-truss BL 30- or DW 100 if using Ferro slotted block ties.

   Similar reinforcing by Dur-O-Wal, Blok-Lok, and Hohmann & Barnard Inc. is acceptable.

8**. Reinforcing Bars:** billet steel to grade 400, deformed bars to CSA-G30.18.

9. **Bolts and Anchors:** To CSA-A370.

10. **Natural Mortar:**

   .1 **Generally:** Use materials only as specified in CSA A179. Ensure that weather and aggregate used in mortar, other than in walls buried in earth, will not cause efflorescence.
   .2 **Mixes:** Mix mortars as specified in CSA A179 using the Proportion Specification.
   .3 **Mortar Types:**
      .1 For masonry walls in contact with earth and bedding forbearing plates and lintels: Mortar Type “S”.
      .2 For load-bearing walls: Mortar Type “S”.
      .3 For all other masonry walls, use regular Type “N” mortar.
   .4 **Grout:** To CSA A179 Table 5.

11. **Mortar Dropping Control Device**: “Mor-Control” manufactured by Dur-O-Wal or Mortar-Net.

PART 3 - EXECUTION

3.1 Workmanship

1. Build masonry plumb, level, and true to line, with joints in proper alignment.

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

3. Set out and build masonry work to the respective dimensions called for on the drawings. Build and lay the block true to line, and level, align vertical joints. Keep angles, reveals, etc. square and plumb.

4. Assume complete responsibility for dimensions of this work.

5. Construct masonry fire rated assemblies in accordance with tested design specifications.

6. Make all joints uniform, in line, square and plumb, with mortar compressed to form joints as specified.

7. Course units to bring wall to required elevations using even, uniform, horizontal and vertical joints of maximum 10mm thickness.

8. Check and co-ordinate location of all anchors, connections and built-in items.

9. Bond units at intersection of walls by horizontal prefabricated “tee” or corner reinforcing units.

10. Lay each solid unit in full bed or mortar. Fill vertical joints. Slushing of joints not permitted.

11. Base course to be solid concrete masonry units laid in full mortar bed.

12. Lay each hollow unit in full bed or mortar for face shells. Butter vertical joints full. When laying closure units, butter vertical units already in place instead of units being placed.

13. Lay exposed masonry units using blocks having square, unbroken edges and corners.

14. Tolerances:

    .1 Variation from mean plane: 6 mm when measured with 3000 mm straight edge.
    .2 Variation from plumb: 6 mm on any vertical line up to 6000 mm high.
    .3 Variation in wall opening sizes: 6 mm maximum.
    .4 Variation of building lines from plan: in any bay or 6000 mm maximum – 12 mm or in 1200 mm or more, 20 mm.

15. Lay out masonry units carefully so as to run as often as possible in full and half unit dimensions. All exposed ends shall match the finish of the faces.

16. All units cut around pipes, ducts, openings, etc. shall be accurately and neatly cut with a power carborundum wheel, and remaining voids shall be slushed full with mortar.

17. Make joints flush and smooth on both sides excepts where they are to be exposed to view. When exposed to view, tool the joints concave, unless otherwise noted.

18. Lay and set up all units carefully so that both faces of the walls are true and even. Do not use chipped or cracked units where exposed to view, even where the defect would not impair strength or durability.

19. Take particular care to keep cavities, weep holes, vents and exposed faces of all units free of mortar.

3.2 Tolerances

1. Clause 6.2 of CAN3-A371 applies except as follows: Walls to receive thinset ceramic tile: plumb within 1:600.

3.3 Exposed Masonry

1. Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

3.4 Jointing

1. Concave joints, allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints.

2. Raked joints, where split rib blocks are used, allow joints to set just enough to remove excess water, then rake joints uniformly to depth of rib and compress with square tool to provide smooth, compressed, raked joints of uniform depth.

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

3.5 Joining of Work

1. Where necessary to temporarily stop horizontal runs of masonry, and in building corner, Step-back masonry diagonally to lowest course previously laid. Do not "tooth" new masonry. Fill in adjacent course before heights of stepped masonry reach 1200 mm.

3.6 Cutting

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

2. Make cuts straight, clean, and free from uneven edges. Use masonry saw where necessary.

3.7 Building-In

1. Build in items required to be built into masonry by other trades.

2. Prevent displacement of built-in items during construction. Check for plumbness, alignment, and correctness of position, as work progresses.

3. Brace door jambs to maintain plumbness. Fill door frame with concrete.

3.8 Support of Loads

1. Where concrete fill is used in lieu of solid units, use 20 MPa concrete to Section 03300.

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

3.9 Provision for Movement

1. Leave 5 mm space below shelf angles.

2. Leave 6 mm space and do not use wedges between tops of non-load bearing walls and partitions and structural elements.

3.10 Loose Steel Lintels

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

3.11 Horizontal Reinforcing

1. Horizontal reinforcing at 400 mm o.c. (every 2nd course), except solid walls greater than, or equal to 340 mm in width. At 340 mm, or greater, horizontal reinforcing at 200 mm o.c. (every course). Use prefabricated corners and tees at all intersecting load bearing walls.

3.12 Vertical Reinforcing

1. Install vertical reinforcing to size and spacing as shown on Drawings. Fill voids with 20MPa concrete.

3.13 Bonding

1. Walls of two or more widths: bond using metal ties in accordance with subsection 9.4 of CSA-A371.

2. Procedure approval by Architect.

3.14 Testing

1. Masonry units to be tested in accordance with S304.1, Clause 15.1, for engineered masonry design, and in conformance with clause 15.1.2.

2. Mortar testing to be in accordance with S304.1, clause 15.2.

3. Grout testing to be in accordance with S304.1, clause 15.3.

3.15 Blockwork - General

1. Do not wet concrete block before laying.

2. Lay block with thicker end of face shell upward.

3. Lay interior block in running board, concave tooled joints.

4. Use solid block or hollow block filled with concrete for top 2 courses under point bearing loads extending minimum 200 mm each side of bearing and where indicated.

5. Install special shaped units where indicated.

6. In block walls install continuous trussed wire reinforcement, as noted.

7. Where resilient base is indicated, tool the joints to within 100 mm of the floor. Cut joints flush behind the base.

8. Extend all walls/partitions to underside of steel/concrete deck unless shown otherwise on drawings and as required. Co-ordinate wall locations with structure above and prior to commencing work, advise Consultant of interference.

9. When masonry walls are not built at once, the ends of the walls are to be raked back at an angle, or terminated at a control joint. Toothing will not be permitted.

3.16 Mortar

1. Measure loose damp ingredients accurately by volume. Place water in mixer, add half volume of sand, add cement, add remainder of sand, add water for plasticity. Mix for at least four minutes. Keep mixer clean.

2. Incorporate colour into mixes in accordance with manufacturer's instructions.

3. 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 a ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient to produce mortar of proper consistency for pointing.

3.17 Concrete Core Fill

1. All concrete block walls shall have vertical grout core fill each side of openings and where shown and as detailed on the drawings.

2. Core fill in walls shall extend from bottom bearing surface to underside of bond beams or structure.

3. Grout core fill shall be placed with a trunk or chute in maximum lifts 2000 mm. Compaction shall be by interior mechanical vibrator. All fill shall be placed in accordance with CSA A23.1.

4. Fill minimum ½ block core each side of frame from foundation to underside of lintels of all door openings over 1 metre wide.

5. Provide inspection openings in base of walls to be grouted. Make good to match adjacent block work after inspection and approval by Engineer.

3.18 Reinforced Block Lintels

1. Install reinforced concrete block lintels at all openings where steel lintels are not indicated in accordance with structural details.

2. Install shoring and bracing as required to openings prior to placing lintel units and concrete fill.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Installation of anchors in masonry: Section 04200
2. Structural Steel Framing: refer to Structural Drawings
3. Steel Joist Framing: refer to Structural Drawings
4. Metal Decking: refer to Structural Drawings
5. Painting: Section 09900

1.2 Scope

1. Provide all miscellaneous metal items except those listed above Under Article 1.1.

1.3 Reference Standards

1. ASTM A167-99(2009) Standard Specification for Stainless and Heat-Resisting Chromium - Nickel Steel Plate, Sheet and Strip.
2. ASTM A325-09ae.1 Standard Specification for Structural Bolts, Steel, Heat-Treated, 120/105 ksi Minimun Tensile Strength.
3. ASTM A143/A143M-07 Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
4. ASTM A307-07b Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
5. ASTM A563-07a Standard Specification for Carbon and Alloy Steel Nuts.
6. ASTM A780/A780M-09 Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
7. CAN/CSA-S16-09 Design of Steel Structures.
8. CSA W59-03(R2008) Welded Steel Construction (Metal Arc Welding).
9. CSA-G40.20-04/G40.21-04(R2009) General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.
10. ASTM A123/A123M-09 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
11. CISC/CPMA 2-75 Canadian Institute of Steel Construction/Canadian Paint Manufacturers Association-A Quick Drying Primer for Use on Structural Steel.

12. CAN/CGSB-1.40-97	Anticorrosive Structural Steel Alkyd Primer.
13. ASTM A53/A53M-07	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

1.4 Shop Drawings

1. Submit shop drawings in accordance with Section 01340 prepared and stamped by a Professional Engineer licensed to design structures in the Province of Ontario.

2. Clearly indicate materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.

PART 2 - PRODUCTS

2.1 Materials

1. Metals:

    .1 **Steel sections and plates:** to CAN3 G40.21, Grade 350W for tubes and Grade 300W for plates and flat shapes.
    .2 **Welding Materials:** to CSA W59.
    .3 **Bolts and anchor bolts:** to ASTM A307, A325, and A563 as applicable.
    .4 **Stainless Steel:** Type 302 or 304 alloy conforming to ASTM A167, No. 4 finish.

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 ASTM A123, minimum Z275 coating.
    .3 **Galvanizing** of structural steel components and loose lintels: refer to Section 05120.
    .4 **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.
    .5. 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.
    .6 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.
    .7 Clean surfaces to be field welded; do not paint.

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.

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.

5. Pipe

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

6. Bituminous Paint

   .1 Alkali-resisting, use to insulate contact between dissimilar metals.

2.2 Fabrication

1. Build work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

2. Weld all connections where possible, and bolt where not possible unless indicated otherwise on drawings.

3. Use self-tapping shake-proof countersunk flat headed screws on items required to be assembled by screws or as indicated.

4. Where possible, work to be fitted and shop assembled, ready for erection.

5. Exposed welds to be continuous for length of each joint. File or grind exposed welds smooth and flush.

6. Weld all stainless steel by the Argon Arc Process. Grind smooth and polish joints, crence-free, and flush without seams.

2.3 List of Miscellaneous Metal Fabrications

1. This Section includes, but is not limited to the following list. 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 Pit Ladder
   .5 Lintels (if not by Structural Steel).

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 Fabrication & Erection

1. Erect metal work square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

2. Insulate metals, where necessary, to prevent corrosion due to contact between dissimilar metals and between metals and masonry or plaster. Use bituminous paint, butyl tape, building paper or other approved means.

3. Provide suitable and acceptable means of anchorage, such as dowels, anchor clips, bar anchors, expansion bolts and shields, toggles.

4. Make field connections with items specified in Articles 2.1.4 and 2.1.5 or weld to CSA S16.

5. Hand items to be cast into concrete or built into masonry over to appropriate trades together with setting templates.

6. Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection.

7. Touch-up galvanized surfaces with zinc 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 the surround galvanizing.

3.3 Wall Benches and Upper Shelf

1. Steel Angles, Steel Channel, Flat Bar Steel, Steel Rod as indicated on details.

2. Use secure round head fasteners or countersink holes for flat head screws.

3. Prime paint: Galvafroid.

4. Chamfer cut ends of Rod 2 mm

3.4 Railings and Guards

1. Provide railings and handrails, as shown on Drawings.

2. Galvanize all exterior railings after fabrication.

3. Wall brackets, as shown, at 1200 mm o.c. maximum.

4. Set railing standards in concrete with heated liquid sulphur to fill hole. Remove overflow immediately.

3.5 Vanity Brackets

1. Angle steel frame, as shown on drawings - shop prime painted.

3.6 Wall Brackets and Hooks

1. As shown on Drawings - prime paint.

3.7 Bollards

1. Supply and install galvanized steel bollards as shown on Drawings. Bollards shall be 150 mm x 9.5 mm thick wall at 1200 mm high, seamless steel pipe. Install 1200 mm into a concrete foundation. Fill bollard with 25 Mpa concrete and round top. Round top of footing also. For number of Bollards required - refer to Drawings.

3.8 Galvanized Steel

1. Galvanize steel members, fabrications, and assemblies after fabrication by the hot dip process in accordance with ASTM A123, minimum Z275 coating.

2. Galvanize bolts, nuts and washers and iron and steel hardware components in accordance with ASTM A123.

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.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Commercial Steel Doors and Frames Section 08100

1.2 Source Quality Control

1. Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.

PART 2 - PRODUCTS

2.1 Materials

1. **Wood Materials:** Material, straight, sawn square, true, dressed four (4) sides properly sized, shaped to correct dimensions from nominal sizes indicated or specified.

2. **Lumber: Use only grade marked lumber. Where left exposed, use best brand of lumber available.** lumber and moisture content to conform to official grading rules of NLGA, for particular lumber and grade, and structurally conform to latest requirements of Ontario Building Code. Conform to Grading Standards, CSA Standard Softwood Lumber 2005. Moist content not greater than 19% at time of installation.

3. **Blocking, Cants, Bucks, Grounds and Nailing Strips:** Douglas fir Graded 122-C, construction or No. 2 Pine, pressure treated in accordance with CSA 080 Series 08.

4. **Plywood:** Douglas fir plywood to CSA 0121-08, good one side with waterproof adhesive.

5. **Rough Hardware:** Nails, screws, bolts, lag screws, anchors, special fastening devices and supports required for erection of all carpentry components. Use galvanized components where exposed to exterior atmosphere.

PART 3 - EXECUTION

3.1 General

1. Do all wood framing in accordance with the Ontario Building Code, Engineering Design in Wood and CSA 086 - 01.

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.

3.2 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.

3.3 Rough Bucks, 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.

3.4 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.
   Refer to Section 07550 Modified Bituminous Roofing.

2. In reference to section 07550 Modified Bituminous Roofing, subsection 3.4 Carpentry and Section 07610 Sheet Metal Roofing: all wood blocking work related to roofing including but not limited to parapets, walls and curbs is by Section 06100 Rough Carpentry. The general contractor is responsible to turn over this work in a dry condition to roofing contractor for making watertight as part of roofing work. After acceptance, the roofing contractor is responsible to maintain water tightness.

3.5 Supports for Mechanical Units

1. Install wood blocking for prefabricated curbs for mechanical units to allow for a level installation on sloping roof.

3.6 Pressure Treated Wood

1. Use wood pressure treated in accordance with CSA 080 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. Fasten each slat to steel frames with 2 screws at top, bottom and at diagonal bracing.

3.7 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).

3.8 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.

End of Section

PART 1 - GENERAL

1.1 Section Includes

1. Section includes for provision of all labour, materials, equipment and services for new rough carpentry in accordance with Contract Documents.

1.2 Related Sections

1. Section 07520 Built Up Roofing
2. Section 07521 SBS Modified Bituminous Membrane Roofing
3. Section 07620 Sheet Metal Flashing and Trim for Roofing
4. Section 07901 Joint Sealers for Roofing

1.3 References

1. CSA B111 / ASTM F1667 - Wire Nails, Spikes and Staples
2. ANSI/ASME B18.6.1 - Slotted and Recessed Wood Screws
3. ASTM A307-Carbon Steel Bolts & Studs
4. CSA O121 - Douglas Fir Plywood
5. CAN/CSA O141 – Softwood Lumber
6. CSA O151 – Canadian Softwood Plywood
7. CAN/CSA-080 Series - Wood Preservation
8. CAN/CSA-O325.0 – Construction Sheathing
9. Graded lumber must be in accordance with rules and regulations of the National Lumber Grades Authority (NLGA).

1.4 Operations

1. Do not interrupt or delay *Owner*'s operations.
2. 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. Provide perimeter barricades and tarpaulins, guardrails, overhead scaffolding and other necessary protection to ensure safety of occupants, public and site workers.

2. Temporarily protect interior spaces, where overhead work is proceeding, and provide dustproof and weatherproof partitions.

1.6 Shop Drawings

1. Submit shop drawings, stamped by a Professional Engineer, licensed in Province of Ontario, if members and securement are part of structural components.

1.7 Permits

1. If required, arrange and pay for all permits, notices and inspections necessary for the proper execution of work in this section.

1.8 Quality Assurance

1. Lumber shall be identified by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

2. Plywood shall be identified by grade mark in accordance with applicable CSA standards.

1.9 Lumber Requirements

1. Dimensions of lumber must conform to dressed sizes specified in CAN/CSA-0141. Dimensions specified and shown are nominal sizes.

2. Moisture content of lumber at time of installation must be S-DRY - maximum 19% moisture content.

3. Lumber must be sound and free of splits and deficiencies, which impair strength and durability.

1.10 Securement

1. Members shall be framed, anchored, fastened, tied and braced to provide necessary strength and rigidity.

2. All nails shall be long enough so that not less than half their required length penetrates into the second member.

3. Individual pieces must be secured with minimum of 2 fasteners at all corners.

4. Splitting of wood members shall be minimized by staggering nails in the direction of the grain and by keeping nails a minimum of 52 mm (2 in.) in from edges.

1.11 Waste Management and Disposal

1. Remove from site and dispose packaging materials at approved facilities.

PART 2 - PRODUCTS

2.1 Material

1. Wood Blocking: No.1 Exterior Grade, 52 x 52 mm (2 in. x 2 in.) 52 x 104 mm (2 x 4 in.), 52 x 152 mm (2 x 6 n.), 52 x 203 mm (2 x 8 in.), 52 x 254 mm (2 x 10 in.) and 52 x 305 mm (2 x 12 in.) and as noted on drawings/details.

2. Plywood Sheathing: 13 mm (1/2 in.) and 19 mm (3/4 in.), exterior grade, solid one side (G1S) unsanded, Veneer Grade B+. Moisture content of plywood shall not exceed 19% on a 'dry weight basis'.

3. Wood Cant: 75 x 75 mm (3 x 3 in.), No.1 Grade, Pressure Treated, exterior grade

4. Shims: Constructed from plywood sheathing or tapered wood blocking to provide minimum 10% slope to interior of roof surface, as indicated on drawings.

5. Wood Sleepers: Fabricated from wood blocking and plywood, configuration, sizes and length as detailed.

6. Fasteners: Are to be of sufficient length to penetrate concrete decks 52 mm (2 in.), metal decks 19 mm (3/4 in.) and wood decks 38 mm (1½ in.). Acceptable Material:

    1. Nails: No. 10 spiral shank, hot dipped galvanized.

    2. Wood and Metal Deck Screws (Low profile head):

        1. Roofgrip #14 Buildex by ITW Construction Products
        2. #14 Heavy Duty Drill Point Fastener by Tru-Fast.
        3. Rawl #14 Deck Screw by Rawlplug Canada Ltd.

    3. Masonry anchors (Robertson head):

        1. Tapcon Plus, 6 mm (1/4 in.) diameter, Climaseal coated by ITW Construction Products.
        2. Tap-Grip heavy-duty self-tapping concrete anchors by Perma-Grip Fasteners.
        3. Rawl PERMA-SEAL TAPPER, 6 mm (1/4 in.) diameter by Rawlplug Canada Ltd.

    4. Steel: Flat head, self-tapping steel screw with coated finish, FM Approved. Fasteners to be of sufficient length to penetrate crest of metal deck 20 mm +/- 5 mm (3/4" +/- ¼").

    5. Bolts, Washers and Nuts: Size as indicated on Drawings. Hot dipped galvanized, corrosion resistant finish, 12.5 mm (1/2") diameter unless otherwise noted.

PART 3 - EXECUTION

3.1 Preparation

1. Substrates shall be structurally sound to receive rough carpentry.

2. All wood framing shall be in accordance with Ontario Building Code or more stringent requirements noted within Contract Documents.

3.2 Installation

1. Cut and fit members accurately. Mitre all corners, leaving no space or unevenness greater than 3 mm (1/8 in.) between components. Lay out work to provide a uniform transition for insulation and membrane.

2. Install continuous plywood sheathing, wood blockings, cants, studs, nailers and continuous shims where required and detailed.

3. Shims to be of sufficient height to ensure a minimum ten percent (10%) positive slope is provided on all parapet walls and under cap flashings.

4. Erect members in position, align, level, square, plumb and secure permanently in place as specified. Brace work temporarily as required to maintain safely in place.

3.3 Fastening

1. Secure new wood with minimum of 2 fasteners at 457 mm (18 in.) on centre staggered, and as follows:
    1. Into masonry: masonry anchors.
    2. Into wood: wood screws.
    3. Into metal: metal screws.

2. Secure lumber as follows:
    1. All fasteners to be placed a minimum of 12 mm (1/2”) from any edge. Install fasteners in two rows in direction of grain, with each fastener offset from one another not less than 457 mm (18”) on centre.
    2. Offset and countersink all screw fasteners flush with surface of wood blocking being secured.
    3. Co-ordinate work to keep cutting and remedial work to a minimum.

3.4 Parapets/Perimeters/Walls/Curbs/Sleepers

1. Construct parapets, perimeters, walls, curbs and sleepers as detailed.

2. Provide new HVAC equipment wood sleeper supports. Width to be a minimum of 140 mm (5.5”). Length of sleeper to span between two framing members.

3. Where possible, maintain minimum height of 305 mm (12 in.) above finished roof surface for sleepers and curbs.

4. Install wood blocking for prefabricated curbs for mechanical units to allow for a level installation where deck is sloped.

3.5 Dividers and Movement joints

1. At dividers and movement joints, neatly cut plywood to required dimensions. Cutting shall be done by 'scoring' with carbide tipped utility tool/knife or circular saw with carbide blade. Smooth cut-edges with a wood rasp.

2. Secure plywood to substrate using appropriate fasteners, screws at 205 mm (8 in.) on centre each way and along perimeters. Maintain screws 13 mm (1/2 in.) from edges and maintain 3 mm (1/8 in.) gap between each piece of board.

3.6 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

PART 1 - GENERAL

1.1 Related Work

1. Rough carpentry: Section 06100

2. Painting: Section 09900

1.2 Reference Standards

1. Do millwork to Millwork Standards of the Architectural Woodwork Manufacturers' Association of Canada (AWMAC) Premium Grade.

1.3 Shop Drawings

1. Submit shop drawings in accordance with Section 01340.

2. Clearly indicate details of construction, profiles, jointing, fastening and other related details.

1.4 Qualification

1. Millwork manufacturer to have not less than 5 years proven first class experience in institutional millwork and shall be a member of AWMAC.

PART 2 - PRODUCTS

2.1 Materials

1. Softwood lumber: to CSA 0121-M1978 and National Lumber Grades Authority (NLGA) requirements, with maximum moisture content of 10% for interior work. Yard lumber select for natural finish of species, indicated to AWMAC premium grade.

2. Hardwood lumber: to National Hardwood Lumber Association (NHLA) requirements, moisture content of maximum 10% for interior work, of species indicated to AWMAC premium grade.

3. Hardwood plywood: to CSA 0115-1967 of thickness indicated, rotary cut face veneer, birch plywood, veneer core. Select veneers to provide book match veneer strips to be 240 mm wide minimum. Grade: Select White.

4. Nails and staples: to CSA B111-1974 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-M, Grade R, 720 kg/m3 density in thicknesses indicated.

6. Book Match Veneer: strips to be 240 mm wide minimum.

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. Basis of design selection for countertops is Folkstone Graphix 507-58 by Formica, or, White Nebula 4621-60 by Wilsonart.

2.3 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.

2. Gables and panels shall be fabricated from 19 mm thick melamine surfaced panels with a P.V.C. edging applied to exposed edges.

3. Bottoms shall be fabricated utilizing the same materials and edge finish as gables. Front edge will be edged with P.V.C. edging. All other edges will be thoroughly sealed and moisture proofed prior to attachment to gables.

4. Rails shall be fabricated and machined to join the gables and form a rigid cabinet frame.

5. **Finish:**

    .1 Melamine surfaced panels shall be finished both sides in the same colours, patterns, and grain as selected by the Consultant.

2.4 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.

2.5 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 ± . 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. Use acid resistant post-forming grade laminate, where indicated on drawings. Colour: black.

7. At all wall termination, provide backsplash return.

2.6 Moulding and Trims

1. Fabricate mouldings in maximum practical lengths to profile shown. Solid birch to receive varnish finish unless noted otherwise. Install with concealed fasteners.

PART 3 - EXECUTION

3.1 Installation

1. Set and secure all material and components in place, rigid, plumb and square.

2. Provide heavy duty fixture attachments for wall mounted cabinets.

3. Use draw bolts in countertop joints.

4. At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

5. Apply water resistant building paper over wood framing members in contract with masonry or cementitious construction.

6. After installation, fit and adjust operating hardware for wood and laminated plastic cabinet doors, drawers and shelves.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Masonry Section 04200

1.2 Scope

1. Apply waterproofing on face of all walls where adjacent interior floor elevation is lower than the exterior grade elevation. Refer to plans for extents of positive side and negative side waterproofing applications.

1.3 Qualifications and Quality Assurance

1. Waterproofing shall be carried out by applicators skilled and with previous similar experience in this work in strict accordance with manufacturer's printed instructions. Submit proof of experience upon Consultant’s request.

2. Manufacturer’s representative shall be called by the applicator to inspect the substrate prior to commencement of work.

3. Manufacturer’s representative shall be retained by installer to provide technical assistance on an as-needed basis during course of installation of membrane.

1.4 Environmental Conditions

1. Do not proceed with waterproofing application during rainy or inclement weather.

1.5 Submittals

1. Submit samples and manufacturer's literature before ordering materials and proceeding with the work.

1.6 Delivery, Storage & Handling

1. Deliver and store materials in original containers with manufacturer's labels and seals intact.

2. Store solvent base liquids away from excessive heat and open flame.

3. Store emulsion liquids at above freezing temperatures, free from contact with cold or frozen surfaces.

1.7 Protection

1. Take extra care to provide ample protection of materials and work of this section from damage by weather, backfiring operations and other causes.

2. Apply protection board as soon as possible after installation of membrane.

PART 2 - PRODUCTS

2.1 Materials

1. Positive Side – applied to the exterior face of walls: materials shall be the following types supplied by Grace Construction Products:
   .1 Bituthene 5000 Membrane.
   Acceptable alternate: MEL-ROL/LM, by W.R. Meadows used in conjunction with a rolled matrix drainage system.

2. Negative Side – applied to the interior face of walls: materials shall be the following types supplied by W.R. Meadows:
   .1 CEM-KOTE CW Plus.
   Acceptable alternate: Permaquik Crystalline, Tremco

PART 3 - EXECUTION

3.1 Conditions of Surfaces

1. Before commencing work, ensure environmental and site conditions are suitable for installation of waterproofing membrane.

2. The substrate shall be clean and dry, free from surface water, ice snow or frost, dust, dirt, oil, grease, curing compounds or any other foreign matter detrimental to the adhesion of the waterproofing membrane.

3. Notify Consultant and Contractor in writing of unsuitable surfaces and working conditions. Commencement of work shall imply acceptance of surfaces and working conditions.

3.2 Membrane Application

1. **Application:** Apply waterproofing products per manufacturer's specifications. Refer to manufacturers product literature for application procedures.

3.3 Clean-Up

1. Promptly as the work proceeds and on completion, clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing work.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Masonry: Section 04200
2. Rough Carpentry (Architectural) Plywood: Section 06100
3. Firestopping and Smoke Seals for Mechanical Work: Division 15
4. Firestopping and Smoke Seals for Electrical Work: Division 16

Note: Firestopping and Smoke Seals within mechanical and electrical assemblies are specified in Divisions 15 and 16. All other firestopping and smoke seals are the responsibility of this Section.

1.2 Reference

1. ASTM E814 - Test Method of fire tests of through-penetration firestops, Factory Mutual.
2. CAN4-S101M - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
3. CAN4-S115M - Standard Method of Fire Tests of Firestop Systems.
4. ULC - List of Equipment and Materials.

1.3 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 15 and 16 a competent, single source be responsible for the firestopping and smoke seals of the entire project.

1.4 Submittals

1. Submit a product data to requirements of Section 01340.
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, ULC design references.
3. Submit proposed type of fireproofing system for each location for approval by Architect. Fireproofing System must be appropriate to achieve expected appearance and finish.

1.5 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.

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

1.6 Regulatory Requirements

1. Conform to applicable code for fire protection ratings.

2. Provide certificate of compliance for authority having jurisdiction indicating approval.

1.7 Delivery, Storage & Handling

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

1.8 Project & Site Conditions

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

1.9 Sequencing & 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 Wood Backing Insulation: ULC labelled, 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 labelled, single component silicone bases, A/D Silicone Firebarrier Sealant by A/D Fire Protection Systems Inc.

5. Firestopping Seal: ULC labelled, single component water-base seal, A/D Firebarrier Seal by A/D Fire Protection Systems Inc.

6. Firestopping Foam: ULC labelled, two components silicone foam, A/D Firebarrier RTV Foam by A/D Fire Protection Systems Inc.

7. Firestopping Mortar: ULC labelled, 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 Examination

1. Examine surfaces to receive work of this Section and report any defects which may affect the Work of this Section.

2. Verify that openings are ready to receive the Work of this Section.

3. Confirm compatibility of surfaces to receive firestopping and smoke seal materials.

4. Beginning of installation means acceptance of existing surfaces and substrate.

3.2 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 firestopping materials and smoke seals to manufacturer's instruction.

3.3 Application

1. Install firestopping and smoke seal material and components in accordance with ULC listing and manufacturer's instructions.

2. Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

3. Apply in sufficient thickness to achieve rating to uniform density and texture.

4. Provide temporary forming if required.

5. Tool or trowel exposed surfaces to a neat finish where required.

6. Remove excess material promptly as work progresses and upon completion.

7. Protect installed material until cured or set.

3.4 Cleaning

1. Clean adjacent surfaces of firestopping and smoke seal materials.

3.5 Field Quality Control

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

3.6 Scheduling

1. Firestop and smoke seal at:

    .1 Penetrations through fire separations (rated and non-rated); masonry, concrete, and gypsum board partitions and walls.
    .2 Top of fire separations (rated and non-rated); masonry and gypsum board partitions.
    .3 Intersection of fire separation masonry and gypsum board partitions.
    .4 Control and sway joints in fire separation masonry and gypsum board partitions and walls.
    .5 Penetrations through fire separation floor slabs, ceilings and roofs, if applicable.
    .6 Openings and sleeves installed for future use through fire separations.
    .7 Refer to AD drawings for locations of fire separations.
    .8 Refer to AD725 for detail of top of wall fire separation assembly.

3.7 Sound Seal

1. At top of all non fire separations masonry partitions compress mineral wool and fill space between masonry and structure. Apply sealant on at least one side of the sound separation.

End of Section

1. GENERAL

1.1 Section Includes

1. Section includes for provision of all labour, materials, equipment and services for Built-Up Modified Asphalt Roofing in accordance with Contract Documents.

1.2 Related Sections

1.	Section 06110	Rough Carpentry
2.	Section 07620	Sheet Metal Flashing and Trim
3.	Section 07901	Joint Sealers

1.3 References

1. CSA A231.1 / CSA A231.2 - Precast Concrete Paving Slabs
2. CAN/CSA A123.21 – Dynamic Wind Uplift Resistance of Roof Membrane Systems
3. CAN/CSA A123.4 – Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems
4. CAN/CSA B149.1- Natural Gas and Propane Installation Code
5. CAN/ULC – S107 – Methods of Fire Test of Roof Covering
6. CAN/ULC - S701 / ASTM C578 - Thermal Insulation, Polystyrene, Boards and Pipe Covering
7. CAN/ULC – S702 / ASTM C612 – Mineral Fibre Thermal Insulation for Buildings
8. CAN/ULC - S704 - Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced
9. CAN/ULC - S706 – Wood Fibre Thermal Insulation for Buildings
10. CAN/ULC - S114 Standard Method of Test for Determination of Non-Combustibility in Building Materials
11. CGSB-37-GP-56 / ASTM D6164 / ASTM 6163 - Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing
12. CGSB 37-GP-9 / ASTM D41 - Primer, Asphalt for Asphalt Roofing, Dampproofing and Waterproofing
13. ASTM E108/ANSI/UL 790–Standard Test Methods for Fire Tests of Roof Coverings
14. ASTM C1289 - Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
15. ASTM C1177 - Glass Mat Gypsum Substrate for Use as Sheathing
16. ASTM C1278 – Fiber Reinforced Gypsum Panels
17. ASTM D1863 - Mineral Aggregate Used on Built-Up Roofs
18. ASTM D6152 - SEBS-Modified Mopping Asphalt Used in Roofing
19. FM 4470 - Approval Standard for Class 1 Roof Covers

20. Canadian Roofing Contractors Association (CRCA) – Specification Manual

1.4 Operations

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

2. *Contractor* shall undertake all reasonable measures to reduce vibration and noise level on the roof decks during work hours.

3. Should specific complaints be issued by *Owner* to this matter, *Consultant* reserves the right to have *Contractor* proceed with other facets of the Work.

1.5 Shop Drawings and Other Submittals

1. Submit to *Consultant* for review, shop drawings, prior to commencement of work. Provide six (6) copies of the shop drawings. Indicate on shop drawings all insulation layers, slopes, crickets, insulation sumps and drainage patterns.

2. Submit Shop Drawings for: Tapered Insulation indicating on shop drawings all insulation layers, slopes, crickets, insulation sumps and drainage patterns.

3. Submit Shop Drawings for: Gas Line Supports and Roof Access Ladders, stamped by Professional Engineer licensed in province of Ontario.

4. **Submit Material List and Shop Drawings to *Consultant* for review <u>prior</u> to ordering materials and commencing Work.**

5. Construction Schedule: Submit required within 10 days of contract award.

1.6 Quality Assurance

1. Skilled trades and *Contractor*s having a minimum of five (5) years related experience shall execute roofing Work.

2. *Contractors* shall be approved applicators of system specified. Documentation shall be provided prior to commencing Work.

1.7 Roof System Compliance

1. Roof system meets requirements of CAN/ULC-S107 “Fire Tests of Roof Coverings’, Class A, B or C as listed in the ULC Directory.

2. Alternatives from other manufacturers will be considered upon submittal and review of technical data sheets and fire resistance test results, and warranty specimen demonstrating product equality.

1.8 Insulation Requirements

1. Polyisocyanurate Roof Insulation Manufacturers shall be members of Polyisocyanurate Insulation Manufacturers Association (PIMA). Manufacturers shall submit documentation listing their LTTR values based on CAN/ULC and ASTM test methods for 2014.

2. ***When insulation thickness exceeds 69 mm (2.7 in.), it shall be installed in multiple layers. Minimum thickness for bottom layer shall be 33 mm (1.3 in.) and 38 mm (1.5 in.) for top layer.***

3. ***In multiple layer applications, if thicknesses greater than 38 mm (1.5 in.) are required, thicker layer shall be installed in bottom followed by minimum 38 mm (1.5 in.) top layer.***

1.9 Warranty

1. Provide Ontario Industrial Roofing Contractor's Association (OIRCA) 'Standard Form of Warranty' for a period of two (2) years from date of Substantial Performance, including all labour, material and workmanship.

2. Provide Standard Form of Warranty including all labour, material and workmanship and a Preventative Maintenance Manual.

3. Warranty shall be for a **period of two (2) years** from date of Substantial Performance, as certified by *Consultant*.

4. Repair leaks into building or roofing assembly within 24 hours of notification. Repair all roof membrane deficiencies, including ridges, blisters, splits and bare spots.

5. Carry out all repair work during warranty period as directed by *Consultant* and at no additional cost to *Owner*. *Contractor* shall extend Warranty on replaced parts and workmanship for a period of two (2) years from date of acceptance of replacement parts and workmanship.

6. Defects shall include but will not be limited to: leaking; failure to stay in place; lifting; blow off; deformation; and breaking of weathertight seals.

1.10 Delivery, Storage and Handling

1. All materials shall be delivered, stored and handled in accordance with the Contract Documents, be in original manufacturer wrapping with labels intact and clearly identifying the product.

2. All modified bitumen membranes that will be used for installation on a daily basis must be stored at a minimum of 15^{o}C (58^{o}F) for a period of at least 4 hours prior to application. Stand rolled materials on end and protect edges.

3. Materials transported, stored or handled in a manner that contradicts Contract Documents, shall not be installed at the Place of the Work, shall be marked and removed from site.

4. Insulation, vapour retarders and roofing membranes must be kept dry under protective coverings or stored in trailers.

5. **Plastic wrapping installed at the factory is not to be used as an outside storage cover**. Emulsions must be maintained at temperatures above freezing.

6. Immediately remove and dispose of wet materials off site. Do not hoist materials with straps/ropes that damage materials. Use specialty supports.

7. Hoist material to roof surface on a daily basis, for same day use. **Do not 'drop' materials during handling and installation.**

1.11 Environmental Requirements

1. Do not install roofing when temperature remains below 0°F (-18°C) for torch applications and 23°F (-5°C) for asphalt applications.

2. Removal and installation of any roof components during inclement weather is not permitted.

1.12 Scaffolding, Ladders and Conveyances

1. Provide scaffolding, ladders and conveyances required for execution of Work and in accordance with the Contract Documents. Provide all hoisting equipment and barricades required to complete the Work.

2. Construct and maintain scaffolding in accordance with authorities having jurisdiction. If required, have scaffolding designed and stamped by Professional Engineer licensed in Province of Ontario.

1.13 Safety Barriers and Fire Protection

1. *Contractor* shall provide upstanding barrier protection at all perimeters, eaves and parapets. **Mesh, screen and tarpaulins shall also be provided to** prevent debris from blowing or falling over edge. Barriers shall be adequately constructed and secured to prevent toppling over.

2. Fire extinguishers must be on site within 3 m (10 ft.) and at same level as torch applicator. Maintain adequate fire watch (as recommended by membrane manufacturer) after each days roofing operations cease.

3. Torches must never be placed near combustible or flammable products. Torches should never be used where flame is not visible or cannot be easily controlled.

4. Never apply the torch directly to old and wood surfaces. Maintain adequate fire watch (as recommended by membrane manufacturer) during work and after each days roofing operations cease.

5. **Maintain minimum two (2) hour fire watch after torch applications have been completed.** Provide additional protection as required. Prior to leaving site, use

digital thermometer to scan roof surface temperature for 'any hot spots' and address them accordingly.

1.14 Protection

1. On a daily basis, provide interior protection to equipment, services, material, floors and walls by use of polyethylene or drop sheets, tape, tarps, plywood sheathing or other means to effectively protect contents.

2. 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.*

3. Protect work of other sections from damage while performing roofing work. Provide tarpaulins and other coverings, as required, to protect lower and adjacent walls, finishes and surfaces. Additional protection shall be provided if instructed by *Consultant*.

4. Work is to be performed on occupied buildings. Take all reasonable precautions to protect against entry of elements and persons to unauthorized areas.

5. Prevent precipitation and debris entering openings and drains during work. Prevent damage to site, roads, curbs and building elements.

6. Protect finished roof surfaces with minimum 13 mm (1/2 in.) plywood sheathing with 25 mm (1 in.) polystyrene insulation board on underside.

7. Damaged areas and surfaces shall be repaired to satisfaction of *Consultant* at no additional cost to *Owner*.

1.15 Temporary Facilities

1. Provide temporary storage facilities for materials, tools and equipment. Location to be approved by *Owner*.

2. Provide temporary washroom facilities for workers. Secure portable washrooms to adjacent fences or walls to prevent toppling over.

3. Ground work stations shall be fully enclosed by temporary fencing and be manned at all times.

4. **Disposal bins shall be located minimum 2 m (6'-6") away from building walls.**

1.16 Fastenings

1. Fasteners, anchors and adhesives shall be of appropriate size and type and must be used in sufficient quantity to provide positive and permanent anchorage of component.

2. Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted. **Powder-actuated** fastening devices are not permitted on this project. Only low velocity plunger-type devices are permitted.

2. PRODUCTS

2.1 Material

1. Primer:
    1. Asphalt Cutback Primer
    2. Modified Membrane Primer: As per Membrane Manufacturer's requirements
    3. Metal Deck Primer: Rustguard Q.D. Shop Coat Primer by Devoe Coatings
2. Vapour Retarder:
    1. Sopravap'r by Soprema Inc.
    2. Vapor-Bloc SA by Henry Company Canada
3. Asphalt for Insulation & Overlay Board:
    1. Type II and Type III by Bitumar
    2. Easy Melt 200 by IKO Industries Limited
4. Modified Roofing Asphalt for Membrane: SEBS polymer modified asphalt
    1. Thermastic 80 by Tremco
    2. Soprasphalte M by Soprema Inc.
    3. SEBS 890-12 by Henry Company Canada
5. Mechanical Fasteners For Base Layer Insulation**:** Factory Mutual (FM) Class 1, No.12 coated screws and 75 mm (3 in.) galvanized metal plate. Fasteners to be of sufficient length to penetrate through crests of metal deck 19 mm (3/4 in.).
6. **Base Insulation:** Two layers of 50 x 1220 x 1220 mm (2. in. x 4 ft. x 4 ft.), comprising of rigid closed cell polyisocyanurate foam core, bonded with **all fibre glass reinforced facer on each side**. Minimum long-term thermal resistance for 2014 material (LTTR) of RSI 1.00 (R 5.7) per 25 mm (1 in.) thickness.
    1. SOPRA-ISO by Soprema Inc.
    2. AC Foam III by Atlas Corporation Ltd.
    3. H-Shield by Hunter Panels

    Note: All polyisocyanurate insulation boards shall be provided by one manufacturer with same production dates and lot numbers and letter submitted regarding claimed R-values.

7. Tapered Insulation, Crickets, Backslope and Sumps: Fabricated from rigid closed cell polyisocyanurate foam core, bonded with **all fibre glass reinforced facer on each side** to layouts and slopes (0.5%, 0.75%, 1.0%, 2.0% or 4.0%) as indicated on drawings. Minimum thickness 13 mm (1/2 in.) 1220 x 1220 mm (4 x 4 ft.).
Provide 1220 x 1220 (4 x 4 ft.) tapered sump at 1% at all drain locations)

   Acceptable Suppliers:

   1. Accu-Plane Enterprises Inc.
   2. Posi-Slope Enterprises Inc.
   3. SOPRA-ISO Tapered by Soprema Inc.

   Filler pieces shall not exceed 63 mm (2.5 in.) per layer and same as tapered.

8. Overlay Board:

   1. 25.4 x 1220 x 1220 mm (1 x 48 x 48 in.) Mineral Fiber Roof Insulation with Asphalt Coating, 'Monoboard Plus' by Roxul

9. Modified Bituminous Membrane Base Sheet: SBS polymer modified, non-woven polyester reinforced sheet, minimum 2.2 mm (0.09 in.)
   1. Elastophene 180 Sanded by Soprema Inc.
   2. modifiedPLUS NP180 s/s Base Sheet by Henry Company Canada

10. Modified Bituminous Membrane Base Sheet Flashings:
   1. modifiedPLUS NP180 Tack Sheet and 930-38 Adhesive by Henry Company Canada
   2. Sopralene Flam Stick and Elastocol Stick Primer by Soprema Inc.
   3. Torch grade base sheet shall be used for flange flashings

11. Modified Bituminous Membrane Cap Sheet Flashings:
   1. Sopralene Flam 250 GR by Soprema Inc. (Grey Colour)
   2. TRA Elastomeric Sheeting System by Tremco, which also includes 152 mm (6 in.) wide Polytherm Roofing Felt, Burmesh and Sheeting Bond.
   3. modifiedPLUS NP250gT4 by Henry Company Canada (Grey Colour)

12. Modified Bituminous Membrane Liquid Flashings: Polyurethane/bitumen resin 'Alsan Flash' and 152 mm (6 in.) wide fabric reinforcement by Soprema Inc.

13. Aggregate: Well graded, round, opaque, non-porous material, washed, free of fines, moisture, ice and snow and long splinters, in accordance with **ASTM D 1863, Size No. 7, 12.5 – 4.75 mm (1/2 in. to No. 4).**

14. Mastic: As per membrane manufacturer's requirements

15. Pitch-Pans:
    1. Sopramasrtic Block and Sopramastic PF sealant by Soprema Inc.
    2. ChemCurb System by Chem Link, which shall include sealer and filler.
    3. Fabricated from 0.71 mm (24 gauge) stainless steel, 102 mm (4 in.) high with 152 mm (6 in.) wide flanges, all seams continuously soldered. Allow 52 mm (2 in) gap all around protrusion for pitch-pan filler.

16. Round Top Cap Nails: Ardox spiral shank with 25 mm (1 in.) steel washer

17. Bulk Granules: Coloured granules in bulk to match cap sheet.

18. Rough Carpentry: As per Section 06 10 00 – Rough Carpentry.

19. Metal Flashing: As per Section 07 62 00 – Sheet Metal Flashing and Trim.

20. Sealants: As per Section 07 92 00 – Joint Sealers.

2.2 Roofing Accessories

1. Storm Collars and Clamps: Fabricated from same material as exhaust stacks and sleeves, with continuously soldered seams and extending a minimum of 52 mm (2 in.) down face of sleeve. Allow 6 mm (1/4 in.) gap between storm collar and sleeve.

2. Precast Concrete Pavers: 52 x 610 x 610 mm (2 x 24 x 24 in.) “Brooklin Roof Ballast’ slabs with Built-In Pedslab Pedestal System”, as manufactured by Brooklin Concrete Products Limited. Colour to be natural with standard diamond texture.

3. Sprayed polyurethane foam insulation: one component polyurethane foam insulating sealant.
    1. ENERFOAM by Abisko Manufacturing Inc.
    2. Duotack by Soprema Inc.

4. Mineral Batt Insulation: Roxul Mineral Batt, of size and thickness to suit site requirements.

5. Aprons: Fabricated from 0.87 mm (0.034 in.) galvanized metal flashings to profile detailed.

6. Butyl Tape: 3 mm x 13 mm (1/8 x 1/2 in.) wide elastomeric butyl rubber.

7. Termination Bar: 3 mm x 25 mm (1/8 x 1 in.) 11 gauge extruded aluminum.

3. EXECUTION

3.1 Workmanship

1. Do work in accordance with Canadian Roofing Contractors Association Roofing Specifications Manual (CRCA) and Manufacturer's requirements **except as specified within Contract Documents and to approval of *Consultant*.**

2. More stringent requirements shall govern.

3.2 Examination and Preparation

1. Examine site conditions and surfaces to ensure that they are in satisfactory condition for the commencement of Work of this section.

2. Ensure that substrates are smooth, clean and dry. Clean surfaces of all substances, which may be detrimental to new roof system. Clean adhesives with solvent and allow vapours to dissipate prior to membrane application.

3. Application of the Work, or any part of it will constitute acceptance of conditions upon which work is to proceed.

3.3 General Requirements

1. Complete new roof system, including vapour retarder, insulations and membrane and membrane flashings to each day's termination point and install temporary water cut-off. Remove water cut-off when work resumes.

2. **If membrane is to be left exposed and there is a possibility of frost or dew, it shall be glaze coated.**

3. No materials will be installed during inclement weather, rain or snowfall.

4. **Phased construction is not acceptable.**

3.4 Primer

1. All surfaces to be primed shall be free of rust, dust or any residue that may hinder adherence.

2. Apply primer to curbs, wall, wood and metal at a minimum rate of 0.2 to 0.3 litres/m^2 (0.5-0.75 gal / 100 sq. ft.) with roller or spray. Do not allow primer to puddle.

3. Prevent primer from entering building interior through openings and joints in metal decks, by installing self-adhesive membrane at roof perimeters, walls, curbs and other roof openings.

4. Allow primer to cure prior to application of new roofing membrane or membrane flashings as detailed. Do not accelerate drying time by use of flame.

5. Self-adhesive membranes must be applied same day as primer.

3.5 Preparation of Asphalt

1. Asphalt shall be heated in kettle, equipped with a circulating pump, sufficiently to provide Equiviscous Temperature (EVT) at point of application. Do not heat asphalt above its Final Blowing Temperature (FBT). Suppliers shall provide lot-specific EVT'S for mopping applications.

2. Equip kettles with working thermometers that accurately register asphalt temperatures at all times. **Asphalt heated beyond 260ºC (550ºF) will be rejected and shall not be used.**

3. **Asphalt shall be applied at temperature not to exceed 235ºC (450ºF) for Polyisocyanurate insulation.**

4. General asphalt temperature applications shall be in the range of: 220°C (428°F) to 260°C (500°F).

5. *It is Contractor's sole responsibility to provide staff with temperature measuring devices to monitor kettle temperature and application temperature of asphalt. Asphalt temperatures shall be continuously monitored to maintain required range.*

3.6 Preparation of Modified Roofing Asphalt

1. Modified roofing asphalt shall be heated in a clean asphalt kettle equipped with a circulating pump in accordance with manufacturer's requirements.

2. Modified asphalt heated beyond 260°C (500°F) will be rejected and shall be removed from site.

3. General modified asphalt temperature applications shall be in the range of: 220°C (428°F) to 230°C (450°F).

3.7 General Requirements

1. Asphalt and Modified Asphalt Quantities (Unless otherwise noted):
    1. 1.25 kg/m^2 (25 lbs. per square) asphalt for each felt mopping.
    2. 1.25 kg/m^2 (25 lbs. per square) asphalt for mopped top coat.
    3. 3.6 kg/m^2 (75 lbs. per square) asphalt for pour coat (If pea gravel used).
    4. Type II – for slopes up to 125 mm/m (1.5"/ft) (1:8)
    5. Type III – for slopes greater than 125 mm (1.5 – 3.0 in.) (1:8 - 1:4) and for membrane flashings

2. Complete new roof system, including vapour retarder, insulations and membrane and membrane flashings to each day's termination point and install temporary water cut-off. Remove water cut-off when work resumes.

3. **Phased construction is not acceptable.**

3.8 Vapour Retarder

1. At all roof perimeters, walls, curbs, dividers, movement and control joints and penetrations, **provide 200 mm (8 in.) self-adhesive reinforcing vapour retarder to seal openings/gaps at junction of wall and deck, to prevent primer/asphalt seepage into building.**

2. **Roll out vapour retarder on dry and clean metal deck.** Peel back first 1000 mm (3 ft.) of release paper and adhere vapour retarder in place. Hold vapour retarder tight and peel off remaining release film diagonally.

3. Apply additional rolls in similar fashion and maintain 75 mm (3 in.) side laps and 150 mm (6 in.) end laps. **Side laps shall bear on crest of metal deck.** Roll vapour retarder onto deck and ensure all laps are sealed.

4. Seal vapour retarder to all penetrations. Prime surfaces as required.

5. **Vapour retarder shall provide a continuous and watertight seal.**

3.9 Base Insulation

1. Install first layer of base insulation over vapour retarder and mechanically secure into substrate to Factory Mutual FM 1-90 requirement layout pattern of five (5) fasteners per 1220 x 1220 mm (4 x 4 ft.) board, as per layout on drawing. Maintain fasteners a minimum of 150 to 305mm (6 to 12 in.) from all perimeters and corners. Provide 50% more fasteners for 2440 mm (8 ft.) perimeters and 75% more at corners for 3660 mm (12 ft.) each way.

2. Stagger all joints in insulation boards minimum 610 mm (24 in.) within adjacent boards and 305 mm (12 in.) from underlying board joints.

3. Ensure fasteners adequately engage and penetrate crest of metal deck 19 mm (3/4 in.) or embedded into wood deck 25 mm (1 in.). Fasteners that do not engage the substrate, shall be removed and re-installed. **Do not overdrive or underdrive fasteners.**

4. Apply second and subsequent layers of insulation in a full mopping of hot asphalt, applied at a rate of 1.25 kg/m^2 (25 lbs. per square).

5. **Insulation shall be immediately placed and walked into hot asphalt to achieve solid bond.**

6. Score and cut boards as required at all undulations in substrate to allow for full contact and walk in place to ensure full adhesion. At junction with wood blocking at parapets, walls and curbs, neatly trim insulation to suit profile of wood assembly and to provide a tight/butt joint.

7. Base insulation shall be reduced 13 mm (1/2 in.) for 1220 mm (4 ft.) centred at drain sump as noted on drawings. Transitions shall be ‘shaved’ to provide a smooth surface for tapered insulation or overlay board.

8. Install insulation boards ensuring panels are tightly butted and end joints between panels are staggered 610 mm (24 in.), each way.

9. Cut insulation boards to fit snugly within 6 mm (1/4 inch) of board joints, perimeters, penetrations, etc., but not oversized to damage vapour barrier during installation.

10. Do not lay more insulation boards than can be covered with roof membrane base sheet on same day. Insulation, which is damaged by moisture, shall be marked and promptly removed from site.

3.10 Tapered Insulation

1. Tapered insulation shall be applied over base insulation and under overlay board.

2. Install tapered insulation, sumps, crickets and backslope in a full mopping of hot asphalt, applied at a rate of 1.25 kg/m^2 (25 lbs. per square), in accordance with reviewed shop drawings and to minimize water ponding.

3. Insulation shall be immediately placed and walked into hot asphalt to achieve solid bond, immediately after placement. Cut insulation boards to fit snugly within 6 mm (1/4 inch) of board joints, perimeters, penetrations, etc., but not oversized to damage vapour barrier during installation.

4. Tapered sump shall be installed in its entirety same day. Under no circumstance shall sump be installed in more than one application as to build-in a high point within sump area.

5. Do not lay more insulation than can be covered with base sheet / overlay board on same day. Transitions shall be ‘shaved’ to provide a smooth surface for tapered insulation or overlay board.

3.11 Overlay Board

1. Top layer of base insulation shall be free of rust, dust or any residue that may hinder adherence of the base sheet / overlay board.

2. Apply overlay board in a full mopping of hot asphalt, applied at a rate of 1.25 kg/m^2 (25 lbs. per square). Embed overlay board into hot asphalt and weigh down / roll into place to achieve solid bond.

3. Install insulation boards ensuring panels are tightly butted and end joints between panels are staggered 610 mm (24 in.), each way and minimum 305 mm (12 in.) to underlying insulation joints. Cut boards to fit snugly within 6 mm (1/4 inch) of board joints, perimeters, penetrations, etc., but not oversized to damage vapour barrier during installation.

4. Do not lay more boards than can be covered with roof membrane base sheet on same day. Boards that are damaged shall be marked and promptly removed from site.

3.12 Fibreboard Cants

1. Install fibreboard cants at junctions between horizontal and vertical surfaces. Provide tight flush joints between length of cants and mitre corners.

2. Embed fibreboard cants in full mopping of modified asphalt. Trim fibreboard cants to suit new roof height elevations. In no case shall top of fibreboard cants extend above parapet.

3.13 Roof Membrane – Applied in Modified Roofing Asphalt

1. Provide new membrane consisting of 2-plies of modified bituminous membrane base sheet specified in this section and as detailed. Do not use materials that have defects or are damaged.

2. Unroll modified base sheets and allow to relax as required by manufacturer. Align dry and position in place and apply 2-ply membrane base sheet commencing at drain or low point working upslope with side laps to shed water.

3. Embed each membrane sheet in a solid mopping of modified roofing asphalt applied at rate of 1.2 kg/m^2 (25 lbs. per square) and extend to top of cant. Maintain minimum 50% stagger from underlying base sheet. Use chalklines to maintain neat and straight lines.

4. Thoroughly and effectively roll membrane into modified roofing asphalt to ensure full contact and adhesion. Do not step or walk on membranes during or immediately after application until bitumen has set.

5. Apply membrane base sheet without voids, wrinkles, buckles, fishmouths or any evidence of a lack of full adhesion. Deficiencies must be repaired to satisfaction of manufacturer and *Consultant*.

6. Do not 'empty/dump' excess bitumen on roof surface/membrane so that it impedes surface drainage. *Consultant* may request that bitumen/membrane be removed and new membrane applied

Roof Membrane Base Sheet Flashings: May Consist of 1-Ply Elastomeric Sheeting System or 2-Ply Modified Bituminous Membrane Flashings.

3.14 Elastomeric Sheeting System

1. Plan installation of TRA Elastomeric Sheeting so flashing height is between 205 mm to 305 mm (8-12 in.) above roof membrane or as detailed and sheeting extends 152mm (6 in.) from base of fibreboard cant onto field of roof system. In addition, all vertical end laps shall be overlapped a minimum 102 mm (4 in.).

2. Apply Thermastic to designate area in a uniform and continuous coverage. Immediately embed TRA Elastomeric Sheeting in hot application of Thermastic.

3. Apply consistent pressure to TRA Elastomeric Sheeting to achieve full adhesion of sheet to flashing substrate. Sheeting shall fully conform to all angle changes, with

no bridging or voids.

4. Secure top edge of TRA Elastomeric Sheeting to wall by using a termination bar secured at 205 mm (8 in.) centres and apply continuous sealant along top edge of bar.

5. Strip in base of flashing to roof system, using a three course application of Thermastic and 152 mm (6 in.) Polytherm roofing felt.

6. Strip in vertical/end flashing laps with BURmesh set in Sheeting Bond, followed by approved elastomeric mastic.

3.15 2-ply Modified Bituminous Membrane Flashings - General Application Guidelines

1. Apply appropriate primer to surfaces that are to receive membrane flashings at rates recommended by manufacturer. Allow primer to 'flash off' prior to membrane flashing application.

2. Apply membrane base sheet flashings in general conformance with details commencing from low point and working up-slope. Maintain minimum 75 mm (3 in.) side and 150 mm (6 in.) end laps. Laps shall be installed to shed water. Side laps shall be staggered minimum 305 mm (12 in.) from underlying membrane base sheet laps.

3. Apply base sheet in maximum 1 m (3.25 ft.) wide strips. Extending minimum of 150m (6 in.) beyond toe of cant (or vertical transition) and onto field of roof.

4. At wall and curbs, provide mechanical fasteners within laps of base sheet flashing, prior to applying succeeding sheet. Fasteners shall be installed at maximum 100 mm (4 in.) on centre commencing from 200 mm (8 in.) above roof membrane.

5. Extend modified bituminous base sheet over parapet, perimeter and eaves down outside face of walls 38 mm (1 ½ in.) onto lower substrate. Secure membrane flashing with large head galvanized nails at 150 mm (6 in.) on centre.

6. At exterior face of parapets / perimeters, apply self-adhesive base sheet flashing, to provide continuous cover over exposed wood and joints between substrates as detailed. Overlap self-adhesive base sheet under overhang of membrane base/cap sheet flashings at top edge of parapets / perimeters.

7. Repair defects in applications with additional piece of self-adhesive base sheet. Carry out repairs to satisfaction of *Consultant.*

Torching Applications

8. **Fully torch base sheet flashing to underlying membrane base sheet**. Provide 3 mm (1/8 in.) 'bitumen bleed-out' at all side and end laps.

Self-Adhesive Applications

9. Apply self-adhesive base sheet flashing onto primed surfaces and roll into place with

adequate pressure to ensure full contact and adhesion with substrate. Membrane must be rolled into place using manufacturer's approved roller.

10. Peel back 100 to 150 mm (4 to 6 in.) of silicone release paper to hold membrane in place. Gradually peel back remaining silicone release paper, pressing down on membrane with an aluminum applicator to ensure good contact/adhesion.

11. Heat weld exterior 25 mm (1 in.) of all side and end laps providing a 3 mm (1/8 in.) bitumen bleed out.

12. Thoroughly and effectively roll membrane (using manufacturer's recommended steel roller) to attain full contact and adhesion.

Reinforcement Gussets

1. Apply gussets at every angle, on inside and outside corners in accordance with manufacturer's requirements.
2. Install self-adhesive or thermofusible gussets before application of membrane base sheet flashing,
3. Install self-adhesive or thermofusible gussets over base sheet flashing and before application of membrane cap sheet flashing.

Modified Bituminous Membrane Cap Sheet Flashings

1. Apply membrane cap sheet flashings in general conformance with details commencing from low point and working up-slope.

2. Membrane sheets with a poly on top face shall have poly burned off prior to applying cap sheet flashings. Maintain minimum 50% stagger from base sheet flashing. Use chalklines to maintain neat and straight lines. Do not walk on or step into newly applied membrane.

3. Fully torch modified bituminous cap sheet flashing to attain full bond. Provide 3 mm (1/8 in.) bleed out at all side laps. Maintain minimum 75 mm (3 in.) side and 152 mm (6 in.) end laps. Laps shall be installed to shed water.

4. Terminate cap sheet 13 mm (1/2 in.) back from outside edge of parapet blocking and past base sheet flashing 52 mm (2 in) onto flat of roof.

5. At wall terminations, install and secure termination bar to adequately restrain the flashings. Secure termination bar at maximum 305 mm (12 in.) on centre. Apply sealant bead along entire length of termination bar.

6. Repair defects in applications with additional piece of torch grade base sheet. Carry out repairs to satisfaction of *Consultant*.

3.16 Sleeves

1. Provide all required vents, stacks and conduit sleeves and supports to suit site conditions.

2. At existing vent pipes, extend pipe with same material to 25 mm (1 in.) above top edge of sleeve. At existing exhaust stacks, extend pipe as required to allow for rain collar installation.

3. Prime stack flanges, top and bottom and set underside of flange in bed of mastic on membrane and position evenly around projection. Flash in flanges with one ply of torch grade base sheet. Extend membrane a minimum of 305 mm (12 in.) beyond the edge of drain flange.

4. Where stacks are installed on top of curbs, entire 'boxed curb' shall be covered with adequately secured overlay board and completely covered with torch grade membrane base sheet and cap sheet.

3.17 Parapets/Perimeters/Walls/Sleepers/Curbs

1. Butt new insulation to sleepers by neatly cutting perimeter to fit profile of sleeper.

2. Provide 2-ply membrane flashings or elastomeric sheeting over all sleepers to fully encapsulate wood and in accordance with this section and as detailed.

3. Construct parapet, perimeters, wall and curbs as detailed with new wood members constructed in accordance with Section 06 10 00 – Rough Carpentry.

4. Provide metal cap flashings at sleepers and curbs prior to re-installing units.

3.18 Dividers/Movement/Control Joints

1. At all roof dividers, movement and control joints, construct as detailed with new wood members and frame in accordance with Section 06 10 00 – Rough Carpentry.

2. Provide 2-ply membrane flashings or elastomeric sheeting in accordance with this section and as detailed.

3.19 Modified Asphalt Floodcoat and Aggregate Surfacing

1. Completed roof membrane and flashing system shall be reviewed by manufacturer providing warranty prior to application of gravel surfacing. Carry out required remedial work as required by manufacturer. *Contractor* shall be responsible for notifying manufacturer and manufacturer shall provide liter of acceptance to *Consultant.*

2. Over completed roof membrane, apply flood coat of modified hot asphalt at a rate of 2.5 kg/m^2 (50 lbs./100 ft^2) and while hot embed 3.0 kg/m^2 (60 lbs. /100 ft^2) of gravel.

3. Broom back loose gravel and apply second pour of bitumen at rate of 2.5 kg/m2 (50 lbs./100 ft^2) and gravel at rate of 15 kg/m2 (300 lbs. per square) of gravel for minimum of 3000 mm (10 ft.) each way at all corners and around all perimeters for 1220 mm (4 ft.).

4. Evenly distribute aggregate and ensure bond with flood coat. Extend aggregate to bottom edge of cant strips.

3.20 Storm Collars

1. Install storm collars complete with clamping ring and sealant over stacks where caps cannot be installed.

3.21 Electrical/Mechanical and Gas Line Penetrations

1. At pipe/conduit penetrations, provide prefabricated pitch-pan system, adhesive and mastic or insulated sleeve. Provide minimum 25 mm (1 in.) gap between penetration and inner face of pitch-pan.

2. Clean and seal the base of the penetration top the membrane and extend minimum 25 mm (1 in.) above the pitch-pan.

3. Adhere pitch-pan system to roof membrane with a continuous 6 mm (1/4 in.) sealant bead on underside of pitch-pan and all end joints. Embed onto membrane and press in place until sealant overflows from all sides. Apply continuous sealant bead at exterior face of all end joints and at junction of pitch-pan to membrane

4. Completely fill pitch-pan with required pourable sealer/mastic, with high point in the middle and sloped to exterior edge to adequately drain moisture over perimeter.

3.22 Precast Pavers

1. Install new precast paver to required layout. Saw cut to fit at corners/walls or core hole where required to fit penetrations and field dimensions. No piece shall be smaller than 152 mm (6 in.) x 610 mm (2 ft.).

2. Set pavers on pedestals and adequately balance pavers so that ‘rocking’ does not occur. Pedestal shall be minimum 152 mm (6 in.) wide by 305 mm (12 in.) long. Maintain continuous drainage under all pavers.

3.23 Pitch – Pan Pockets

1. New pitch-pan pockets are to be provided at penetrations where specified sleeves are not suitable. All surfaces shall be clean dry and free from all deleterious material. Galvanized metal penetrations and painted metal must be prepared using a grinding machine to bare metal. PVC pipe must be sanded with sandpaper.

2. All metal surfaces and the pitch-pan pocket must be cleaned with non-greasy solvent such as acetone or Methyl Ethyl Ketone (MEK). Place pitch-pan pocket at desired location and mark outside edge for reference. Pitch pocket shall be placed with minimum 25 mm (1 in) clearance from inside of pitch pocket and penetration.

3. Seal base of penetration with sealant to prevent potential of mastic flowing through openings. Apply sealant over entire granulated surface of membrane where pitch pocket will be installed, to avoid any water infiltration between pitch pocket and membrane.

4. Position pitch-pan pocket and apply a liberal bead of sealant at outside perimeter of pitch pocket. Use the tip of a trowel to adhere sealant to the membrane. Dispense an initial amount of mastic (equivalent to half of the nozzle), outside of the pitch pocket, to assure a homogeneous mixture of parts A and B.

5. Fill assembled pitch pocket with mastic until full, with a high point at middle and tapered to outside edge to allow for water flow over pitch-pocket.

3.24 Quality Control

1. *Owner* may retain an independent *Consultant* to carry out periodic supervision during construction.

2. If requested by *Consultant*, take cut-test samples of roofing membrane and membrane flashings, wrap and label samples, identify locations and submit to *Consultant* for review and testing.

3. *Contractor* shall make an allowance for **minimum of one cut test per day** and all required patching to match existing assembly. Samples must be a minimum 305 x 305 mm (12 x 12 in.) and include all new roof components including asphalt pour and gravel. Failed test results will require remedial work acceptable to *Consultant* and may entail complete removal and replacement of failed areas.

3.25 Clean-up

1. Remove all excess materials, debris, tools and equipment as work proceeds and on completion, or sooner if requested by *Consultant*. Remove all stains, asphalt, caulking or other adhesive from all surfaces.

End of Section

Part 1 - GENERAL

1.1 Section Includes

1. Section includes for provision of labour, materials, equipment and services for the supply and installation of the SBS Modified Bituminous Membrane Roofing in accordance with Contract Documents.

1.2 Related Sections

1. Section 06110 Rough Carpentry for Roofing
2. Section 07620 Sheet Metal Flashing and Trim
3. Section 07901 Joint Sealers for Roofing

1.3 References

1. CGSB-37-GP-56M / ASTM D6164 / ASTM 6163 - Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing.
2. CGSB 37-GP-9M / ASTM D41 - Primer, Asphalt for Asphalt Roofing, Dampproofing and Waterproofing.
3. CAN/ULC-S701 / ASTM C578 -Thermal Insulation, Polystyrene, Boards and Pipe Covering
4. CAN/ULC–S702 / ASTM C612 – Mineral Fibre Thermal Insulation for Buildings.
5. CAN/ULC-S704 - Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
6. CAN/ULC–S107 – Fire Test of Roof Covering.
7. ASTM E108/ANSI/UL 790–Standard Test Methods for Fire Tests of Roof Coverings.
8. CAN/CSA A123.21 – Dynamic Wind Uplift Resistance of Roof Membrane Systems.
9. CSA A231.1 / CSA A231.2 - Precast Concrete Paving Slab*s.*
10. CAN/CSA B149.1- Natural Gas and Propane Installation Code.
11. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
12. ASTM C1177- Glass Mat Gypsum Substrate for Use as Sheathing.
13. ASTM C1278 – Fiber Reinforced Gypsum Panels
14. Canadian Roofing Contractors Association (CRCA) – Specification Manual.

1.4 Shop Drawings and Other Submittals

1. Submit to *Consultant* for review, shop drawings, prior to commencement of work. Indicate on shop drawings all insulation layers, slopes, crickets, insulation sumps and drainage patterns.

2. Submit Shop Drawings for: Tapered Insulation indicating on shop drawings all insulation layers, slopes, crickets, insulation sumps and drainage patterns.

3. Submit Shop Drawings for: Gas Line Supports and Roof Access Ladders, stamped by Professional Engineer licensed in province of Ontario.

4. **Submit Material List and Shop Drawings to *Consultant* for review <u>prior</u> to ordering materials and commencing Work.**

5. Construction Schedule: Submit required within 10 days of contract award.

1.5 Quality Assurance

1. Skilled trades and *Contractor*s having a minimum of five (5) years related experience shall execute roofing Work.

2. *Contractors* shall be approved applicators of system specified. Documentation shall be provided prior to commencing Work.

1.6 Roof System Compliance

1. Roof system meets requirements of CAN/ULC-S107 “Fire Tests of Roof Coverings’, Class A as listed in the ULC Directory.

2. Roof system is based on a 2-ply SBS Modified Bituminous Membrane System by Soprema Inc**.** IKO Industries is an acceptable alternate.

3. Alternatives from other manufacturers will be considered upon submittal and review of technical data sheets and fire resistance test results, and warranty specimen demonstrating product equality.

1.7 Insulation Requirements

1. Polyisocyanurate Roof Insulation Manufacturers shall be members of Polyisocyanurate Insulation Manufacturers Association (PIMA). Manufacturers shall submit documentation listing their LTTR values based on CAN/ULC and ASTM test methods for 2014.

2. When insulation thickness exceeds 69 mm (2.7 in.), it shall be installed in multiple layers. Minimum thickness for bottom layer shall be 33 mm (1.3 in.) and 38 mm (1.5 in.) for top layer.

3. In multiple layer applications, if thicknesses greater than 38 mm (1.5 in.) are required, thicker layer shall be installed in bottom followed by minimum 38 mm (1.5 in.) top layer.

4. Curing Time: Insulation shall be cured and delivered to site in accordance with Polyisocyanurate Insulation Manufacturers Association (PIMA).

1.8 Warranty

1. Provide Standard Form of Warranty including all labour, material and workmanship and a Preventative Maintenance Manual.

2. Warranty shall be for a **period of two (2) years** from date of Substantial Performance, as certified by *Consultant*.

3. Provide **twenty (20) years with option for 25 years** roof membrane manufacturer's Warranty for labour, materials and workmanship with from date of Substantial Performance.

4. Repair leaks into building or roofing assembly within 24 hours of notification. Repair all roof membrane deficiencies, including ridges, blisters, splits and bare spots.

5. Carry out all repair work during warranty period as directed by *Consultant* and at no additional cost to *Owner*. *Contractor* shall extend Warranty on replaced parts and workmanship for a period of two (2) years from date of acceptance of replacement parts and workmanship.

6. Defects shall include but will not be limited to: leaking; failure to stay in place; lifting; blow off; deformation; and breaking of weathertight seals.

1.9 Delivery, Storage and Handling

1. All materials shall be delivered, stored and handled in accordance with the Contract Documents, be in original manufacturer wrapping with labels intact and clearly identifying the product.

2. All modified bitumen membranes that will be used for installation on a daily basis must be stored at a minimum of 15°C (58°F) for a period of at least 4 hours prior to application. Stand rolled materials on end and protect edges.

3. Materials transported, stored or handled in a manner that contradicts Contract Documents, shall not be installed at the Place of the Work, shall be marked and removed from site.

4. Insulation, vapour retarders and roofing membranes must be kept dry under protective coverings or stored in trailers.

5. **Plastic wrapping installed at the factory is not to be used as an outside storage cover**. Emulsions must be maintained at temperatures above freezing.

6. Immediately remove and dispose of wet materials off site. Do not hoist materials with straps/ropes that damage materials. Use specialty supports.

7. Hoist material to roof surface on a daily basis, for same day use. **Do not 'drop' materials during handling and installation.**

1.10 Environmental Requirements

1. Do not install roofing when temperature remains below 0ºF (-18ºC) for torch applications and 23ºF (-5ºC) for asphalt applications.

2. Removal and installation of any roof components during inclement weather is not permitted.

1.11 Scaffolding, Ladders and Conveyances

1. Provide scaffolding, ladders and conveyances required for execution of Work and in accordance with the Contract Documents. Provide all hoisting equipment and barricades required to complete the Work.

2. Construct and maintain scaffolding in accordance with authorities having jurisdiction. If required, have scaffolding designed and stamped by Professional Engineer licensed in Province of Ontario.

1.12 Safety Barriers and Fire Protection

1. *Contractor* shall provide upstanding barrier protection at all perimeters, eaves and parapets. **Mesh, screen and tarpaulins shall also be provided to** prevent debris from blowing or falling over edge. Barriers shall be adequately constructed and secured to prevent toppling over.

2. Fire extinguishers must be on site within 3 m (10 ft.) and at same level as torch applicator. Maintain adequate fire watch (as recommended by membrane manufacturer) after each days roofing operations cease.

3. Torches must never be placed near combustible or flammable products. Torches should never be used where flame is not visible or cannot be easily controlled.

4. Never apply the torch directly to old and wood surfaces. Maintain adequate fire watch (as recommended by membrane manufacturer) during work and after each days roofing operations cease.

5. **Maintain minimum two (2) hour fire watch after torch applications have been completed.** Provide additional protection as required.

6. **Prior to leaving site, use digital thermometer to scan roof surface temperature for 'any hot spots' and address them accordingly.**

1.13 Protection

1. On a daily basis, provide interior protection to equipment, services, material, floors and walls by use of polyethylene or drop sheets, tape, tarps, plywood sheathing or other means to effectively protect contents.

2. 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.*

3. Protect work of other sections from damage while performing roofing work. Provide tarpaulins and other coverings, as required, to protect lower and adjacent walls, finishes and surfaces. Additional protection shall be provided if instructed by *Consultant*.

4. Work is to be performed on occupied buildings. Take all reasonable precautions to protect against entry of elements and persons to unauthorized areas.

5. Prevent precipitation and debris entering openings and drains during work. Prevent damage to site, roads, curbs and building elements.

6. Protect finished roof surfaces with minimum 13 mm (1/2 in.) plywood sheathing with 25 mm (1 in.) polystyrene insulation board on underside.

7. Damaged areas and surfaces shall be repaired to satisfaction of *Consultant* at no additional cost to *Owner*.

1.14 Temporary Facilities

1. Provide temporary storage facilities for materials, tools and equipment. Location to be approved by *Owner*.

2. Provide temporary washroom facilities for workers. Secure portable washrooms to adjacent fences or walls to prevent toppling over.

3. Ground work stations shall be fully enclosed by temporary fencing and be manned at all times.

4. **Disposal bins shall be located minimum 2 m (6’-6”) away from building walls.**

1.15 Fastenings

1. Fasteners, anchors and adhesives shall be of appropriate size and type and must be used in sufficient quantity to provide positive and permanent anchorage of component.

2. Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted. **Powder-actuated** fastening devices are not permitted on this project. Only low velocity plunger-type devices are permitted.

1.16 Wiring Within Roof Assembly

1. If electrical wiring is encountered within roof assembly, Consultant and Owner shall be contacted immediately.

Part 2 - PRODUCTS

2.1 Material

1. Primer:

    1. Asphalt Cutback Primer
    2. Self-Adhesive Membrane Primer: Elastocol Stick by Soprema Inc.
       Approved equal: S.A.M. Adhesive by IKO Industries
    3. Modified Membrane Primer: Elastocol 500 by Soprema Inc. Approved equal by IKO Industries
    4. Metal Deck Primer: Rustguard Q.D. Shop Coat Primer by Devoe Coatings.

2. Thermal Barrier: Fibreglass mat faced panel with a specially treated gypsum core that resists moisture. Minimum 13 mm (1/2") thickness. Accepted products:

    1. Dens-Deck Prime Roofboard by Georgia-Pacific
    2. Approved Alternate

3. Mechanical Fasteners For Thermal Barrier and Base Layer Insulation**:**
   Factory Mutual (FM) Class 1, No.12 coated screws and 75 mm (3 in.) galvanized metal plate. Fasteners to be of sufficient length to penetrate through crests of metal deck 19 mm (3/4 in.).

4. Vapour Retarder:

    1. On Metal Decks: Sopravap'r and Elastocol Stick Primer by Soprema Inc.
       Approved equal: M.V.P. and S.A.M. Adhesive by IKO Industries

    2. Concrete Decks: Elastophene SP 2.2 by Soprema Inc.
       Approved equal: Torchflex TF 95 –SF-Base by IKO Industries

5. **Base Insulation:** 79 & 75 x 1220 x 1220 mm (3.1 in. & 3.0 in. x 4 ft. x 4 ft.), comprising of rigid closed cell polyisocyanurate foam core, bonded with **all fibre glass reinforced facer on each side**. Minimum long-term thermal resistance for 2014 material (LTTR) of RSI 1.00 (R 5.7) per 25 mm (1 in.) thickness. Provide 63 mm & 50 mm (2-1/2 in. & 2 in.) for 1220 x 1220 mm (48 x 48 in.) to create sump at drain.

    1. SOPRA-ISO by Soprema Inc.
    2. IKOTherm III by IKO Industries
    3. AC Foam III by Atlas Corporation Ltd.
    4. H-Shield by Hunter Panels

Note: All polyisocyanurate insulation boards shall be provided by one manufacturer with same production dates and lot numbers and letter submitted regarding claimed R-values.

6. Insulation / Overlay Board Adhesive: A high elastomeric, two part component, one step low rise foamable adhesive that contains no solvents.

    1. Duotack by Soprema Inc.

    2. Millennium Adhesive by IKO Industries

7. Tapered Insulation, Crickets, Backslope and Sumps: Fabricated from rigid closed cell polyisocyanurate foam core, bonded with **all fibre glass reinforced facer on each side** to layouts and slopes (0.5%, 0.75%, 1.0%, 2.0% or 4.0%) as indicated on drawings. Minimum thickness 13 mm (1/2 in.). 1220 x 1220 mm (4 x 4 ft.). **Provide 2440 x 2440 (8 x 8 ft.) tapered sump at 1% at all drain locations)**

    Acceptable Suppliers:

    1. Accu-Plane Enterprises Inc.

    2. Posi-Slope Enterprises Inc.

    3. SOPRA-ISO Tapered by Soprema Inc.]\

    4. IKOTherm III Tapered by IKO Industries

    Filler pieces shall not exceed 63 mm (2.5 in.) per layer and same as tapered.

8. Overlay Board/Membrane Base Sheet: 14.7 x 914 x 2440 mm (9/16 in. x 3 ft. x 8 ft.) a high performance panel comprised of a non-woven polyester base sheet factory laminated to a high density mineral fibre insulation board, with thermofusible top surface.

    1. Xpress Board HD by Soprema Inc.

    2. High density mineral wool fibre board and Modiflex MP-180-FS Base by IKO Industries installed on-site

9. Protection Board for Flashings: 6.4 x 1220 x 1524 mm (1/4 in. x 4 ft. x 5 ft.) semi-rigid protection board composed of a mineral fortified asphaltic core formed between two saturated fibreglass felts.

    1. Sopraboard by Soprema Inc.

    2. Protectoboard by IKO Industries

10. Modified Bituminous Membrane Base Sheet Flashings:

    1. Sopralene Flam Stick and Elastocol Stick Primer.
    Approved equal: Armourbond Flash HD and S.A.M. Adhesive by IKO Industries

2. Sopralene Flam 180 by Soprema Inc. (Flanges, End Laps, Patching). Approved equal: Torchflex TP-180- FF Base by IKO Industries

11. Modified Bituminous Membrane Liquid Flashings: Polyurethane/bitumen resin 'Alsan Flash' and 152 mm (6 in.) wide fabric reinforcement by Soprema Inc. Approved Equal: MS Detail by IKO Industries

12. Modified Bituminous Membrane Cap Sheet and Cap Sheet Flashings: Sopralene Flam 250 FR GR by Soprema Inc. (Grey Colour). Approved Equal: Prevent TP HD Cap by IKO Industries

13. Mastic: Sopramastic by Soprema Inc. Approved equal: AquaBarrier Mastic by IKO Industries.

14. Pitch-Pans:

    1. Sopramasrtic Block and Sopramastic PF sealant by Soprema Inc.
    2. ChemCurb System by Chem Link, which shall include sealer and filler.
    3. Fabricated from 0.71 mm (24 gauge) stainless steel, 102 mm (4 in.) high with 152 mm (6 in.) wide flanges, all seams continuously soldered. Allow 52 mm (2 in) gap all around protrusion for pitch-pan filler.

15. Sopraguard Tape: Self-adhesive, flame-stop tape with glass mat reinforcement. Approved equal: Modiflex Roof Tapes by IKO Industries

16. Round Top Cap Nails: Ardox spiral shank with 25 mm (1 in.) steel washer

17. Bulk Granules: Coloured granules in bulk to match cap sheet.

18. Rough Carpentry: As per Section 06 10 00 – Rough Carpentry.

19. Metal Flashing: As per Section 07 62 00 – Sheet Metal Flashing and Trim.

20. Sealants: As per Section 07 92 00 – Joint Sealers.

2.2 Roofing Accessories

1. New Roof Drain: refer to mechanical specified

2. Drain/Plumbing Couplings: 'Fernco Flexible Coupling', of appropriate size and type to suit site conditions by Fernco Connectors Ltd.

3. Vent (Soil) Pipe Sleeves: 1.6 mm (0.64 in.) thick, 75 or 102 mm (3 or 4 in.), one piece spun aluminum pre-insulated stack jack. To be minimum of 305 mm (12 in.) above finished roof surface. Diameter to suit site conditions. Acceptable Material:

    1. SJ-38 Insulated Stack Jack Flashing by Thaler Metal Industries Ltd.

4. Storm Collars and Clamps: Fabricated from same material as exhaust stacks and sleeves, with continuously soldered seams and extending a minimum of 52 mm (2 in.) down face of sleeve. Allow 6 mm (1/4 in.) gap between storm collar and sleeve.

5. Precast Concrete Pavers: 52 x 610 x 610 mm (2 x 24 x 24 in.) “Brooklin Roof Ballast’ slabs with Built-In Pedslab Pedestal System”, as manufactured by Brooklin Concrete Products Limited. Colour to be natural with standard diamond texture.

6. Paver / Gas Line Support Pedestals: 25 mm (1 in.) “Roofmate” as manufactured by Dow Chemical Canada Ltd. or Foamular 250 by Owens-Corning.

7. Sprayed polyurethane foam insulation: one component polyurethane foam insulating sealant.
    1. ENERFOAM by Abisko Manufacturing Inc.
    2. Duotack by Soprema Inc.
    3. Millennium Adhesive by IKO Industries

8. Mineral Batt Insulation: Rockwool Mineral Batt, of size and thickness to suit site requirements.

9. Aprons: Fabricated from 0.87 mm (0.034 in.) galvanized metal flashings to profile detailed.

10. Butyl Tape: 3 mm x 13 mm (1/8 x 1/2 in.) wide elastomeric butyl rubber.

11. Termination Bar: 3 mm x 25 mm (1/8 x 1 in.) 11 gauge extruded aluminum.

Part 3 - EXECUTION

1.1 Workmanship

1. Do work in accordance with Canadian Roofing Contractors Association Roofing Specifications Manual (CRCA) and Manufacturer’s requirements **except as specified within Contract Documents and to approval of *Consultant*.**

2. More stringent requirements shall govern.

1.2 Examination and Preparation

1. Examine site conditions and surfaces to ensure that they are in satisfactory condition for the commencement of Work of this section.

2. Ensure that substrates are smooth, clean and dry. Clean surfaces of all substances, which may be detrimental to new roof system. Clean adhesives with solvent and allow vapours to dissipate prior to membrane application.

3. Application of the Work, or any part of it will constitute acceptance of conditions upon which work is to proceed.

1.3 General Requirements

1. Complete new roof system, including vapour retarder, insulations and membrane and membrane flashings to each day's termination point and install temporary water cut-off. Remove water cut-off when work resumes.
2. No materials will be installed during inclement weather, rain or snowfall.
3. **Phased construction is not acceptable.**

1.4 Primer

1. All surfaces to be primed must be free of rust, dust or any residue that may hinder adherence.
2. Apply primer to curbs, wall, wood and metal at a minimum rate of 0.2 to 0.3 litres/m^2 (0.5-0.75 gal / 100 sq. ft.) with roller or spray. Do not allow primer to puddle.
3. Prevent primer from entering building interior through openings and joints in metal decks, by installing self-adhesive membrane at roof perimeters, walls, curbs and other roof openings.
4. Allow primer to cure prior to application of new roofing membrane or membrane flashings as detailed. Do not accelerate drying time by use of flame.
5. Self-adhesive membranes must be applied same day as primer.

1.5 Thermal Barrier (Canopies Only)

1. Apply thermal barrier in urethane adhesive. Use designed applicator and apply Duotack at 20 mm (3/4 in.) wide ribbons at 305 mm (12 in.) on centre in field of roof and at 150 mm (6 in.) for 2440 mm (8 ft. perimeters) and at 100 mm, (4 in.) at 3050 mm (10 ft.) corners.
2. Thermal barrier shall be immediately placed into adhesive bead before a film (skin) starts to form on the adhesive bead. Install new thermal barrier panels with sides and ends supported by deck flutes and with panels placed together with moderate contact. Cut boards cleanly, avoid breaking boards to conform to roof layout.
3. Stagger end joints of adjacent rows of boards. Use largest pieces possible but no piece shall be smaller than 305mm x 305mm (12 in. x 1 in.). Fill in voids larger than 6 mm (1/4 in.) with spray foam or batt insulation.

1.6 Vapour Retarder

1. At all roof perimeters, walls, curbs, dividers, movement and control joints and penetrations, **provide 200 mm (8 in.) self-adhesive reinforcing vapour retarder**

to seal openings/gaps at junction of wall and deck, to prevent primer/asphalt seepage into building.

2. **Roll out vapour retarder on clean and fully primed surface.** Peel back first 1000 mm (3 ft.) of release paper and adhere vapour retarder in place. Hold vapour retarder tight and peel off remaining release film diagonally.

3. Apply additional rolls in similar fashion and maintain 75 mm (3 in.) side laps and 150 mm (6 in.) end laps. **Side laps shall bear on solid wood or crest of deck.** Roll vapour retarder onto deck and ensure all laps are sealed.

4. Seal vapour retarder to all penetrations by use of self-adhesive vapour retarder for all occasions. Prime surfaces as required.

5. **Vapour retarder shall provide a continuous and watertight seal if being used as a temporary roof.**

1.7 Base Insulation

1. Install first layer of base insulation over vapour retarder and mechanically secure into substrate to Factory Mutual FM 1-90 requirement layout pattern of five (5) fasteners per 1220 x 1220 mm (4 x 4 ft.) board, as per layout on drawing. Maintain fasteners a minimum of 150 to 305mm (6 to 12 in.) from all perimeters and corners. Provide 50% more fasteners for 2440 mm (8 ft.) perimeters and 75% more at corners for 3660 mm (12 ft.) each way.

2. Ensure fasteners adequately engage and penetrate crest of metal deck 19 mm (3/4 in.) or embedded into wood deck 25 mm (1 in.). Fasteners that do not engage the substrate, shall be removed and re-installed. **Do not overdrive or underdrive fasteners.**

3. Apply second and subsequent layers of insulation in urethane adhesive. Use designed applicator and apply Duotack at 20 mm (3/4 in.) wide ribbons at 305 mm (12 in.) on centre in field of roof and at 150 mm (6 in.) for 2440 mm (8 ft. perimeters) and at 100 mm, (4 in.) at 3050 mm (10 ft.) corners.

4. Insulation shall be immediately placed into adhesive bead before a film (skin) starts to form on adhesive bead.

5. **Stagger all joints in insulation boards within each adjacent layer and between lower and upper layers. Walk insulation into low rise adhesive to achieve solid bond, immediately after placement.**

6. Score and cut boards as required at all undulations in substrate to allow for full contact and walk in place to ensure full adhesion. At junction with wood blocking at parapets, walls and curbs, neatly trim insulation to suit profile of wood assembly and to provide a tight/butt joint.

7. Base insulation shall be reduced 13 mm (1/2 in.) for 1220 mm (4 ft.) centred at drain sump as noted on drawings. Transition shall be 'shaved' to provide a smooth surface for tapered insulation or overlay board.

8. Install insulation boards ensuring panels are tightly butted and end joints between panels are staggered 610 mm (24 in.), each way.

9. Cut insulation boards to fit snugly at all perimeters, roof openings, etc., but not oversized to damage the vapour barrier during installation.

10. Do not lay more insulation boards than can be covered with roof membrane base sheet on same day. Insulation, which is damaged by moisture, shall be marked and promptly removed from site.

1.8 Tapered Insulation

1. Tapered insulation shall be applied over base insulation and under overlay board.

2. Install tapered insulation, sumps, crickets and backslope in low rise foam adhesive. Use designed applicator and apply adhesive at 20 mm (3/4 in.) wide ribbons at 305 mm (12 in.) on centre in field of roof and at 150 mm (6 in.) for 2440 mm (8 ft.) perimeters and at 100 mm (4 in.) at 3050 mm (10 ft.) corners.

3. Insulation shall be immediately placed into adhesive bead before a film (skin) starts to form on the adhesive bead.

4. **Tapered sump shall be installed in its entirety same day.** Under no circumstance shall sump be installed in more than one application as to build-in a high point within sump area.

5. Install insulation ensuring panels are tightly butted and walk insulation low rise foam adhesive to achieve solid bond, immediately after placement.

6. Do not lay more insulation than can be covered with base sheet / overlay board on same day.

1.9 Overlay Board / Membrane Base Sheet

1. Top layer of base insulation shall be free of rust, dust or any residue that may hinder adherence of the base sheet / overlay board.

2. Apply overlay board in urethane adhesive. Use designed applicator and apply Duotack at 20 mm (3/4 in.) wide ribbons at 305 mm (12 in.) on centre in field of roof and at 150 mm (6 in.) for 2440 mm (8 ft. perimeters) and at 100 mm, (4 in.) at 3050 mm (10 ft.) corners.

3. Allow adhesive to slightly rise and then embed insulation into place and weigh down till good adhesion is attained.

4. Stagger side and end joints to adjacent boards and to underlying insulation joints. Immediately after placement, walk boards into adhesive to achieve solid bond.

5. Gradually peel back silicone release paper at laps, pressing down on membrane with an aluminum applicator to ensure good contact and adhesion. Heat weld exterior 25 mm (1 in.) edge of side lap with a hot-air gun or torch flame.

6. Where there is no factory lap, seal butt ends with a minimum 150 mm (6 in.) torch grade membrane base sheet centred over the lap to provide a watertight seal.

7. Roll side and end laps to ensure adequate adhesion in the self-adhesive laps of membrane. Laps shall be installed to shed water, commencing from low point and working upslope.

8. Do not lay more boards than can be covered with roof membrane base sheet on same day. Boards that are damaged shall be marked and promptly removed from site.

1.10 Protection Board on Perimeter Flashings, Mechanical Curbs, Sleepers, etc.

1. Install protection board in adhesive and mechanically fasten to substrate.

1.11 Roof Membrane Base Sheet Flashings

General Application Guidelines

1. Torch off poly of underlying membrane base sheet prior to primer application.

2. Apply appropriate primer to surfaces that are to receive membrane flashings at rates recommended by manufacturer. Allow primer to ‘flash off’ prior to membrane flashing application.

3. Apply membrane base sheet flashings in general conformance with details commencing from low point and working up-slope. Maintain minimum 75 mm (3 in.) side and 150 mm (6 in.) end laps. Laps shall be installed to shed water. Side laps shall be staggered minimum 305 mm (12 in.) from underlying membrane base sheet laps.

4. Apply base sheet in maximum 1 m (3.25 ft.) wide strips. Extending minimum of 150m (6 in.) beyond toe of cant (or vertical transition) and onto field of roof.

5. At wall and curbs, provide mechanical fasteners within laps of base sheet flashing, prior to applying succeeding sheet. Fasteners shall be installed at maximum 100 mm (4 in.) on centre commencing from 200 mm (8 in.) above roof membrane.

6. Extend modified bituminous base sheet over parapet, perimeter and eaves down outside face of walls 38 mm (1 ½ in.) onto lower substrate. Secure membrane flashing with large head galvanized nails at 150 mm (6 in.) on centre.

7. At exterior face of parapets / perimeters, apply self-adhesive base sheet flashing, to

provide continuous cover over exposed wood and joints between substrates as detailed. Overlap self-adhesive base sheet under overhang of membrane base/cap sheet flashings at top edge of parapets / perimeters.

8. Repair defects in applications with additional piece of self-adhesive base sheet. Carry out repairs to satisfaction of *Consultant.*

Torching Applications

9. **Fully torch base sheet flashing to underlying membrane base sheet**. Provide 3 mm (1/8 in.) 'bitumen bleed-out' at all side and end laps.

Self-Adhesive Applications

10. Apply self-adhesive base sheet flashing onto primed surfaces and roll into place with adequate pressure to ensure full contact and adhesion with substrate. Membrane must be rolled into place using manufacturer's approved roller.

11. Peel back 100 to 150 mm (4 to 6 in.) of silicone release paper to hold membrane in place. Gradually peel back remaining silicone release paper, pressing down on membrane with an aluminum applicator to ensure good contact/adhesion.

12. Heat weld exterior 25 mm (1 in.) of all side and end laps providing a 3 mm (1/8 in.) bitumen bleed out.

13. Thoroughly and effectively roll membrane (using manufacturer's recommended steel roller) to attain full contact and adhesion.

1.12 Reinforcement Gussets

1. Apply gussets at every angle, on inside and outside corners in accordance with manufacturer's requirements.
2. Install self-adhesive or thermofusible gussets before application of membrane base sheet flashing,
3. Install self-adhesive or thermofusible gussets over base sheet flashing and before application of membrane cap sheet flashing.

1.13 Roof Membrane Cap Sheet

1. Base sheet application shall be reviewed by manufacturer and *Consultant* prior to proceeding with membrane cap sheet.

2. Apply membrane cap sheet commencing from centre of drain or low end and working upslope. **Fully torch cap sheet** to base sheet and extend to edge of perimeter, after base sheet flashing has been completed.
3. Provide 3 mm (1/8 in.) 'bitumen bleed-out' at all side and end laps. Maintain minimum 75 mm (3 in.) side and 152 mm (6 in.) end laps. Laps shall be installed to shed water.

4. Maintain minimum 50% stagger from base sheet. Use chalklines to maintain neat and straight lines. Do not walk on or step into newly applied membrane.

5. Apply loose granules in areas where excess heat welding has occurred. Apply heat to affected area, place granules and embed them into warm membrane.

6. Apply membrane cap sheet without voids, wrinkles, buckles, fishmouths or any evidence of a lack of full adhesion. Repair defects to satisfaction of *Consultant*.

1.14 Roof Membrane Cap Sheet Flashings

1. Apply membrane cap sheet flashings in general conformance with details commencing from low point and working up-slope.

2. Membrane base sheets/flashings with a poly on top face shall have poly burned off prior to applying cap sheet flashings. Maintain minimum 50% stagger from base sheet flashing. Use chalklines to maintain neat and straight lines. Do not walk on or step into newly applied membrane.

3. Fully torch modified bituminous cap sheet flashing to attain full bond.

4. Terminate cap sheet 13 mm (1/2 in.) back from outside edge of parapet blocking and past base sheet flashing 52 mm (2 in) onto flat of roof.

5. Provide 3 mm (1/8 in.) bleed out at all side laps. Maintain minimum 75 mm (3 in.) side and 152 mm (6 in.) end laps. Laps shall be installed to shed water.

6. At wall terminations, install and secure termination bar to adequately restrain the flashings. Secure termination bar at maximum 305 mm (12 in.) on centre. Apply sealant bead along entire length of termination bar.

7. Repair defects in applications with additional piece of torch grade base sheet. Carry out repairs to satisfaction of *Consultant*.

1.15 Drains

1. Cut opening through membrane base sheet, insulation, thermal barrier, vapour retarder and centre drain over pipe. Apply mastic on underside of flange.

2. Insert drain body into new drain pipe until flange is flush with roof membrane. Secure new drains with mechanical (MJ) connection and underside with deck clamp.

3. **Note: Overlay board to be completely cut-out under drain flange.**

4. Flash drain flange with one ply of torch grade base sheet. Extend membrane a minimum of 305 mm (12 in.) beyond the edge of drain flange. Membrane cap sheet to be extended continuously through drain area.

5. Install clamping ring, control flow and aluminum strainer over raised bosses and install screws to tighten ring against membrane and flashings until secure.

6. Ensure roof drains are clear of debris and free draining at project completion.

1.16 Sleeves

1. Provide all required vents, stacks and conduit sleeves and supports to suit site conditions.

2. At existing vent pipes, extend pipe with same material to 25 mm (1 in.) above top edge of sleeve. At existing exhaust stacks, extend pipe as required to allow for rain collar installation.

3. Prime stack flanges, top and bottom and set underside of flange in bed of mastic on membrane and position evenly around projection. Flash in flanges with one ply of torch grade base sheet. Extend membrane a minimum of 305 mm (12 in.) beyond the edge of drain flange.

4. Where stacks are installed on top of curbs, entire 'boxed curb' shall be covered with adequately secured overlay board and completely covered with torch grade membrane base sheet and cap sheet.

1.17 Parapets/Perimeters/Walls/Sleepers/Curbs

1. At mechanical units, provide new wood sleepers as detailed that extend over minimum 3 joist supports to maximum length required to support units or match existing. Butt new insulation to sleepers by neatly cutting perimeter to fit profile of sleeper.

2. Provide 2-ply membrane flashings over all sleepers to fully encapsulate wood and in accordance with this section.

3. Construct parapet, perimeters, wall and curbs as detailed with new wood members constructed in accordance with Section 06 10 00 – Rough Carpentry.

4. Provide 2-ply membrane flashings at all noted locations in accordance with this section and as detailed.

5. Provide metal cap flashings at sleepers and curbs prior to re-installing units.

1.18 Dividers/Movement/Control Joints

1. At all roof dividers, movement and control joints, construct as detailed with new wood members and frame in accordance with Section 06 10 00 – Rough Carpentry.

2. Provide 2-ply membrane flashings at all noted locations in accordance with this section and as detailed.

1.19 Overflow Scuppers

1. Where indicated on drawings, install new scuppers and secure to substrate.

2. Flash in scupper flanges with one-ply of self-adhesive base and one ply torch grade cap sheet.

1.20 Storm Collars

1. Install storm collars complete with clamping ring and sealant over stacks where caps cannot be installed.

1.21 Electrical/Mechanical and Gas Line Penetrations

1. At pipe/conduit penetrations, provide prefabricated pitch-pan system, adhesive and mastic or insulated sleeve. Provide minimum 25 mm (1 in.) gap between penetration and inner face of pitch-pan.

2. Clean and seal the base of the penetration top the membrane and extend minimum 25 mm (1 in.) above the pitch-pan.

3. Adhere pitch-pan system to roof membrane with a continuous 6 mm (1/4 in.) sealant bead on underside of pitch-pan and all end joints. Embed onto membrane and press in place until sealant overflows from all sides. Apply continuous sealant bead at exterior face of all end joints and at junction of pitch-pan to membrane

4. Completely fill pitch-pan with required pourable sealer/mastic, with high point in the middle and sloped to exterior edge to adequately drain moisture over perimeter.

1.22 Precast Pavers

1. Install new precast paver to required layout. Saw cut to fit at corners/walls or core hole where required to fit penetrations and field dimensions. No piece shall be smaller than 152 mm (6 in.) x 610 mm (2 ft.).

2. Set pavers on pedestals and adequately balance pavers so that ‘rocking’ does not occur. Pedestal shall be minimum 152 mm (6 in.) wide by 305 mm (12 in.) long. Maintain continuous drainage under all pavers.

1.23 Pitch – Pan Pockets

1. New pitch-pan pockets are to be provided at penetrations where specified sleeves are not suitable. All surfaces shall be clean dry and free from all deleterious material. Galvanized metal penetrations and painted metal must be prepared using a grinding machine to bare metal. PVC pipe must be sanded with sandpaper.

2. All metal surfaces and the pitch-pan pocket must be cleaned with non-greasy solvent such as acetone or Methyl Ethyl Ketone (MEK). Place pitch-pan pocket at desired location and mark outside edge for reference. Pitch pocket shall be placed with minimum 25 mm (1 in) clearance from inside of pitch pocket and penetration.

3. Seal base of penetration with sealant to prevent potential of mastic flowing through openings. Apply sealant over entire granulated surface of membrane where pitch

pocket will be installed, to avoid any water infiltration between pitch pocket and membrane.

4. Position pitch-pan pocket and apply a liberal bead of sealant at outside perimeter of pitch pocket. Use the tip of a trowel to adhere sealant to the membrane. Dispense an initial amount of mastic (equivalent to half of the nozzle), outside of the pitch pocket, to assure a homogeneous mixture of parts A and B.

5. Fill assembled pitch pocket with mastic until full, with a high point at middle and tapered to outside edge to allow for water flow over pitch-pocket.

1.24 Mechanical Equipment

1. *Contractor* shall be responsible to remove and re-install roof mounted mechanical equipment and services necessary to facilitate application of new roof system. This includes temporary removal and replacement of all associated ductwork. Do not disconnect H.V.A.C. without approval of *Owner*.

2. Mechanical pipes and gas lines must be disconnected and sufficiently supported. Use treated wood blocks located on concrete pavers resting on top of pedestals to temporarily support equipment.

3. During roof replacement operations, all H.V.A.C. ducts are to be adequately supported. Temporary removal of gas piping is responsibility of *Contractor* and must be re-installed in accordance with applicable regulations and authorities having jurisdiction.

4. *Contractor* must provide for adjustments to ducting, duct supports and piping to suit new roof elevations and new mesh and mastic repairs to match existing duct coatings.

5. At wall junctions, ductwork is to be sealed with transition membranes that are secured to wall with termination bar or metal flashings and provide a watertight junction.

6. Submit certificate from licensed mechanical contractor stating that all modifications/connections comply with Building Automation System and that it is fully functional.

1.25 Electrical Equipment

1. *Contractor* must disconnect all wiring and junction boxes required to facilitate installation of new roof system. Prior to disconnecting electrical systems, obtain approval from *Consultant* or *Owner*. Provide minimum 48 hours' notice for clearance.

2. Submit certificate from licensed electrical contractor stating the all modifications/connections comply with the Electrical Safety Authority (ESA).

1.26 Quality Control

1. *Owner* may retain an independent *Consultant* to carry out periodic supervision during construction.

2. If requested by *Consultant*, take cut-test samples of roofing membrane and membrane flashings, wrap and label samples, identify locations and submit to *Consultant* for review and testing.

3. *Contractor* shall make an allowance for **minimum of one cut test per day** and all required patching to match existing assembly. Samples must be a minimum 305 x 305 mm (12 x 12 in.) and include all new roof components including asphalt pour and gravel. Failed test results will require remedial work acceptable to *Consultant* and may entail complete removal and replacement of failed areas.

1.27 Clean-up

1. Remove all excess materials, debris, tools and equipment as work proceeds and on completion, or sooner if requested by *Consultant*. Remove all stains, asphalt, caulking or other adhesive from all surfaces.

End of Section

PART 1 - GENERAL

1.1 Section Includes

1. This 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 06110 Rough Carpentry for Roofing
2. Section 07520 Built Up Roofing
3. Section 07521 SBS Modified Bituminous Membrane Roofing
4. Section 07901 Joint Sealers for Roofing

1.3 References

1. ASTM A653M- Sheet Steel, Zinc Coated (Galvanized) by the Hot Dipped Process, General Requirements.
2. CAN/CGSB 37-GP-9M / ASTM D41- Asphalt Primer.
3. Canadian Sheet Steel Building Institute (CSSBI) Bulletin No. SSF-3, Core and Maintenance of Pre-finished Sheet Steel Building Products.
4. Canadian Roofing Contractors Specification Manual- 'FL' Series Details.
5. SMACNA Architectural Sheet Metal Quality Assurance Manual - 2015

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. Locate mock-ups at specific areas designated by *Consultant*.

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

3. 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 Quality Assurance Manual - 2015 by skilled trades having a minimum of five (5) years related experience.

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.

Part 2 - PRODUCTS

2.1 Material

1. Prefinished Steel Sheet: Galvanized steel, 0.71 mm (24 gauge) core nominal thickness, zinc coated (galvanized) to designation G90 by the hot dip process, with a prefinished coat. Profiles as detailed.

2. Pre-finished Coat and Primer: 8,000 series finish, factory applied coating on high grade primer. Colour to be approved by Consultant/Owner selected from standard colours listed in General Colour Card.

3. Starter (Hook) Strips: Fabricated from prefinished steel sheet, 0.87 mm (22 gauge) core nominal thickness. Minimum 100 mm (4 in.) wide face **or as detailed** and shall extend onto wall substrate minimum 38 mm (1-1/2 in.) and be continuous.

4. Termination Bar: 3 mm x 25 mm (1/8 x 1 in.) extruded aluminum bar.

5. Fasteners: In accordance with Section 06 10 00 – Rough Carpentry.

6. Touch-up paint: As supplied and recommended by sheet steel manufacturer.

7. Exposed Sheet Metal Fasteners: Self-Drilling Hex Head with washer and colour coded cap

8. Cap, Counter and Fascia Metal to be fabricated to layouts and details shown on drawings and to extent required.

9. Overflow Scuppers: Overflow (Where Shown on Drawings): Fabricated from 0.71 mm (24 gauge) stainless steel. To be a minimum 203 mm wide x 104 mm high (8 x 4 in.) with continuously soldered seams with a 152 mm (6 in.) wide apron/flanges. Bottom edge to extend 38 mm (1-1/2 in.) past wall and top edge 25 mm (1 in.) with open end.

10. Sealants: In accordance with Section 07 92 00 – Joint Sealer.

Part 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. Fabricate cap flashings, counter flashings, closures, starter strips, and other miscellaneous sheet metal work with prefinished sheet metal in general accordance with applicable CRCA 'FL' series specifications and / or as indicated on Drawings.

3. 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.

4. Double back all edges a minimum of 13 mm (1/2 in.).

5. Form joints with S-locks and make allowances for movement. Mitre and form standing seams at all corners. Make allowance for movement at joints.

6. Provide a counter flashing and an intermediate vertical flashing where the cap flashing is greater than 610 mm (24”) above the top of the roofing membrane. Form vertical flashings in 1220 mm (4 ft.) maximum lengths.

7. Fabricate cap flashings, counter flashings and starter strips to details shown and where required.

8. 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.

9. **Provide horizontal stiffening rib “V” on all face metal exceeding 225 mm (9 in.) in girth and where shown on drawings.**

10. 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.

11. 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.

12. 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 for all metal cap and counter flashings and gravel stops secured at a maximum 406 mm (16 in.) on centre in a zig-zag-pattern.

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 or re-use existing (where approved by *Consultant*), into masonry surfaces to accommodate installation of sheet metal flashings. Reglet is to be a minimum 19 mm wide x 25 mm deep (3/4 in. x 1 in.).

5. 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. Provide fasteners with washers.

6. At reglets, return top edge of flashings into reglet 25 mm (1 in.). Secure flashings with pin grips, spaced at maximum 406 mm (16 in.) on centre and apply sealant bead to shed water.

7. Provide continuous termination bar at top edge of membrane flashings where indicated on Drawings and at locations where membrane flashings terminate at base of a wall and no other means of mechanical securement is specified or indicated. Fasten termination bar to substrate at a maximum 305 mm (12 in.) on centre with appropriate fasteners.

8. Fasteners are to be located a 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 the end of one length in a 25 mm (1 in.) deep "S" lock formed in the end of the adjacent length. Concealed portion of the "S" lock shall extend 25 mm (1 in.) outwards and shall be nailed to substrate. Face nailing of joints will not be permitted.

10. Top edge of counter flashing shall be inserted under cap flashings.

11. Provide three exposed fasteners on interior side of cap flashing, evenly spaced per 2400 mm (8 ft.) length.

3.3 Overflow Scuppers

1. Where indicated on drawings, install new scuppers and secure to substrate.

2. Flash in scupper flanges in accordance with appropriate roof section.

3.4 Clean-up

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

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Caulking in connection with roof flashing: Section 07620

1.2 Environmental Conditions

1. Sealant and substrata materials to be minimum 5 deg. C.

2. Should it become necessary to apply sealants below 5 deg. C, consult sealant manufacturer and follow their recommendations.

1.3 Warranty

1. Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run lose adhesion or stain adjacent surfaces in accordance with General Conditions, but for five (5) years total.

PART 2 - PRODUCTS

2.1 Materials

1. Primers: type recommended by sealant manufacturer.

2. Joint Fillers:

   .1 General: compatible with primers and sealants, outsized 30 to 50%.
   .2 Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.
   .3 Neoprene or butyl rubber: round solid rod, Shore A hardness 70.
   .4 Polyvinyl chloride or neoprene: extruded tubing with 6 mm minimum thick walls.
   .5 Bond breaker: pressure sensitive plastic tape which will not bond to sealants.
   .6 Sealant Type A: One component, chemical curing, conforming to CAN2-19.13-M82, Class C-2-25-B-N; multi-component, chemical curing, conforming to CAN2-19.24-M80, Type 2, Class B.
   .7 Sealant Type B: Multi-component, chemical curing mildew resistant conforming to CGSB 19-GP-22M.
   .8 Sealant type C: Multi-component, acrylic emulsion base, conforming to CGSB 19-GP-17M.
   .9 Sealant type D: One component, polyurethane base, chemical curing, conforming to CAN2-19.13-M82, Class C-1-25-B-N; or multi-component, chemical curing, conforming to CAN2-19.24-M80, type 1.

3. Color of Sealants: to be selected by Consultant. Allow for a total of three (3) colours for Type A, two colours for Type B, two colours for Type C and one colour for Type D. Locations as directed on site by Consultant.

4. Joint cleaner: xylol, methylethyl-ketone or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

5. Vent tubing: 6 mm inside diameter extruded polyvinyl chloride tubing.

PART 3 - EXECUTION

3.1 New Work

1. Caulk where specified in 3.4 and everywhere required.

2. Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.

3. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

4. Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.

5. Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturer's instructions.

6. Examine joint sizes and correct to achieve depth ratio 1/2 of joint width with minimum width and depth of 6 mm, maximum width 25 mm.

7. Install joint filler to achieve correct joint depth.

8. Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

9. Apply bond breaker tape where required to manufacturer's instructions.

10. Prime sides of joints to sealant manufacturer's instructions immediately prior to caulking.

3.2 Application

1. Apply sealants, primers, joint fillers, bond breakers, to manufacturer's instructions. Apply sealant using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

2. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities. Neatly tool surface to a slight concave joint.

3. In masonry cavity construction, vent caulked joints from cavity to 3 mm beyond external face of wall by inserting vent tubing at bottom of each joint and maximum to 1500 mm o.c. vertically. Position tube to drain to exterior.

4. In precast concrete panel facing, vent space behind panels by inserting vent tubing at bottom of each vertical caulked joint and at every second intersection of horizontal and vertical joints. Position tube to drain to exterior.

5. Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after tooling of joints.

6. Use sealants specified in the following locations:

   Type A: Joints between windows or door frames and adjacent building components; control and expansion joints and all other locations where sealing is required, except in locations designated for Type B, C and D. Ensure that sealant chosen (from the several specified under "MATERIALS") for each location is recommended by manufacturer for use on surfaces encountered.

   Type B: Joints between splash backs and walls.

   Type C: Joints between interior metal door frames and partitions.

   Type D: Joints in horizontal surfaces between concrete slabs, pavers and precast concrete panels.

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 06110 Rough Carpentry for Roofing
2. Section 07520 Built Up Roofing
3. Section 07521 SBS Modified Bituminous Membrane Roofing
4. Section 07620 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.
5. CAN/ULC-S115-05 Standard Method of Fire Tests of Firestop Systems.
6. ULC List of Equipment and Materials, Firestop Systems and Components.

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 minimum five years 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^{o}C (68^{o}F) immediately prior to application. Sealant applications must be carried out when ambient temperature is above 0^{o}C (32^{o}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. Vertical Wall Joints - Three-component, chemically curing, epoxidized polyurethane sealant, 'Dymeric 240' by Tremco Incorporated.

4. Silicone sealants: Silicone based sealant, for metal to metal junctions and glazing. Acceptable Material:

    1. Spectrum 2 as manufactured by Tremco Incorporated.
    2. Dow Corning 999-A Silicone Building & 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. Firestop Sealant: By Tremco, Dow Corning Canada Inc., GE Silicone, 3M Corporation or approved equal, to CAN/ULC-S115-05.

7. Joint Backing: Polyethylene, urethane, neoprene or vinyl, extruded foam recommended by sealant manufacturer. Circular shape with diameter 25% greater than joint width before installation.

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 Removal of Exiting Sealants

1. Remove existing sealants, backing material, dust, oil, grease, oxidation, millscale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and grinding.

2. Rake out joints, cracks and crevices to receive sealant, to a depth measuring half the joint width. Clean out existing reglets to satisfaction of *Consultant*.

3.2 Preparation

1. Examine joint sizes and conditions to establish correct depth to width ratio for joint backing and sealant. Clean joint surfaces of deleterious material and substances including dust, rust, oil grease, and other matter that may impair work.

2. Ensure joint surfaces are dry and frost free. Prepare substrate as recommended by sealant manufacturer ensuring adjacent surfaces are not damaged.

3. Commencement of Work implies acceptance of existing conditions and assuming full responsibility for finished condition of the Work.

3.3 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. Prime copper, concrete and masonry surfaces to receive sealant.

3.4 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. Where required, mix materials in strict accordance with sealant manufacturer’s instructions. Apply sealant using appropriate gun with proper size nozzle.
5. Apply sealant in continuous beads, in solid contact to underlying surfaces with sufficient pressure to fill voids and joints solid.
6. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities. Superficial skin bead is not acceptable.
7. Tool exposed surfaces before skinning occurs to attain concave shape using approved tools.
8. Cure sealant in accordance with the manufacturer's requirements. Do not cover up sealants until proper curing has taken place.

3.5 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

PART 1 - GENERAL

1.1 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 Architect.

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 Architect.

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 Architect.

6. Doors and frames shall be prepared for, but not limited to, preparation for continuous hinges, heavy weight hinges, cylindrical locks, rim and concealed vertical rod/ mortise lock case exit devices, surface door closers and concealed overhead stops.

1.2 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.

1.3 Requirements of regulatory agencies

1. Install fire labeled steel door and frame product in accordance with NFPA-80, current edition, unless specified otherwise.

1.4 References

1.	ANSI A115.IG-1994	Installation Guide for Doors and Hardware
2.	ANSI A250.4-1994	Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.
3.	ASTM A653-M97	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4.	ASTM A924-M97	Standard Specification for General Requirements for Sheet, Metallic-Coated by the Hot-Dip Process.
5.	ASTM B117-95	Method of Salt Spray (Fog) Testing.
6.	ASTM C177-97	Test Method for Steady-State heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot -Plate Apparatus.
7.	ASTM C518-91	Test method for Steady State Heat Flux Measurements and Thermal Transmission properties by means of the heat Flow Meter Apparatus.
8.	ASTM C578-95	Specification for Rigid, Cellular polystyrene Thermal Insulation.
9.	ASTM C665-95	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
10.	ASTM D1735-92	Practice for Testing Water Resistance of Coating Using Water Fog Apparatus.
11.	CAN4-S104-M80	Fire Tests of Door Assemblies.
12.	CAN4-S105-M85	Standard Specification for Fire Door Frames Meeting the performance required by CAN4-S104.
13.	CAN4-S106-M80	Standard Method for Fire Tests of Window and Glass Block Assemblies.

14. CGSB 41-Gp-19Ma Rigid Vinyl Extrusions for Windows and Doors

15. CGSB 82.5-M88 Insulated Steel Doors.

16. CSA A101-M83 Mineral Fiber Thermal insulation for Buildings.

17. CSA W59-M89 Welded Steel Construction (Metal Arc Welding)

18. ISO 9001:1994 Quality Systems – Model for Quality Assurance.

19. NFPA-80, 1999 Fire Doors and Windows

20. CSDMA Dimensional Standards for Commercial Steel Doors and Frames.

21. Manufacturers Standard and Galvanized Sheet Gauges

22. Fleming Fire Labeling Specifications

23. ULC List of Equipment and Materials, Volume 2

1.5 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 Architect 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.

1.6 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.

1.7 Submittals

1. Submit shop drawings in accordance with the General Conditions of the Contract.

2. Indicate each type of door, frame, steel, core, material thickness, mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, paneled or louvered) and arrangement of standard builders' hardware.

3. Include a schedule identifying each unit, with door marks or numbers referencing the numbering in Architect's schedules or drawings.

4. Provide confirmation in writing that all aspects to reinforcing, construction, and gauge of metal are met as written in this section.

1.8 Warranty

1. All steel door and frame product shall be warranted from defects in workmanship for a period of one (1) year from date of shipment.

2. All steel door and frame product shall be warranted against rust perforation for a period of five (5) 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 five (5) 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 Doors

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.

.2 Door Cores:
Honeycomb:
Structural small cell (25.4 mm maximum) kraft paper "honeycomb". Weight: 36.3 kg per ream (minimum), density: 16.5 kg/m^3 (minimum), sanded to the required thickness.
.1 Polystyrene:
Rigid extruded, fire retardant, closed cell board, density 16kg/m^2, thermal values: RSI 1.06 minimum, conforming to ASTM C578.
.2 Temperature Rise Rated (TRR):
Solid slab core of non-combustible, inorganic composite to limit temperature rise on the "unexposed" side of door to 250°C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Architect.

.3 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.
.2 Interlocking Edge Seams:
Resin reinforced polychloroprene (RRPC), fire resistant, high viscosity, sealant/adhesive or UL approved equivalent.
.3 Polystyrene Cores:
Heat resistant, epoxy based, low viscosity, contact cement.
4. Primer:
Rust inhibitive touch-up only.
5. Exterior Top Caps:
Rigid polyvinylchloride (PVC) extrusion.

2. **Construction**

.1 General:
.1 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.
.2 Doors shall be swinging, 44.4 mm thick of the types and sizes indicated on the schedules or drawings.
.3 Exterior doors shall be lock seam, flush.
.4 Face sheets for exterior doors shall be fabricated from (16) gauge steel.
.5 Longitudinal edges of exterior doors shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.
.6 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.

.7 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.
.8 Interior doors shall be stiffened, insulated and sound deadened with honeycomb core laminated under pressure to each face sheet.
.9 Stiffened, insulated and sound deadened with core where Temperature Rise Rated (TRR) fire labeled doors are specified.
.10 Longitudinal edges of interior doors shall be mechanically interlocked, adhesive assisted with edge seams visible.
.11 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.
.12 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.
.13 Lock and hinge edges shall be beveled 3 mm in 50 mm unless builders' hardware or door swing dictates otherwise.
.14 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.
.15 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.
.16 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.
.17 Exterior 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.

.2 **Hardware Preparations:**
.1 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.
.2 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
.3 Doors shall be factory reinforced only for surface mounted hardware.
.4 Templated holes 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.
.5 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.
.6 Hinge and pivot reinforcements shall be 10 gauge steel minimum high frequency type reinforcing.

.7 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.
.8 Lock, strike and flush bolt reinforcements shall be 12 gauge steel minimum.
.9 Reinforcements for concealed closers and holders shall be 12 gauge steel minimum.
.10 For surface mounted hardware, reinforcements shall be 16 gauge steel minimum.
.11 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.
.12 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.
.13 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.
.14 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.
.15 Doors and Frames shall be prepared for, but not limited to preparations for heavy weight oversized Butt Hinges, Continuous Hinges, Cylindrical Locksets, Concealed Vertical Rod and Mortise Lock Case Exit Devises, Surface Door Closer and concealed Overhead Stops.

.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 that 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.

.4 Louver Preparations:
.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.

.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.

2.2 Panels

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

2.3 Frame Product

1. **Materials**

.1 Steel:
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:
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/m^3 (minimum), conforming to ASTM C665

2. **Construction**

.1 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/m^3 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 galvanneal 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.

.2 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.

.3 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 reinforcings 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.

.4 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.

2.4 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 +1.6mm, -0.8mm.
.2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of $\pm$ 1.2mm.

.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 ± 1.2mm.

.4 Manufacturing tolerances on formed frame profiles shall be ± 0.8mm for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbet shall be ± 1.6mm and ± 0.4mm respectively. Hardware cutout dimensions shall be as per template dimensions, +0.4mm, -0.

2.5 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

1. Install doors and frames in accordance with the Door and Hardware Institute “Installation guide for doors and hardware”.

2. Set frame product plumb, square, aligned, without twist at correct elevation.

3. 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 $\pm$ 1.6mm.
    .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 $\pm$ 1.6mm.
    .3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be $\pm$ 1.6mm.
    .4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be $\pm$ 1.6mm.

4. Fire labeled product shall be installed in accordance with NFPA-80.

5. Secure anchorages and connections to adjacent construction.

6. 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.

7. Frame product in unit masonry shall be fully grouted in place.

8. Install doors maintaining clearances outlined in Section 2.4.

9. Install louvers and vents.

10. Adjust operable parts for correct clearances and function.

11. Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.

12. Any grout or other bonding material shall be cleaned from products immediately following installation.

13. Exposed field welds shall be finished to present a smooth uniform surface and shall be touched-up with a rust inhibitive primer.

14. Exposed surfaces that have been scratched or otherwise marred during shipment, installation or handling shall be touched-up with a rust inhibitive primer.

15. Finish paint in accordance with Section 09900.

16. Install glazing materials and door silencers.

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 Architect 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 Architect.

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 verified on site with the Architect.

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 09900.

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 Architect. If prefinished equipment is damaged, it shall be re-painted. Painting to be by formulations specified in Section 09900.

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.

1.4 Abbreviations Legend

1. Refer to Room Finish Schedule for abbreviations Legend.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Sealants: caulking — Section 07900

1.2 Reference Standards

1. Do tile work to Installation Manual 200-1979, "Ceramic Tile," produced by Terrazzo Tile and Marble Association of Canada (TTMAC), except where specified otherwise.

1.3 Maintenance Material

1. Provide maintenance data for tile work for incorporation into Maintenance Manual specified in Section 01720.

2. Provide 12 additional tiles of each type and color of tile required for project for maintenance use. Store where directed. Clearly identify each box.

3. Maintenance material to be of same production area as installed material.

1.4 Environmental Requirements

1. Air temperature and structural base temperature at tile installation area must be above 13 degrees C for 24 hours before, during and 24 hours after installation.

1.5 Extended Warranty:

1. Submit a warranty for entire flooring tile installation, covering materials and labour and the repair or replacement of defective work for three (3) years total.

PART 2 - PRODUCTS

2.1 Tiles

1. Designation PT: porcelain tile to CAN 2-75-1M77.

    .1 Basis of design: Lea Stone Series distributed by Olympia tile, size 300 mm x 600 mm. Acceptable alternates by Centura and Crossville.

2.2 Accessories

1. Control Joints – Schluter – Dilex –KSN for floors and walls with Tiles.

2.3 Setting Materials

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, “Kerapoxy” by Mapei, distributed by Midgley and West, Hamilton Ontario.

   .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. Sanded, Portland cement based with Plastijoints acrylic additive, Kerncolour / Floor by Mapei or similar by Laticrete. Colour as selected by Architect.

PART 3 - EXECUTION

3.1 Workmanship

1. Apply tile to clean and sound surfaces.

2. Fit tile units around corners, fitments, fixtures, drains and other built-in objects to maintain uniform joint appearance. Make cut edges smooth, even and free from chipping. Edges resulting from splitting not acceptable.

3. Maximum surface tolerance: 1:800.

4. Make joints between tiles uniform and approximately 3 mm wide, (maximum 4 mm) plumb, straight, true, even and with adjacent units flush. Align patterns.

5. Lay out units so perimeter tile are minimum 1/2 size.

6. Install floor tiles as per pattern. Pattern will be supplied by architect at a later date.

7. Sound tiles after setting and replace hollow sounding units to obtain full bond.

8. Make internal angles square, external angles chamfered at 45° with narrow tile strip.

9. Construct base, as indicated on drawings, with rounded top edge.

10. Use bullnose edged tiles at termination of wall tiles, except where tiles abut projecting surface or differing plane.

11. Seal grouted joints with sealer.

12. Clean installed tile surfaces after installation cured.

13. Keep building expansion joints free of mortar or grout.

14. Tiles must be flush with adjacent dissimilar finishes. Add leveler at lower floor finishes to porcelain tile at all door openings, feather back as required to eliminate visible elevation difference around doorways. Typical at all locations.

15. Install steel floor termination strip at all door openings where porcelain tile meets VCT.

3.2 Setting System

1. Install porcelain floor tiles in accordance with TTMAC applicable thinset detail.

End of Section

PART 1 - GENERAL

1.1 Reference Standards

1. Fabrication: to ASTM 365-78 and CAN/GSB-92.1-M77.

2. Installation: to ASTM C636-76, except where specified otherwise.

1.2 Design Criteria

1. Maximum deflection 1/360 of span to ASTM 365-78 deflection test.

1.3 Samples

1. Submit two each 12” x 12” samples of each individual tile and grid type in accordance with Section 01340.

1.4 Warranty

1. Submit an extended warranty covering materials and labour and the repair or replacement of defective work but for two (2) years total.

PART 2 - PRODUCTS

2.1 Materials

1. **Acoustic Panel Type (ACT-1)**
    1. **ACT-1**: 610 mm x 1220 mm x 25mm, fine textured vinyl faced, square lay-in, #2807 by Armstrong. Suspension system: 15/16” Prelude XL, white, by Armstrong.
    2. Acceptable equal as manufactured by CGC.

2. **Exposed Tee Bar Grid Components:** Cold rolled steel, zinc coated, shop painted, satin sheen, white, interlocking, main and cross tee of double web with rectangular bulb, depth governed by span, 1” exposed face.

3. **Hangers:** 1/8” galvanized soft annealed steel wire. Maximum spacing 12.0 feet.

4. **Accessories:** splices, clips, retainers, etc., to complement suspension system components.

2.2 Installation

1. Co-ordinate suspension system with related components.

2. Install acoustic units parallel to building lines with edge unit not less than 50% or unit width.

3. Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

4. Support suspension system main runners at 48” 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. Provide for Owner one (1) complete carton of each type of ceiling tile.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Not applicable.

1.2 Maintenance Data

1. Provide data for maintenance of resilient flooring for incorporation into Maintenance Manual.

1.3 Environmental Requirements

1. Maintain minimum 20 deg. C air temperature at flooring installation area for three (3) days before, during and for seven (7) days after installation.

PART 2 - PRODUCTS

2.1 Materials

1. **Vinyl composition tile (VCT):** to ASTM F 1066-1995 a, Type A design, asbestos free, 3 mm thick, 300 mm x 300 mm size Standard Excelon, Imperial Texture by Armstrong. **Acceptable Alternate**: Mannington Commercial: Designer Essentials Series full range.

2. **Resilient rubber base (RB):** 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. Colours: Three (3) from full Johnsonite/ Tarkett "Coloright" colour line.

3. **Transition Strips:** aluminum, Reno-T same height by Schluter or equivalent.

4. **Primers and adhesives:** waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade. Use Johnsonite 990 Solvent Free Environmentally Safe White Acrylic Cove Base Adhesive for rubber base.

PART 3 - EXECUTION

3.1 Inspection

1. Ensure concrete floors are dry, by using test methods recommended by tile manufacturer, and inspect for negative alkalinity, carbonization or dusting.

2. Commencement of work indicates acceptance of conditions by flooring installer.

3.2 Subfloor Treatment

1. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler.

2. Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured.

3. Ensure of smooth transition between any raised surfaces at door ways. Prepare subfloor with leveling compound to ensure smooth transition. Typical where VCT meets PT floors.

3.3 Tile

1. Apply adhesive uniformly using recommended notched trowel in accordance with Flooring Manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

2. Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles - minimum half tile width or as indicated by drawings and Finish Schedule.

3. Cut tile and fit neatly around fixed or excessively heavy objects.

4. Install flooring in pan type floor access covers and all clean out covers, where applicable. Maintain floor pattern.

5. Terminate flooring at center line of door in openings where adjacent floor finish or color is dissimilar.

6. Install metal edge strips at unprotected or exposed edges where flooring terminates.

7. At doorways to incrapack units, extend tile and base fully into door opening to incrapak classroom.

3.4 Base Application

1. Set base in adhesive tightly against wall and floor surfaces. Use lengths as long as practicable and not less than minimum 500 mm long.

2. Install straight and level to variation of 1:1000.

3. Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

4. Miter internal corners. Use premoulded corner pieces at all external corners and ensure full adhesion through to ends of corner pieces. See detail for termination at door frames.

5. Leave in the building one (1) complete carton of each of two (2) colours of floor tile and twelve (12) tiles of each of the remaining colours. Colours of extra tile to be specified by Architect.

3.5 Initial Maintenance after Installation

1. Broom sweep or vacuum thoroughly.

2. Do not wet mop, wash, scrub, or strip the floor. These procedures will be done by the Owner.

3.6 Protection of Work

1. Following broom sweeping, protect new floors with 0.15 mm thick Polyethylene cover and lay planking in all necessary traffic areas to minimize damage by other trades. Maintain until just before final inspection.

3.7 Preparation for Inspection

1. Only if so notified by Architect, and in the presence of the Owner, scrub the floor using a neutral detergent and a floor machine of 170-250 rpm capability equipped with a scrub brush or a scrubbing pad (3M blue or equal).

2. Lightly rinse and allow to dry. Note: Do not flood the floor with rinse water, scrubbing, or stripping solutions. Final re-washing, if required, and waxing will be done by owner.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Not applicable.

1.2 Reference Standard

1. 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.

1.3 Product Data

1. Submit to Architect, for review, product data for all formulas, including manufacturer's trade names.

2. Paint Manufacturer will provide periodic reviews and reports to Architect regarding work in this Section and if Contractor is adhering to manufacturer’s product specifications.

1.4 Environmental 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 Health and Environmental Specifications.

1.5 Extent of Painting

1. For new construction, for rooms shown in room finish schedule to have painted walls, paint all non prefinished surfaces unless indicated otherwise, and repaint prefinished surfaces where indicated.

2. For existing construction, for rooms shown in room finish schedule to have repainted walls:
   - Paint all non prefinished new surfaces unless indicated otherwise.
   - Repaint prefinished surfaces where indicated.
   - Repaint all previously painted surfaces unless indicated otherwise.

1.6 Finishes and Colours

1. Review the requirements outlined in Finish and Colour Notes.
   A separate colour schedule will be issued after contract award.

1.7 Warranty

1. Provide a two (2) year warranty on completion stating that the work has been performed with respect to the standards and requirements incorporated in the OPCA specification manual latest edition

PART 2 - PRODUCTS

2.1 Materials

1. Acceptable products: Per Chapter 5 OPCA Manual as listed.

2. Paint materials for each paint system to be products of a single manufacturer.

3. Use low-VOC and low-odour paints only.

PART 3 - EXECUTION

3.1 Preparation of Surfaces in new Construction

1. Prepare surfaces to receive paint per Chapter 3 OPCA Manual.

2. Prepare wood surfaces to CGSB 85-GP-1M.
   .1 Use CGSB 1-GP-126M vinyl sealer over knots resinous areas.
   .2 Apply wood paste filler to nail holes and cracks.
.3 Tint filler to match stains for stained woodwork.

3. Touch up shop paint primer on steel with CGSB 1-GP-40M to CGSB 85-GP-14M.

4. Prepare galvanized steel and zinc coated surface to CGSB 85-GP-16.

5. Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound.

3.2 Preparation of Previously Painted Surfaces

1. Remove screws, bolts, nails, etc. from all surfaces to be painted

2. Remove all peeling and scaling paint by scraping and sanding.

3. Remove loose and broken pieces. Fill all holes, cracks and crevices with appropriate patching compound and match surrounding texture. Touch-up with appropriate primer.

4. Remove all dirt, grease, oil, wax and other contaminants by scrubbing with a detergent solution such as trisodium phosphate. Rinse with clean water.

5. All metal surfaces must be washed with mineral sprits. Change solvent and rags frequently. Remove all rust by sanding. Prime with rust inhibitive paint.

6. Dull all glossy surfaces by sanding.

7. Wash with solvent surfaces that have been subject to writing with marking pens, crayons, or lipsticks. Prime to stop bleeding.
8. For joints within or adjacent to exterior areas to be painted or cleaned, remove old cracked and loose caulking and replace with a high quality caulking compound.

3.3 Application

1. Sand and dust between each coat to remove defects visible from distance up to 60”.

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.

3.4 Mechanical and Electrical Equipment

1. 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

2. Paint gas piping standard yellow where visible on roof or in service spaces.

3. Paint surfaces inside of ductwork and elsewhere behind grilles where visible using primer and one coat of matte black paint.

4. Paint both sides and edges of plywood backboards for equipment before installation.

5. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 Paint Systems

1. System references listed are based on Chapters 4A and 4B of OPCA Manual and are OPCA Premium Grade, unless noted otherwise.

3.6 Interior Finishes

1. Wood, where applicable: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade.

2. Gypsum board - Ceilings and bulkheads - INT. 4-A, Alkyd Flat Finish, Premium Grade.

3. Gypsum board – walls: JNT4A, Alkyd eggshell, Premium Grade.

4. Concrete Block: INT. 8-B, Alkyd Semi-Gloss Finish, Premium Grade.

5. Galvanized metal: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade.

3.7 Refinishing of Previously Painted Surfaces

1. Apply two (2) finishing coats of paint materials listed in Section 3.5 and 3.6 for the type of surface considered.

2. When satisfactory coverage can be achieved by only one (1) coat, the second coat is not required.

3. Apply additional coats if necessary to cover accent colours, graphics, etc.

End of Section

PART 1 - GENERAL

1.1 Shop Drawings

1. Submit shop drawings in accordance with Section 01340.

PART 2 - PRODUCTS

2.1 Fixtures

1. **Tackboard (TB)** - As manufactured by Architectural School Products, Mississauga; natural coloured cork tackboard:

    .1 Single layer cork sheet 6 mm thick; natural color, on 6 mm particle board to Can 3.188.1-M78, Grade R.
    .2 Extruded aluminum trim No. 205, 1.5 mm wall thickness, mitred, clear anodized finish
    .3 Concealed steel fastenings (1 coat CGSB 1-GP-81e baked primer) to toggle bolts. Do not fasten to wall with adhesive.
    .4 Acceptable alternates: Martack Specialties Limited.
    .6 Size and quantities as shown on plans.

PART 3 – EXECUTION

3.1 Installation

1. Install where indicated on drawings and as per manufacturer’s instructions.

End of Section

PART 1 - GENERAL

1.1 Description of Work

1. This section covers and includes the furnishing and installing of passenger hydraulic elevator equipment as hereinafter described. Refer to Division 1 for general project requirements.

2. All terms of this specification shall have their meaning defined in the American Society of Mechanical Engineers Safety Code for Elevators and Escalators A17.1 and hereinafter referred to as the ANSI A17.1 Code, including all revisions and authorized changes to date.

1.2 Related Work by Others

1. General contractor shall provide the following in accordance with the requirements of the ANSI A17.1 Code plus applicable Model Building Code. For specific rules, refer to ANSI A17.1, Section 300 for hydraulic elevators. State or local requirements must be used if more stringent.

    .1 Clear, plumb hoistway, with variations not to exceed 1/2" at any point. Minimum two hours of fire resistance rating of hatch walls.
    .2 75° Bevel guards on all projections, recesses or setbacks over 2" (4" for A17.1 2000 areas) except for loading or unloading.
    .3 Supports for rail brackets at pit, each floor and roof. Maximum allowable vertical spacing of rail supports, without backing. Divider beams between hoistway at each floor and roof, for guide rail bracket supports.
    .4 Supports for holeless jack synchronization cables to hatch walls in overhead. Hoist beam to be provided.
    .5 Light outlet, in center of hoistway (or in the machine room) as indicated by elevator contractor.
    .6 Recesses, supports, and patching, as required, to accommodate hall button boxes, signal fixtures, etc.
    .7 All barricades outside elevator hoistways as required.
    .8 Dry pit reinforced to sustain normal vertical forces from rails, holeless jack units and buffers. Pit floor to be level and free of debris.
    .9 Convenience outlet and light fixture in pit with switch located adjacent to the access door.
    .10 Where access to the pit is by means of the lowest hoistway entrance, vertical ladder of non-combustible material extending 42" minimum, 48" minimum for A17.1-2000 areas, above sill of access door or handgrips shall be provided to the same height.
    .11 Enclosed and protected machine room.
    .12 Access to the machine room and machinery space as required by the governing code or authority.
    .13 Lighting, convenience outlets, heating, cooling and ventilation of machine room, and machinery space. Machine room temperature to be maintained between 55 and 90 degrees F.
    .14 A fused disconnect switch for each elevator and light switch located per the National Electrical Code (NFPA No. 70), and where practical, located inside the

machine room adjacent to the door.

.15 Suitable copper feeder, ground and branch wiring circuits for signal system and power operated door, included main line switch. Feeder and branch wiring circuits for car light and fan, including main line switch.

.16 Clear access above ceiling, or metal/concrete raceways in floor, for oil line and wiring duct from machine room, if machine room is remote from elevator hoistway.

.17 Convenience outlet and telephone outlet on control panel.

.18 Cutout through machine room wall, 8" x 16", for oil line and wiring duct. Coordinate with elevator contractor at the building site.

.19 All conduit and wire runs remote from either the machine room or the hoistways.

.20 Heat, smoke or products of combustion sensing devices connected to elevator machine room terminals when such devices are required. Make contacts on the sensors should be sided for 120 volt D.C.

.21 Furnish and install finished flooring in elevator cab.

.22 Entrance walls and finished floors are not to be constructed until after door frames and sills are in place. Consult elevator contractor for rough opening size. When drywall construction is used, the general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained.

.23 Where drywall or sheet rock construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.

.24 Door frames are to be anchored to walls and properly grouted in place to maintain legal fire rating (masonry construction).

.25 The interface of the elevator wall with the hoistway entrance assembly shall be in strict compliance with the elevator contractor's requirements.

.26 Filling and grouting around entrances by general contractor as required.

.27 For sill support by the elevator contractor, hoistway capable of accepting anchor stud type fasteners must be provided.

.28 When fixtures are mounted in drywall, wall thickness may increase. The general contractor must coordinate requirements with the elevator contractor.

.29 Where openings occur, all walls and sill supports must be plumb.

1.3 Quality Assurance

1. The elevator contractor is a company specializing in manufacturing and installing elevator equipment with not less than five years successful experience.

2. All designs, clearances, construction, workmanship and material, unless specifically excepted, shall be in accordance with the requirements of the ANSI code, handicap accessibility, Americans with Disabilities Act and all codes having legal jurisdiction. The ANSI A17.1 Code shall govern except where codes having legal jurisdiction include more rigid requirements or conflict with the ANSI A17.1 Code.

3. The elevator shall follow design and manufacturing procedures, certified in accordance with International Organization for Standardization (ISO9001-2000) to meet product and service requirements for quality assurance for new products.

1.4 Submittals

1. The elevator contractor shall, after structural and architectural drawings are furnished,

submit complete working drawings, showing the location of all equipment, loads, and all other information necessary to render a totally functional elevator to the owner.

2. The elevator contractor shall provide finish samples upon request.

3. The elevator contractor shall provide wiring diagrams.

4. The elevator contractor shall provide Renewal Parts Catalogs and Maintenance Instructions.

1.5 Temporary Use

1. Temporary use of the car shall be negotiated with the elevator contractor if required and shall be in accordance with the terms and conditions of the elevator contractor's temporary acceptance form.

1.6 Warranty

1. The elevator contractor shall guarantee the material and workmanship of the equipment installed by him under these specifications and make good any defects not due to ordinary wear or to improper use which may develop within one year after the completion of the installation or acceptance thereof by beneficial use, whichever is earlier.

1.7 Proprietary Information

1. Any proprietary material, information or data contained in the equipment, or any component or feature thereof, remains the property of the elevator contractor. This includes, but is not limited to, tools, devices, manuals, software, source codes, access codes, object codes, passwords and remote monitoring feature, which is deactivated if elevator contractor maintenance is discontinued.

1.8 Maintenance

1. The elevator included in these specifications shall receive regular maintenance on each unit for a period of 12 months after the completion of work described herein or acceptance thereof by beneficial use, whichever is earlier.

2. Trained employees shall make periodic examinations and perform work including necessary adjusting, greasing, oiling and replacing parts to keep the elevator in operation, except parts that require replacement because of accidents, vandalism, misuse or negligence by parties other than the manufacturer.

3. The elevator contractor shall perform all work under this Agreement, except emergency minor adjustment call-back service, on overtime. The elevator contractor shall provide emergency minor adjustment call back service, 24 hours 7 days a week.

4. Should the owner request that examinations, cleaning, lubrication, adjustments, repairs, replacements or emergency minor adjustment callback service (unless included above) be performed on other than the elevator contractor's regular working hours of his regular

working days, the elevator contractor shall absorb the straight time labor charges and the owner shall compensate the elevator contractor for the overtime premium, travel time and expense at his normal billing rates.

5. The elevator control system can incorporate a built-in remote diagnostic module to relay the constant status of the elevator and control system to a 24 hours 7 days a week central monitoring facility. The remote monitoring device is capable of transmitting information on the current status of the elevator, including any malfunction, system error or shutdown.

PART 2 - PRODUCTS / OPERATIONS

2.1 Acceptable Manufacturers

1. Subject to compliance with requirements, provide products of one of the following manufacturers or approved equivalent, supplying 3000lb capacity in max. 8’-4” width by max. 6’-3” depth hoistway.

   .1 Schindler Elevator Corporation (Basis of Design – 330A product)
   .2 South Western
   .3 Thyssen Krupp
   .4 Vertechs Elevator

2.2 Elevator System and Components

1. Elevator Equipment Summary:

Building:	White Oaks Secondary School
Customer:	Halton District School Board
Location:	Oakville, ON
Building Type:	School/College/University
Application:	Telescopic Holeless Dual Piston
Service:	General Purpose Passenger
Quantity:	1
Capacity:	3000 lbs
Speed:	100 fpm
Travel:	24 feet 3 inches
Landings:	3
Front Openings:	3
Rear Openings:	0
Operation:	Microprocessor Single Car Automatic Operation
Machine Room:	Adjacent to elevator hoistway.
Platform Size:	7'-0" wide x 5'-7" deep
Cab Height:	8'-0"
Guide Rails:	16 lb. per foot
Hoistway Entrances:	3'-6" wide x 7'-0" high SSSO doors
Power Supply:	208 Volts 3 Phase 60 Hz
Contract Maintenance:	12 months with emergency callback, 24 hours 7 days a week

2. Additional Features:
   Anti-Stall Feature
   Braille and Audible Signals
   Door Open and Close Stall Protection
   Emergency Lighting
   Firefighter's Service, sensors by others
   Independent Service Feature
   Infrared Light Curtain Door Protection
   Low Oil Return
   Overload Sensors
   Phase Protection
   Start Type: Soft Start
   Cab Pads and Fasteners: 1 set(s)
   Certificate Frame
   Digital Hall Position Indicator at main floor(s)
   Hoistway Access Switch at top floor(s)
   Locking Service Panel in Car Operating Panel
   Pressure Switch
   Remote Monitoring Capable
   Battery powered lowering Rescue Feature
   Telephone (ADA compliant)
   Key switch at hall stations

2.3 Materials and Components

1. Stainless steel and bronze shall have #4 satin or #8 mirror finish as specified herein. Baked enamel colors, if specified, shall be chosen by the architect from elevator manufacturer's standard color selections.

2. Aluminum used for threshold and hoistway entrance sills shall be extruded; aluminum used for exposed frames in suspended ceilings shall be anodized.

3. Plastic laminates shall be general purpose type and meet flame spread ratings as required by code. Pattern shall be selected from the elevator contractor's standard selection.

4. Motors, pumps, valves, fluid tank, hydraulic fluid, microprocessor controller, controls, pushbuttons and wiring shall be UL or CSA approved.

5. Spring buffers, attachment brackets and anchors shall be designed and sized according to code with safety factors.

6. Pump shall be of the positive displacement screw type, designed for steady discharge with minimal pulsations.

7. A muffler shall be provided to reduce noise transmission.

8. A holeless dual jack system that utilizes two mechanically synchronized jacks shall be provided. The jacks are located at each side of the car and connected to the elevator structure. An external mechanical assembly shall be used to synchronize the jack

section movement as the elevator travels up and down the hoistway, if two or more jack stages are applied.

2.4 Cab

1. Cab shall be 8'-0" high from finished floor to underside of canopy.
2. The cab walls shall be steel, baked enamel finish with plastic laminate raised panels.
3. The base, frieze and reveals will be #4 stainless steel.
4. The ceiling shall be suspended with exposed frame with aluminum eggcrate lay-in panels. The lighting shall be fluorescent.
5. Front returns shall be of integral construction. Transoms shall run full width of cab and will be finished in #4 stainless steel.
6. Cab doors shall be flush design both sides, rib construction, finished in #4 stainless steel.
7. A one speed exhaust fan shall be mounted in cab transom or canopy.
8. A 1 1/2" round diameter in #4 stainless steel handrail shall be mounted on the side walls.
9. The threshold shall be extruded aluminum.
10. The cab finish flooring shall be furnished and installed by others.
11. There will be 1 set of quilted, soil resistant and fire-retardant pads with appropriate fasteners shall be furnished.
12. A certificate frame shall be provided.

2.5 Hoistway Entrances

1. Hoistway door and frame construction shall be UL rated, with required fire rating. Doors shall be of rigid flush panel construction and contain sound-deadening material. Frames shall be securely fastened at the corners to form a unit frame. Frames shall be bolted.
2. Exposed areas of the corridor frames shall be finished in #4 stainless steel on all floors.
3. Doors shall be finished in #4 stainless steel on all floors.
4. Sills shall be extruded aluminum on all floors.

2.6 Cab Fixtures

1. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons and illuminating indications shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for

car light and accessories shall be provided.

2. The following cab fixtures shall also be provided:
   Car Lantern(s)
   Digital Car Position Indicator
   Locking Service Panel in Car Operating Panel
   Certificate Frame
   Telephone (ADA compliant)

2.7 Hall Fixtures

1. An up button and down button at intermediate floors and a single button at each terminal floor at a height to comply with handicap requirements.

2. The following hall fixtures shall also be provided:

   .1 Digital Hall Position Indicator at main floor(s)

3. Hall Fixtures shall be finished in #4 stainless steel. Fixture cover plates shall be mounted with tamper resistant screws in the same finish as the fixture.

PART 3 - EXECUTION

3.1 General

1. Prior to commencing elevator installation, inspect hoistways, hoistway openings, pits and machine rooms as constructed. Verify that hoistway, pit, machine room and openings are of correct size and within tolerance and are ready for work of this section. Notify General Contractor in writing of any dimensional discrepancies or other conditions detrimental to the proper installation or performance of elevator work. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer. Arrange for temporary electrical power to be available for installation work and testing of elevator components.

3.2 Installation of Elevator System

1. Components will be arranged in machine room so equipment can be removed for repairs or replaced without dismantling or removing other equipment components.

2 Coordinate elevator work with work of other trades, for proper time and sequence to avoid construction delays.

3. Set entrances in vertical alignment with car openings, and aligned with plumb hoistway lines.

4. Adjust for smooth acceleration and deceleration of car so not to cause passenger discomfort. Adjust doors to prevent opening of doors at any landing on the corridor side unless the car is at rest at that landing, or is in the leveling zone and stopping at that landing. Adjust automatic floor leveling feature at each floor to achieve within 1/4" of the landing.

3.3 Permits and Tests

1. The elevator contractor shall obtain and pay for all necessary Municipal and State permits and relating to the installation of the elevator at his expense, shall make all tests as required by governing codes in effect at the time of the award. The elevator contractor shall be reimbursed for any permits, tests or equipment necessitated by governing authorities after the date of the award.

End of Section

WHITE OAKS SECONDARY SCHOOL
SOUTH CAMPUS
ELEVATOR UPGRADE

1330 MONTCLAIR DR, OAKVILLE ONTARIO L6H 1Z5

NAME OF PRACTICE: GRGURIC ARCHITECTS INCORPORATED
CERTIFICATE OF PRACTICE NUMBER: 4760
CONTACT: **JOHN GRGURIC**
28 KING STREET EAST, UNIT B, STONEY CREEK, ON L8G 1J8
TEL: 905-664-8735

NAME OF PROJECT:
WHITE OAKS SECONDARY SCHOOL - SOUTH CAMPUS ELEVATOR UPGRADE

LOCATION:
1330 MONTCLAIR DR, OAKVILLE ONTARIO, L6H 1Z5

Item	Ontario's 2012 Building Code Data Matrix Parts 3 or 9		OBC Reference (References are to Division B unless noted [A] for Division A or [C] for Division C)	
			☐ Part 3	☐ Part 9
1	Project Description: **RENOVATION OF EXISTING LULA ELEVATOR TO A FULL SIZE ELEVATOR** ☐ New ☐ Addition ■ Alteration ☐ Change of Use	■ Part 11 / 11.1 to 11.4	1.1.2. [A]	1.1.2 [A] & 9.10.1.3
2	Major Occupancy(s) **A-2 - ASSEMBLY**		3.1.2.1.(1)	9.10.2
3	Building Area Existing **11,723 m²** New **0 m²**		1.4.1.2.[A]	1.4.1.2.[A]
4	Gross Area Existing **16,183 m²** New **0 m²** Renovation Area **51,4 m²**		1.4.1.2.[A]	1.4.1.2.[A]
5	Number of storeys **3** Above grade **3** Below grade **0**		1.4.1.2.[A] & 3.2.1.1	1.4.1.2.[A] & 9.10.4
7	Number of Streets/ Fire Fighter Access **1 STREET ACCESS**		3.2.2.10 & 3.2.5	9.10.20.
8	Building Classification **EXISTING GROUP A, DIVISION 2 TO REMAIN**		3.2.2.25	9.10.2.
9	Sprinkler System Proposed ☐ entire building ☐ selected compartments ☐ selected floor areas ☐ basement ☐ in lieu of roof rating ■ not required **EXISTING**		3.2.2.24 3.2.1.5. 3.2.2.17. INDEX	9.10.8.2 INDEX
10	Standpipe required	☐ Yes ■ No	3.2.9	N/A
11	Fire Alarm required	■ Yes ☐ No	3.2.4	9.10.18
12	Water Service/Supply is Adequate	■ Yes ☐ No	3.2.5.7.	N/A
13	High Building	☐ Yes ■ No	3.2.6	N/A
14	Permitted Construction ☐ Combustible permitted ☐ Non-combustible required ■ Both Actual Construction ☐ Combustible ☐ Non-combustible ■ Both		3.2.2.20.-83	9.10.6
15	Mezzanine(s) Area m²		3.2.1.1.(3)-(8)	9.10.4.1
16	Occupant load based on ☐ m² /person ■ design of building **EXISTING** 1st Floor **(NO CHANGE)** Occupancy ____ Load ____ persons 2nd Floor **(NO CHANGE)** Occupancy ____ Load ____ persons 3rd Floor **(NO CHANGE)** Occupancy ____ Load ____ persons		3.1.17	9.9.1.3
17	Barrier-free Design	■ Yes ☐ No (Explain)	3.8	9.5.2
18	Hazardous Substances	☐ Yes ■ No	3.3.1.2. & 3.3.1.19	9.10.1.3(4)
19	Required Fire Resistance Rating (FRR) **EXISTING** Horizontal Assemblies FRR (Hours): Floors - Hours; Roof - Hours; Mezzanine - Hours FRR of Supporting Members: Floors - Hours; Roof - Hours; Mezzanine - Hours	Listed Design No. or Description (SG-2): Non-Combustible	3.2.2.24 & 3.2.1.4	9.10.8. 9.10.9.

19 — Spatial Separation - Construction of Exterior Walls **N/A EXISTING** — 3.2.3 — 9.10.14

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb. Constr.	Comb. Constr. Nonc. Cladding	Non-comb. Constr.
North	-	-	-	-	-	-	-	-	-	-
South	-	-	-	-	-	-	-	-	-	-
East	-	-	-	-	-	-	-	-	-	-
West	-	-	-	-	-	-	-	-	-	-

20 — Plumbing Fixture Requirements — **N/A EXISTING** — Male / Female Count @ ____ % / ____ % except as noted otherwise

Basement: Occupancy _____ Occupancy _____
1st Floor: Occupancy _____ Occupancy _____
2nd Floor: Occupancy _____ Occupancy _____

Occupant Load	BC Table Number	Fixtures Required	Fixtures Provided	Building Code Reference ☐ Part 3	☐ Part 9
	3.7.4.3. (14)			3.7.4.2. - 3.7.4.3	
	3.7.4.3. (14)			3.7.4.2. - 3.7.4.3	

21 — Travel Distance to Exits (Refer to Drawings)

Ontario Building Code Data Matrix Part 11 – Renovation of Existing Building — **Building Code Reference**

				Building Code Reference
11.1	Existing Building classification:	Describe Existing Use: **ELEMENTARY SCHOOL** Construction Index: Hazard Index: ■ Not Applicable (no major change of occupancy)		11.2.1 T 11.2.1.1A T 11.2.1.1B to N
11.2	Alteration to Existing Building is:	Basic Renovation ■ Extensive Renovation ☐		11.3.3.1 11.3.3.2
11.3	Reduction in Performance Level:	Structural: ■ No ☐ Yes By Increase in occupant load: ■ No ☐ Yes By change of major occupancy: ■ No ☐ Yes Plumbing: ■ No ☐ Yes Sewage System: ■ No ☐ Yes		11.4.2 11.4.2.1 11.4.2.2 11.4.2.3 11.4.2.4 11.4.2.5
11.4	Compensating Construction:	Structural: ■ No ☐ Yes (explain) Increase in occupant load: ■ No ☐ Yes (explain) Change of major occupancy: ■ No ☐ Yes (explain) Plumbing: ■ No ☐ Yes (explain) Sewage system: ■ No ☐ Yes (explain)		11.4.3 11.4.3.2 11.4.3.3 11.4.3.4 11.4.3.5 11.4.3.6
11.5	Compliance Alternatives Proposed:	■ No ☐ Yes (give number [s])		11.4.2

Halton District School Board

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

CK ENGINEERING INC.
2400 INDUSTRIAL ST
BURLINGTON, ON
L7P 1A5
TEL: (905) 631-1115
EMAIL: info@ckengs.net
MECHANICAL / ELECTRICAL ENGINEER

exp Services Inc.
t 905 525 6069 | f 905 528 7310
499 King Street East, Suite 200
Hamilton, ON L8N 1E1
Canada
www.exp.com
• BUILDINGS • EARTH & ENVIRONMENT • ENERGY • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •
STRUCTURAL ENGINEER

KEY PLAN - PROJECT LOCATION
N.T.S.

DRAWING LIST:

ARCHITECTURAL

A0.00 COVER SHEET & OBC MATRIX
A1.00 DEMOLITION FLOOR PLANS
A1.01 DEMOLITION REFLECTED CEILING PLANS
A2.00 FLOOR PLANS
A2.01 REFLECTED CEILING AND FLOOR / WALL FINISH FLOOR PLAN
A3.00 WALL SECTIONS
A3.01 WALL SECTIONS AND DETAILS

STRUCTURAL

S1.00 GENERAL NOTES
S1.01 GENERAL NOTES AND TYPICAL DETAILS
S2.00 FLOOR FRAMING PLANS
S3.00 SECTIONS

MECHANICAL

M0.01 MECHANICAL SPECIFICATION
M0.02 MECHANICAL SCHEDULES, KEYPLAN, LEGENDS, AND DRAWING LIST
M0.03 MECHANICAL DETAILS AND SITE REFERENCES
M101 MECHANICAL DEMOLITION PLAN
M2.01 MECHANICAL NEW PLAN

ELECTRICAL

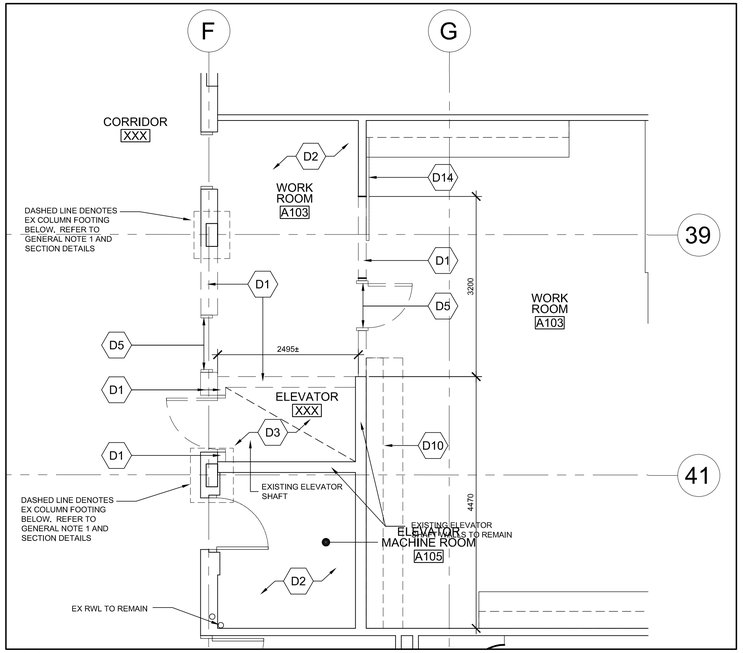
E0.1 SPECIFICATIONS AND DRAWING LIST SHEET 1 OF 2
E0.2 SPECIFICATIONS SHEET 2 OF 2
E0.3 LEGENDS, ABBREVIATIONS AND SCHEDULES
E0.4 DEVICE SCHEDULES AND DETAILS
E0.5 REFERENCE PHOTOS
E1.1 ELECTRICAL DEMO PLANS
E2.1 ELECTRICAL NEW PLANS
E3.1 FIRE ALARM RISER DIAGRAM - NEW

ISSUED FOR TENDER

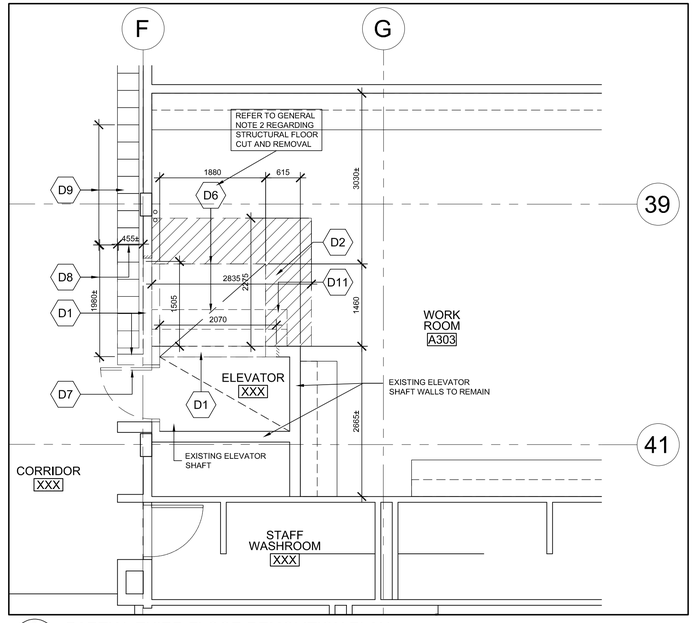
2023-01-25

PROJECT NUMBER
2022-24

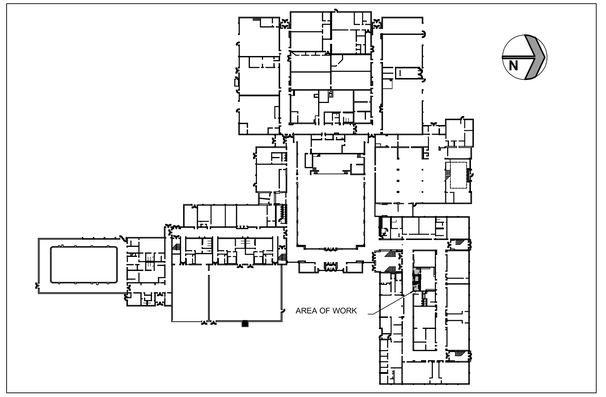
SHEET NUMBER
A 0.00



1 A1.00 PARTIAL GROUND FLOOR DEMOLITION PLAN (ALSO REFER TO DETAIL 4/A1.00)
SCALE: 1:50



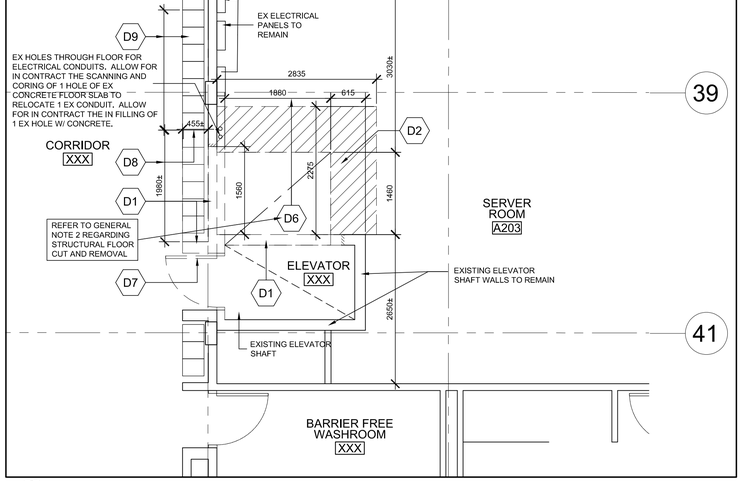
3 A1.00 PARTIAL THIRD FLOOR DEMOLITION PLAN
SCALE: 1:50



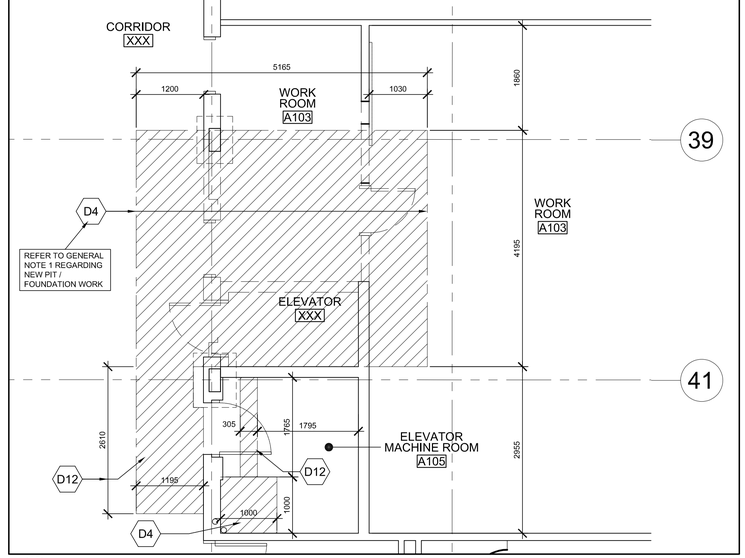
KEY PLAN
SCALE: NTS

GENERAL NOTES

1. GENERAL CONTRACTOR IS TO COORDINATE AND PROVIDE ALL NEW ELEVATOR PIT FOUNDATION WORK AS SHOWN INCLUDING EXCAVATION, SHORING, SEQUENCING, UNDERPINING AND REROUTING OF EX UNDERGROUND SANITARY AND WATER LINES. THE NEW PIT FOUNDATION WALLS AND FOOTINGS EXTEND BELOW THE EXISTING COLUMN FOOTING AND THE TWO EX ELEVATOR WALLS AND FOOTINGS THAT ARE TO REMAIN. REFER TO PLANS, STRUCTURAL DRAWINGS AND MECHANICAL DRAWINGS.
2. GENERAL CONTRACTOR IS TO COORDINATE AND PROVIDE SHORING AS NEEDED TO SUIT NEW STRUCTURAL MODIFICATIONS INCLUDING CUT AND REMOVALS OF EX STRUCTURAL CONCRETE FLOOR TO SUIT EXPANDED ELEVATOR SHAFT FLOOR OPENING AND REMOVAL OF EXISTING LOAD BEARING WALLS WHERE APPLICABLE. REFER TO PLANS AND STRUCTURAL DRAWINGS.
3. COORDINATE AND VERIFY WITH THE OWNER ALL ITEMS TO BE SALVAGED, MOVED & STORED PRIOR TO DEMOLITION.
4. CAUSE NO DAMAGE TO EXISTING CONSTRUCTION TO REMAIN. TAKE CARE NOT TO ENCROACH ON ADJACENT OCCUPIED AREAS OR AREAS NOT WITHIN THE SCOPE OF WORK. PROTECT ALL EXISTING FINISHES, DOORS, FRAMES, ETC. WHICH ARE TO REMAIN. PATCH AND MAKE GOOD ALL EXISTING ADJACENT SURFACES FINISHES & MATERIALS WHERE DISTURBED BY NEW CONSTRUCTION AT NO EXTRA COST TO THE PROJECT.
5. MECHANICAL AND ELECTRICAL ITEMS SHOWN, I.E. DUCTWORK, PIPING, ELECTRICAL CONDUITS, LIGHT FIXTURES, ETC. ARE FOR REFERENCE ONLY AND ARE NOT INCLUSIVE. REFER TO MECHANICAL AND ELECTRICAL DRAWING FOR ALL RELATED NEW AND DEMOLITION WORK REQUIRED.
6. CONNECTIONS OF ALL NON STRUCTURAL ELEMENTS AND EQUIPMENT TO SUPPORTING STRUCTURE TO BE DESIGNED TO COMPLY WITH ARTICLE 4.1.8.18 OF THE 2012 ONTARIO BUILDING CODE FOR SEISMIC LOADS. CONTRACTOR TO SUBMIT SHOP DRAWINGS SHOWING THESE CONNECTIONS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER FOR APPROVAL BY ARCHITECT PRIOR TO ANY WORK BEING EXECUTED.
7. IF CONTRACTOR ENCOUNTERS ANY SUSPECTED ASBESTOS CONTAINING MATERIALS (ACM) MATERIALS, THEY ARE TO ADVISE ARCHITECT & CLIENT IMMEDIATELY FOR FURTHER CONFIRMATION & INSTRUCTIONS.
8. TRANSITIONS BETWEEN NEW AND EXISTING FLOOR FINISHES TO BE MADE SMOOTH AND CONTINUOUS, GRIND EXISTING FLOOR SLAB ACROSS DOOR THRESHOLDS TO SUIT THICKNESS OF NEW MATERIALS AND ENSURE NEW MATERIAL IS INSTALLED FLUSH WITH EXISTING.
9. ALL PATCHING AND REPAIRING OF SURFACES ARE NOT NECESSARILY SHOWN. PATCH AND REPAIR ALL EXISTING SURFACES SCHEDULED TO RECEIVE NEW FINISHES TO THAT ALL SURFACES WHEN COMPLETE RESEMBLE A NEW INSTALLATION.
10. CONTRACTOR TO ALLOW FOR PATCHING AND REPAIR AND REFINISHING OF ALL EXISTING ADJACENT MATERIALS, SURFACES & FINISHES.
11. CONTRACTOR TO ALLOW FOR PATCHING AND REPAIR OF ADJACENT MATERIALS AT ALL ELECTRICAL LIGHTING, EQUIPMENT, CONDUIT, RACEWAYS, MECHANICAL PLUMBING, PIPING, ETC. TO BE REMOVED, RELOCATED, REPLACED, INSTALLED, REFER TO ELECTRICAL DRAWINGS. PREPARE ALL SURFACES FOR NEW FINISHES.
12. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING FLOOR FINISHES TO REMAIN, WALLS AND WALL MOUNTED EQUIPMENT FOR THE DURATION OF THE PROJECT.
13. CONTRACTOR IS RESPONSIBLE FOR SWEEPING THE SITE DAILY AND CONDUCTING A FINAL CLEANING AT THE END OF THE PROJECT. THE FINAL CLEANING INCLUDES A COMPLETE PRE-MOVE CLEANING; WIPING DOWN ALL WALLS, ALL NEW FIXTURES AND MILLWORK, ALL NEW DOOR FRAMES AND SILLS, SWEEPING AND MOPPING THE FLOORS. THE CONTRACTOR WILL PROVIDE ALL EQUIPMENT NECESSARY TO CLEAN THE SITE PRIOR TO CLIENT OCCUPANCY. THE CONTRACTOR WILL NOT BE PERMITTED TO USE CLIENTS CARE TAKING TOOLS AND EQUIPMENT; MOPS, BROOMS, BAGS, BINS, ETC.
14. REFER TO MECHANICAL, ELECTRICAL AND STRUCTURAL DOCUMENTS FOR ASSOCIATED DEMOLITION.
15. COORDINATE WITH MECHANICAL & ELECTRICAL DOCUMENTS FOR FULL EXTENT OF ALTERATIONS TO EXISTING PLUMBING, HEATING, VENTILATION, SPRINKLER SYSTEMS, ELECTRICAL PANELS, FIXTURES, CONDUITS, ETC. WITHIN EXISTING TO REMAIN.
16. WHERE EXISTING SURFACES ARE DISTURBED DUE TO DEMOLITION OR ALTERATIONS, AND NOT REQUIRED TO BE COVERED WITH NEW FINISHES, SUCH SURFACES SHALL BE MADE GOOD TO MATCH EXISTING ADJACENT MATERIALS AND FINISHES.
17. MAKE GOOD ALL MATERIALS AND FINISHES WHERE DISTURBED AND WHERE ALTERATIONS OCCUR, REFER TO ALL DOCUMENTS FOR EXTENT OF WORK REQUIRED, MAKING GOOD INCLUDES ALL WORK ASSOCIATED WITH THE REMOVAL OF EXISTING AND INSTALLATION OF NEW SERVICES, ETC. (EXAMPLES; PLUMBING / HEATING MODIFICATIONS IN EXISTING BUILDING, INSTALLATION OF NEW DUCTS IN EXISTING BUILDING, ETC.)
18. WHERE EXISTING WALLS, PARTITIONS / FURRINGS, BUILDING FITMENTS, HOUSEKEEPING PADS, ETC., ARE BEING REMOVED, MAKE GOOD SUBSTRATES TO RECEIVE NEW SPECIFIED MATERIALS AND FINISHES.
19. WHERE NEW FLOORING MATERIALS ARE INDICATED IN THE PLANS OR ROOM FINISH SCHEDULE, COMPLETELY REMOVE EXISTING FLOORING TO EXPOSE STRUCTURAL FLOOR SLAB, PATCH & FILL HOLES AND DEFECTS IN IN SLAB, REPAIR AND MAKE GOOD EXISTING FLOOR SLAB TO BE SMOOTH AND LEVEL. FLOOR SLAB TO BE VOID OF WAVES, BUMPS AND DEPRESSIONS IN MATERIALS AND FINISHES. EXISTING FLOOR SLAB TO ACCEPT NEW SPECIFICATIONS AND FLOOR MANUFACTURERS REQUIREMENTS.



2 A1.00 PARTIAL SECOND FLOOR DEMOLITION PLAN
SCALE: 1:50



4 A1.00 PARTIAL GROUND FLOOR- FLOOR / FINISH DEMOLITION PLAN
SCALE: 1:50

DEMOLITION NOTES

- D1 EXISTING CONCRETE BLOCK WALL TO BE DEMOLISHED AND REMOVED. PATCH AND REPAIR EXISTING WALL TO REMAIN AND MAKE READY TO RECEIVE NEW WALL FINISH.
- D2 EX VCT TILE TO BE REMOVED AND DISPOSED OF. GRIND EX FLOOR SLAB THAT IS TO REMAIN TO REMOVE ANY EXCESS ADHESIVE. PATCH AND REPAIR FLOOR SLAB AS REQUIRED TO MAKE READY TO RECEIVE NEW FLOOR FINISH
- D3 EXISTING LULA ELEVATOR TO BE DECOMMISSIONED, REMOVED, AND DISPOSED OF. REFER TO AND COORDINATE WITH ELECTRICAL DRAWINGS FOR DISCONNECTS
- D4 DENOTES EXTENT OF EXISTING CONCRETE SOG AND FLOOR FINISH TO BE CUT AND REMOVED TO ALLOW FOR CONSTRUCTION OF ELEVATOR PIT. EX FILL MATERIAL TO BE REMOVED AS REQUIRED.
- D5 EXISTING HM DOOR AND METAL DOOR FRAME TO BE REMOVED AND DISPOSED OF
- D6 DENOTES EXTENT OF EXISTING CONCRETE FLOOR AND STRUCTURE BELOW IS TO BE REMOVED AND DISPOSED OF. REFER TO STRUCTURAL DRAWINGS. COORDINATE THE SIZE OF OPENING REQUIRED WITH ELEVATOR SUPPLIER
- D7 REMOVE AND DISPOSE OF EX HOLLOW METAL DOOR AND FRAME. PATCH AND REPAIR WALLS TO REMAIN AND MAKE READY TO RECEIVE NEW WALL FINISH.
- D8 REMOVE AND RETURN TO OWNER EX LOCKER BANK (6 LOCKERS). CUT DOWN AND REMOVE EXISTING CONCRETE BASE TO BELOW EXISTING TERRAZZO FLOOR FINISH. MAKE REMAINING EX FLOOR SLAB READY TO RECEIVE NEW FLOOR FINISH.
- D9 REMOVE EXISTING LOCKER BANK (7 LOCKERS) AND STORE IN A SAFE PLACE FOR REINSTALLATION.
- D10 REMOVE EXISTING WORK STATION AND UPPER CABINETS AND STORE IN A SAFE PLACE FOR REINSTALLATION. REMOVE AND DISPOSE OF EXISTING TACKBOARDS. ALLOW FOR REMOVAL OF ANY CONSTRUCTION ADHESIVE AND PATCHING OF HOLES IN WALLS TO REMAIN.
- D11 REMOVE EXISTING UPPER CABINETS AND STORE IN A SAFE PLACE FOR REINSTALLATION. REMOVE AND DISPOSE OF EXISTING WORKSTATION AND TACKBOARDS. ALLOW FOR REMOVAL OF ANY CONSTRUCTION ADHESIVE AND PATCHING OF HOLES IN WALLS TO REMAIN.
- D12 DENOTES EXTENT OF EXISTING CONCRETE FLOOR SOG AND FLOOR FINISH TO BE CUT AND REMOVED TO ALLOW FOR INSTALLATION OF UNDERGROUND MECHANICAL PIPES. REFER TO AND COORDINATE WITH MECHANICAL DRAWINGS.
- D13 DENOTES EXTENT OF EXISTING CONCRETE SOG AND FLOOR FINISH TO BE CUT AND REMOVED TO ALLOW FOR INSTALLATION OF SUMP PIT. EX FILL MATERIAL TO BE REMOVED AS REQUIRED. REFER TO AND COORDINATE WITH MECHANICAL DRAWINGS.
- D14 EX TACK BOARD TO BE REMOVED AND STORED IN A SAFE PLACE FOR REINSTALLATION

Halton District School Board

CONSTRUCTION

ABBREVIATIONS LEGEND

AFF	ABOVE FINISHED FLOOR
EX	EXISTING
HM	HOLLOW METAL
SOG	SLAB ON GRADE
VCT	VINYL COMPOSITE TILE

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

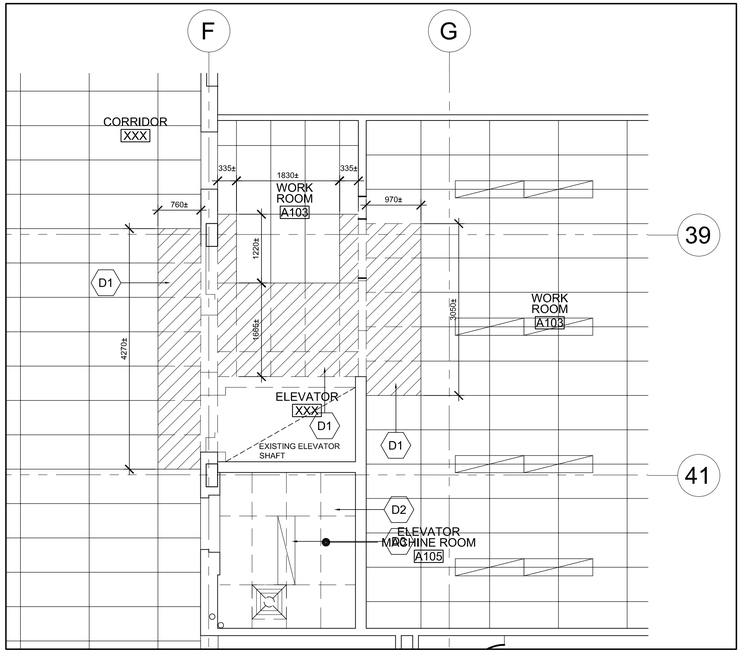
DEMOLITION FLOOR PLANS

GRGURIC ARCHITECTS INCORPORATED

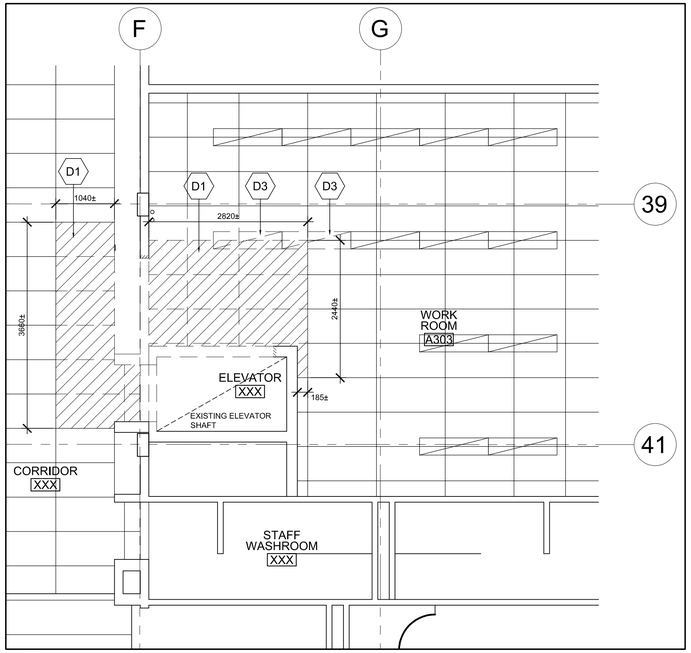
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT; 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A1.00
CHECKED JG	
PRINT DATE	

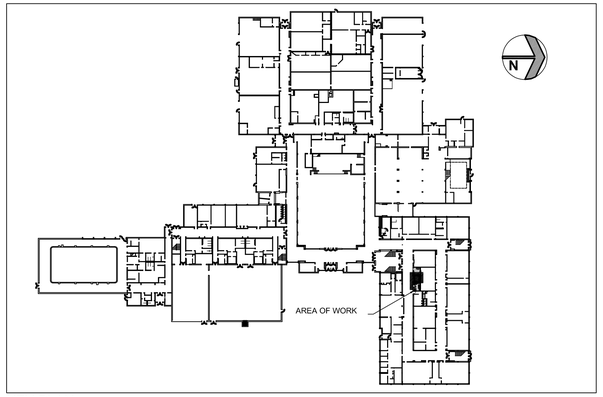
X:\Data\2022\2022-24\HDSB-White-Oaks-South-Elevator-Upgrades\05drawings\12-Working\A1.00_floorplans.dwg



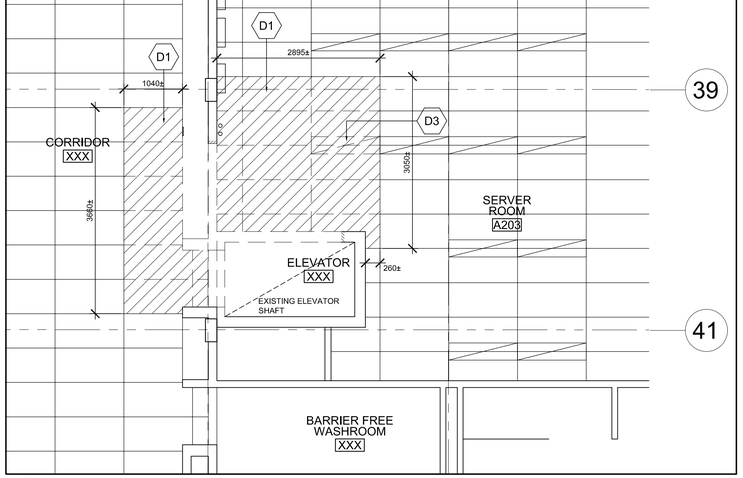
1 A1.00 PARTIAL GROUND FLOOR DEMOLITION RCP
SCALE: 1:50



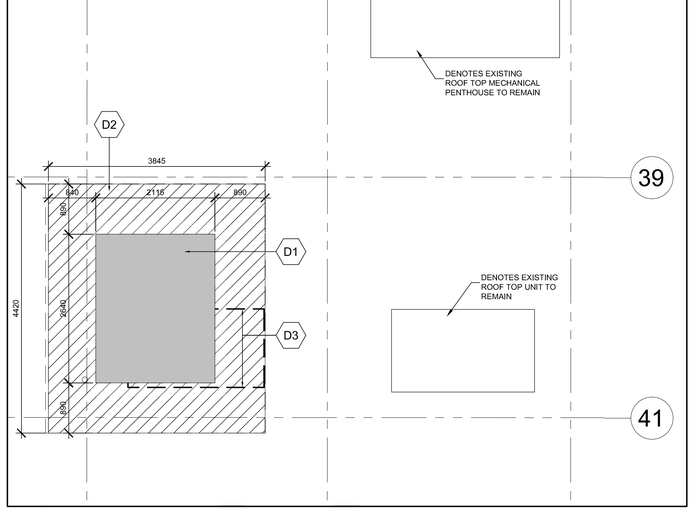
3 A1.00 PARTIAL THIRD FLOOR DEMOLITION RCP
SCALE: 1:50



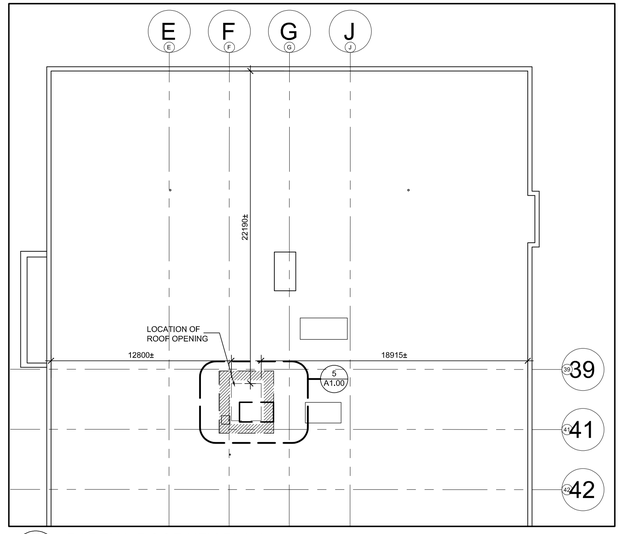
KEY PLAN
SCALE: NTS



2 A1.00 PARTIAL SECOND FLOOR DEMOLITION RCP
SCALE: 1:50



5 A1.00 PARTIAL ROOF DEMOLITION PLAN
SCALE: 1:50



4 A1.00 PARTIAL ROOF KEY PLAN
SCALE: 1:50

RCP DEMOLITION NOTES

D1 SHADED AREA DENOTES EXTENT OF EX ACT CEILING TO BE REMOVED AND DISPOSED OF. EX CEILING GRID OVER DENOTED AREA TO BE REMOVED AND DISPOSED OF. RESECURE EX CEILING GRID TO REMAIN TO EX STRUCTURE AND MAKE READY TO RECEIVE NEW GRID AND TILES

D2 REMOVE AND DISPOSE OF EX ACT, SUSPENSION GRID, WALL TRACK AND HANGING WIRES. PATCH AND REPAIR WALLS AS REQUIRED TO MAKE READY TO RECEIVE NEW WALL FINISH.

D3 REMOVE AND DISPOSE OF EX SURFACE MOUNTED LIGHT. REFER TO AND COORDINATE WITH ELECTRICAL DRAWINGS.

ROOF DEMOLITION NOTES

D1 DENOTES EXTENT OF EX ROOF MEMBRANE, INSULATION AND CONCRETE ROOF DECK TO BE REMOVED AND DISPOSED OF. REFER TO AND COORDINATE WITH STRUCTURAL DRAWINGS FOR ROOF DECK REMOVAL.

D2 DENOTES EXTENT OF EX ROOF MEMBRANE AND INSULATION TO BE REMOVED AND DISPOSED OF. MAKE EX ROOF DECK TO REMAIN READY TO RECEIVE NEW ROOFING MATERIAL

D3 EX MECHANICAL UNIT TO BE RELOCATED. REFER TO AND COORDINATE WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR DISCONNECTION OF SERVICES. EX SLEEPERS BELOW UNIT TO BE REMOVED AND DISPOSED OF.

Halton District School Board

CONSTRUCTION

ABBREVIATIONS LEGEND

ACT	ACOUSTIC CEILING TILE
EX	EXISTING

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH
ELEVATOR UPGRADES

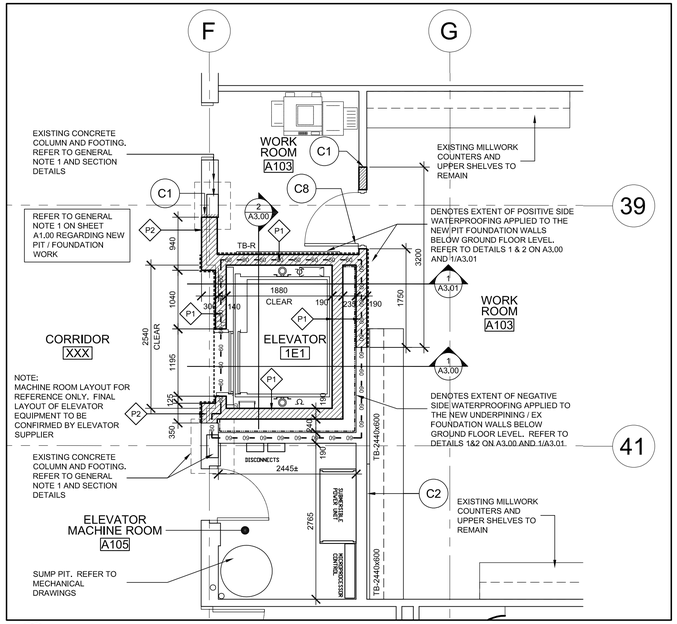
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

DEMOLITION REFLECTED CEILING PLANS

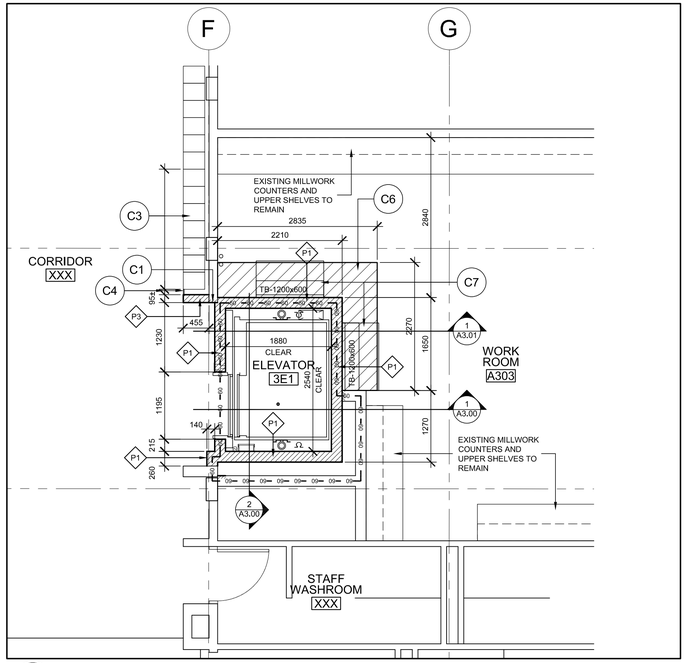
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A1.01
CHECKED JG	
PRINT DATE	

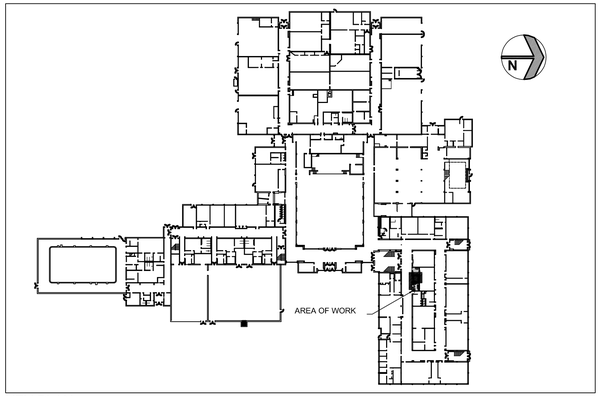
S:\Data\2022\2022-24-HDSB-White-Oaks-South-Elevator-Upgrades\05drawings\12-Working\A1.00_floor-plans.dwg



1 / A2.00 PARTIAL GROUND FLOOR PLAN
SCALE: 1:50



3 / A2.00 PARTIAL THIRD FLOOR PLAN
SCALE: 1:50



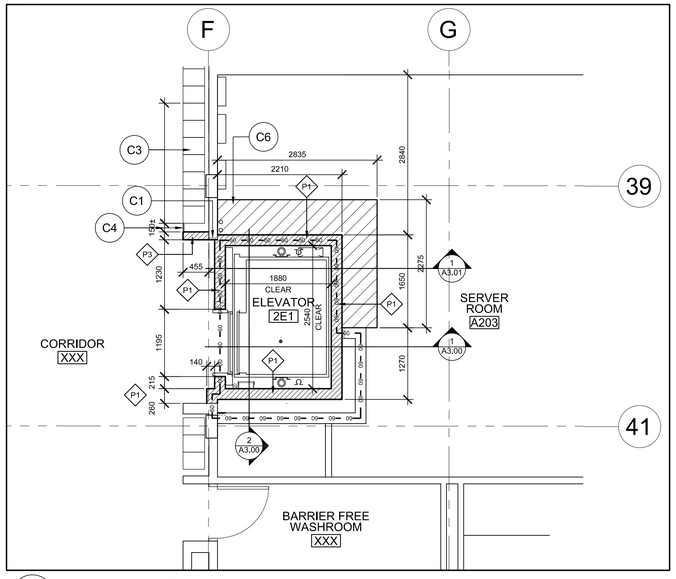
KEY PLAN
SCALE: NTS

GENERAL NOTES

1. GENERAL CONTRACTOR IS TO COORDINATE AND PROVIDE ALL NEW ELEVATOR PIT FOUNDATION WORK AS SHOWN INCLUDING EXCAVATION, SHORING, SEQUENCING, UNDERPINNING AND REROUTING OF EX UNDERGROUND SANITARY AND WATER LINES. THE NEW PIT FOUNDATION WALLS AND FOOTINGS EXTEND BELOW THE EXISTING COLUMN FOOTING AND THE TWO EX ELEVATOR WALLS AND FOOTINGS THAT ARE TO REMAIN. REFER TO PLANS, STRUCTURAL DRAWINGS AND MECHANICAL DRAWINGS.

CONSTRUCTION NOTES

- C1 PATCH AND REPAIR EXISTING CONCRETE BLOCK WALL AND MAKE READY TO RECEIVE NEW FINISH.
- C2 REINSTALL EXISTING WORK COUNTER AND UPPER SHELVES.
- C3 REINSTALL EXISTING LOCKERS THAT WERE REMOVED.
- C4 PROVIDE NEW METAL CLOSURE PANEL AT END OF REINSTALLED LOCKERS. FIELD VERIFY WIDTH OF PANEL REQUIRED
- C5 NOT USED
- C6 DENOTES EXTENT OF NEW VCT TILE
- C7 NEW 1200mm WIDE TEACHER'S WORKSTATION. REFER TO DETAIL 5/A2.01
- C8 NEW 950mm x 2150mm HM DOOR AND FRAME, PAINTED

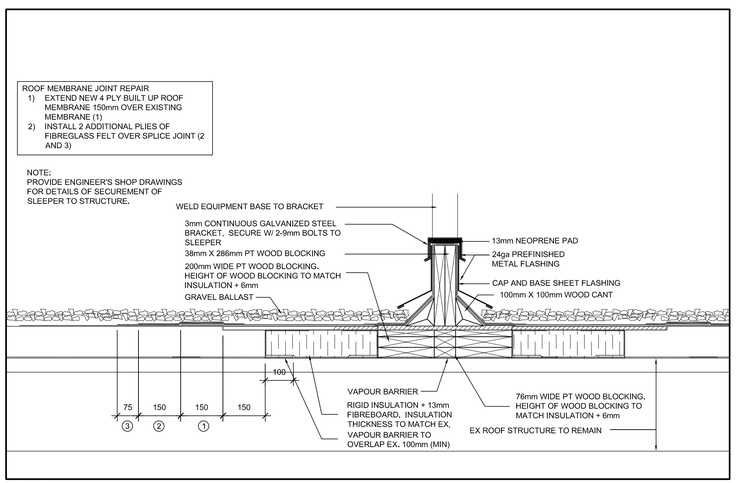


2 / A2.00 PARTIAL SECOND FLOOR PLAN
SCALE: 1:50

4 / A2.00 PARTIAL ROOF PLAN
SCALE: 1:50

INTERIOR WALL PARTITION TYPES

NO.	ASSEMBLY	DESCRIPTION	REMARKS
P1		- 190mm CONCRETE BLOCK	- EXTEND TO U/S OF STRUCTURE - 1hr FIRE RESISTANCE RATING (OBC SB-2) - BULLNOSE BLOCK AT ALL EXPOSED CORNERS
P2		- 90mm VENEER BRICK -190mm CONCRETE BLOCK	- EXTEND TO U/S OF STRUCTURE
P3		- 140mm CONC. BLOCK	- EXTEND TO 150mm ABOVE ADJACENT CEILING



5 / A2.00 DETAIL - EQUIPMENT SLEEPER
SCALE: 1:10

Halton District School Board

CONSTRUCTION

LEGEND

ACT	ACOUSTIC CEILING TILE
CONC	CONCRETE
EX	EXISTING
HM	HOLLOW METAL
HR	HOUR
MIN	MINIMUM
PT	PRESSURE TREATED
R	RELOCATED
RWL	RAIN WATER LEADER
TB	TACK BOARD
U/S	UNDERSIDE
VCT	VINYL COMPOSITE TILE
W/	WITH

=50 =50 = 1hr FIRE RATED WALL

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH ELEVATOR UPGRADES

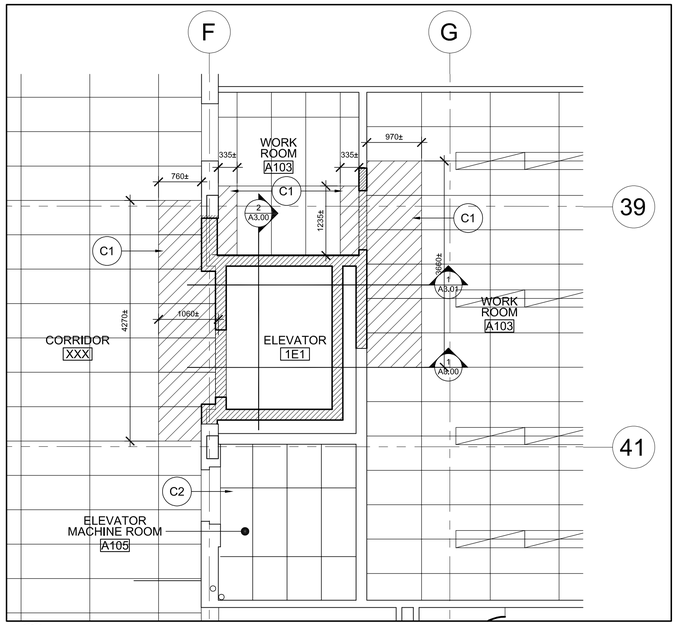
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

FLOOR PLANS

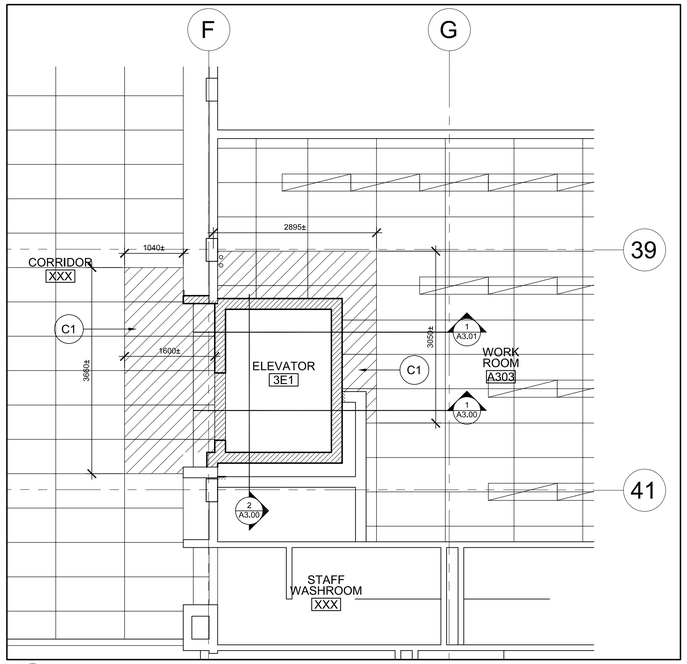
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A2.00
CHECKED JG	
PRINT DATE	

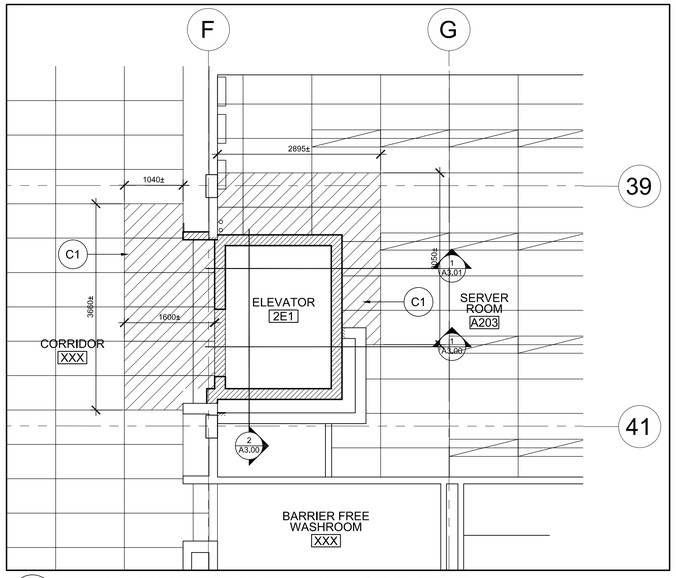
S:\Data\2022\2022-24-HDSB-White-Oaks-South-Elevator-Upgrades\05drawings\r12-Working\A1.00_floor-plans.dwg



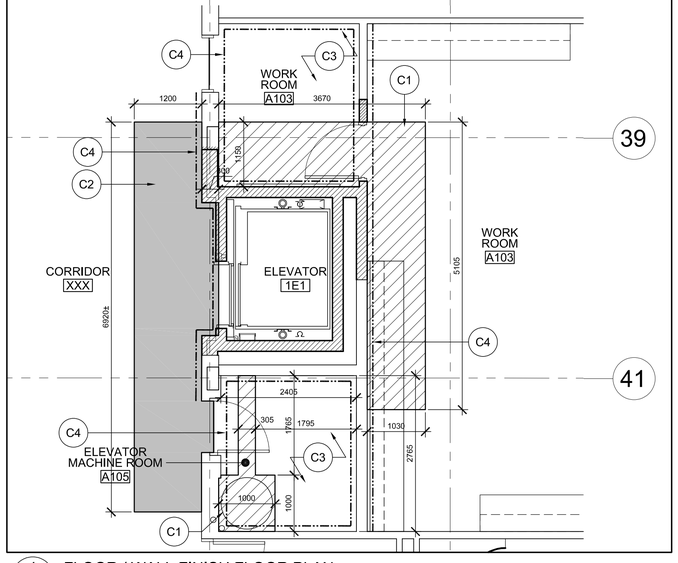
1 A2.01 PARTIAL GROUND FLOOR REFLECTED CEILING PLAN
SCALE: 1:50



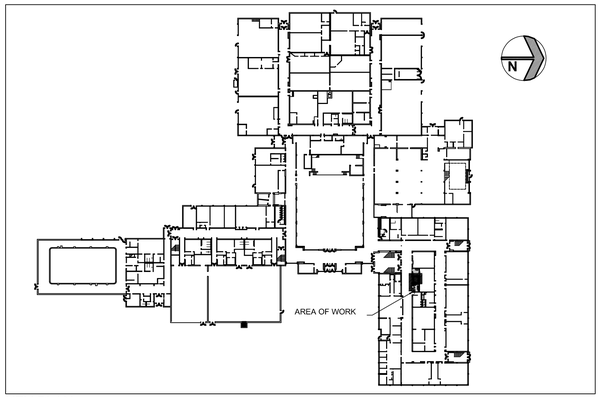
3 A2.01 PARTIAL THIRD FLOOR REFLECTED CEILING PLAN
SCALE: 1:50



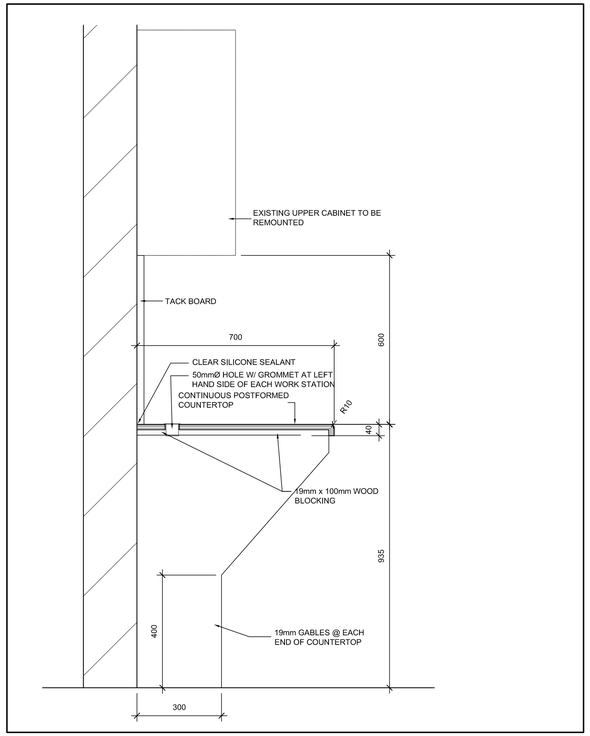
2 A2.01 PARTIAL SECOND FLOOR REFLECTED CEILING PLAN
SCALE: 1:50



4 A2.01 FLOOR / WALL FINISH FLOOR PLAN
SCALE: 1:50



KEY PLAN
SCALE: NTS



5 A2.01 MILLWORK DETAIL - TEACHER'S WORK STATION
SCALE: 1:10

RCP CONSTRUCTION NOTES

- C1 PROVIDE NEW SUSPENSION TEE'S TO MATCH EXISTING. PROVIDE NEW ACT-1
- C2 PROVIDE NEW SUSPENDED ACT-1 CEILING. CEILING SUSPENSION SYSTEM (TEE'S) TO BE HUNG FROM EXISTING STRUCTURE ABOVE

FLOOR / WALL FINISH CONSTRUCTION NOTES

- C1 HATCH AREA DENOTES EXTENTS OF NEW POURED CONCRETE FLOOR. THICKNESS OF NEW FLOOR TO MATCH EXISTING (APPROX 125mm). REFER TO STRUCTURAL DRAWINGS. PROVIDE NEW VCT FLOOR FINISH.
- C2 HATCH AREA DENOTES EXTENTS OF NEW POURED CONCRETE FLOOR. THICKNESS OF NEW FLOOR TO MATCH EXISTING (APPROX 125mm). REFER TO STRUCTURAL DRAWINGS. PROVIDE NEW TERRAZZO FLOOR FINISH. THICKNESS OF TERRAZZO TO MATCH EXISTING (APPROX 65mm). NEW TERRAZZO FLOORING TO MEET THE TILE & MARBLE ASSOCIATION OF CANADA REQUIREMENTS. INSTALL FLUSH WITH EXISTING FLOOR AND TILE INTO EXISTING DIVIDER STRIP OR TO SUIT PATCHED AREA. INSTALL PORTLAND CEMENT UNDER-BASE AND MARBLE / STONE CHIP AGGREGATE AND CEMENT MIXED DRY WITH COLOUR PIGMENTS TO MATCH EXISTING TERRAZZO. CURE SURFACE, MACHINE GRIND & SEAL. PATCH AND MAKE GOOD EXISTING CONC. BLOCK AT JAMBS.
- C3 PROVIDE NEW VCT FLOOR FINISH ON EX CONCRETE SOG
- C4 PATCH AND REPAIR EX CONCRETE BLOCK WALLS WHERE WALL MOUNTED ITEMS HAVE BEEN REMOVED AND MAKE WALL READY TO RECEIVE NEW PAINT FINISH
- C5 CONCRETE BLOCK / BRICK WALL TO BE PAINTED.

Halton District School Board

N
CONSTRUCTION

ABBREVIATIONS LEGEND

ACT	ACOUSTIC CEILING TILE
SOG	SLAB ON GRADE
VCT	VINYL COMPOSITE TILE
W/	WITH

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH
ELEVATOR UPGRADES

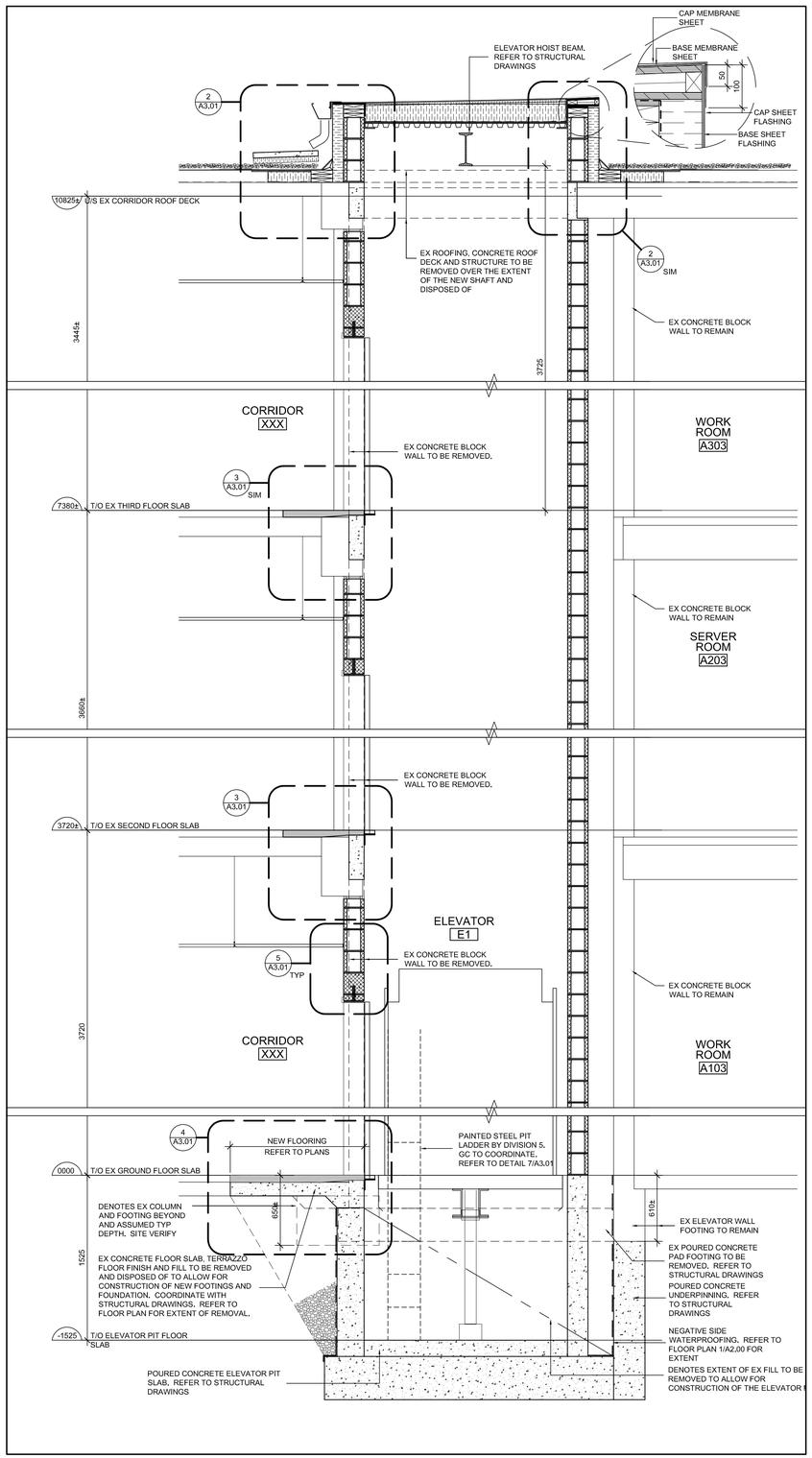
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

REFLECTED CEILING AND FLOOR / WALL FINISH FLOOR PLANS

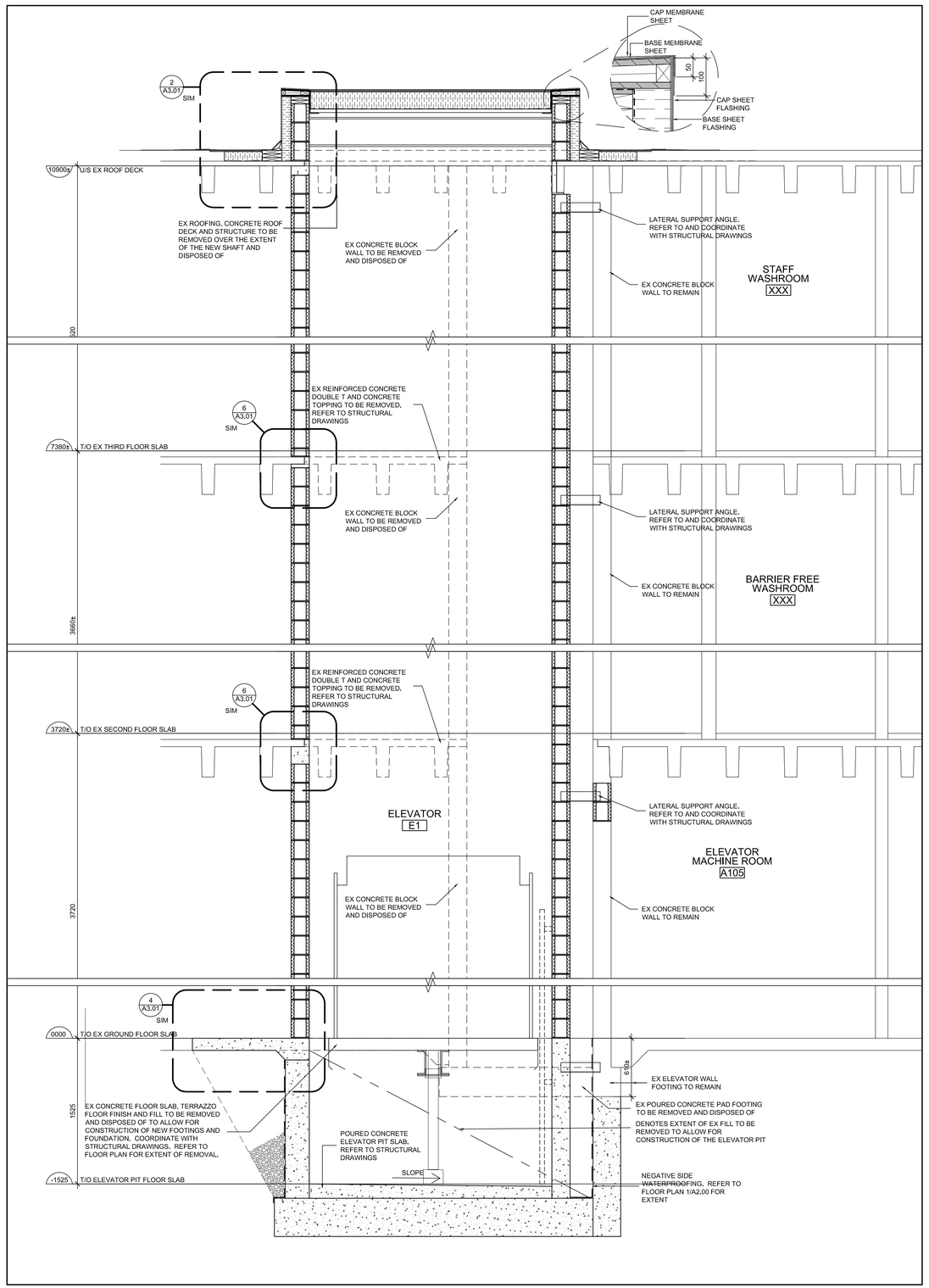
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A2.01
CHECKED JG	
PRINT DATE	

S:\Data\2022\2022-24-HDSB-White-Oaks-South-Elevator-Upgrades\05drawing\a\12-Working\A1.00_floor-plans.dwg



1 A3.00 SECTION - ELEVATOR HOISTWAY
SCALE: 1:25



2 A3.00 SECTION - ELEVATOR HOISTWAY
SCALE: 1:25

Halton District School Board

ABBREVIATIONS LEGEND

EX	EXISTING
GC	GENERAL CONTRACTOR
SIM	SIMILAR
TYP	TYPICAL
T/O	TOP OF
U/S	UNDERSIDE

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH
ELEVATOR UPGRADES

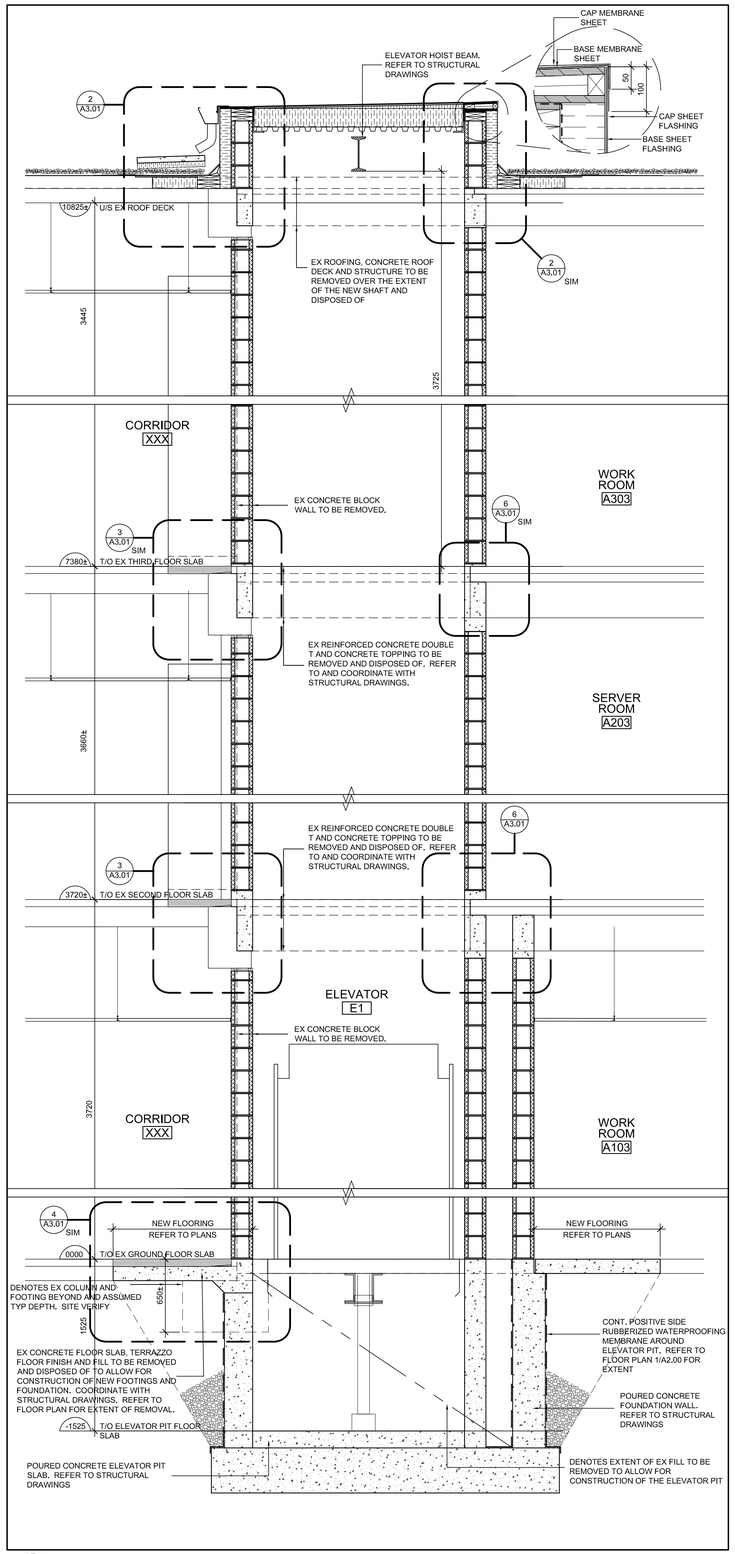
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

WALL SECTIONS

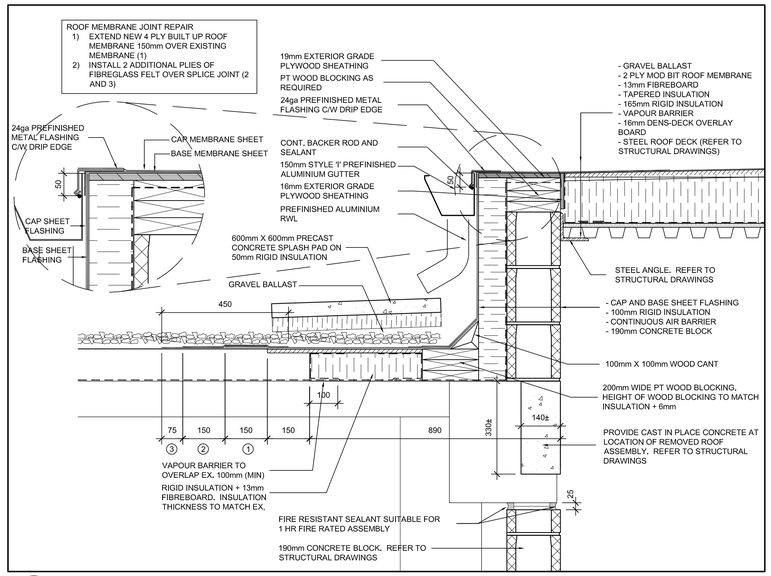
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A3.00
CHECKED JG	
PRINT DATE	

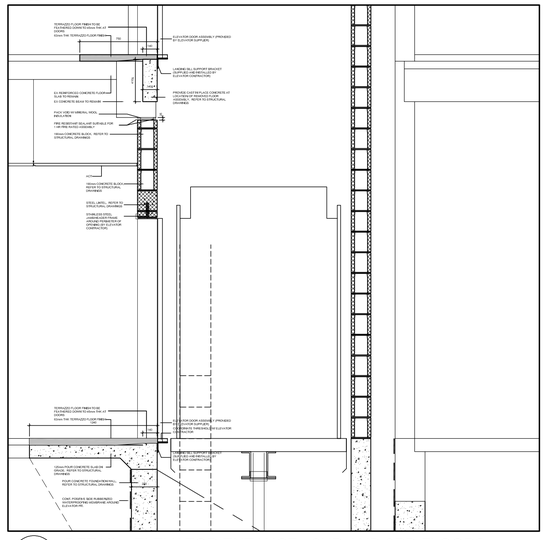
S:\Data\2022\2022-24-HDSB-White-Oaks-South-Elevator-Upgrades\05drawings\12-Working\A2.00_sections.dwg



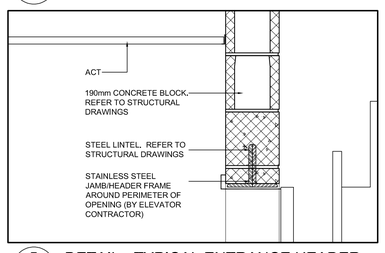
1 A3.01 SECTION - ELEVATOR HOISTWAY
SCALE: 1:25



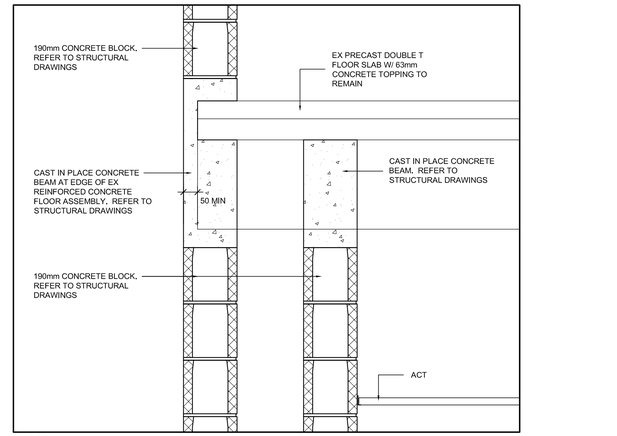
2 A3.01 DETAIL - TYPICAL PARAPET
SCALE: 1:10



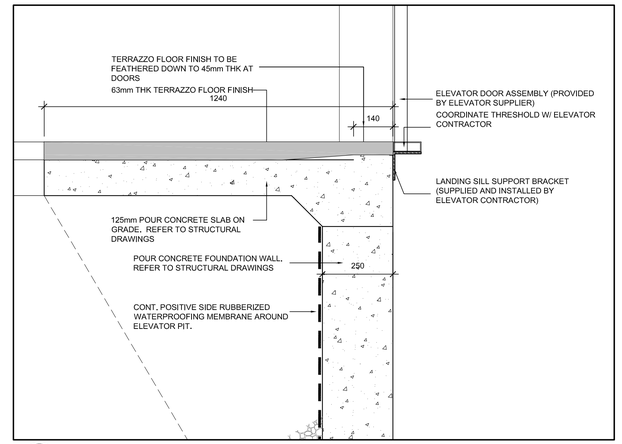
3 A3.01 DETAIL - ELEVATOR ENTANCE - 2ND AND 3RD FLOORS
SCALE: 1:10



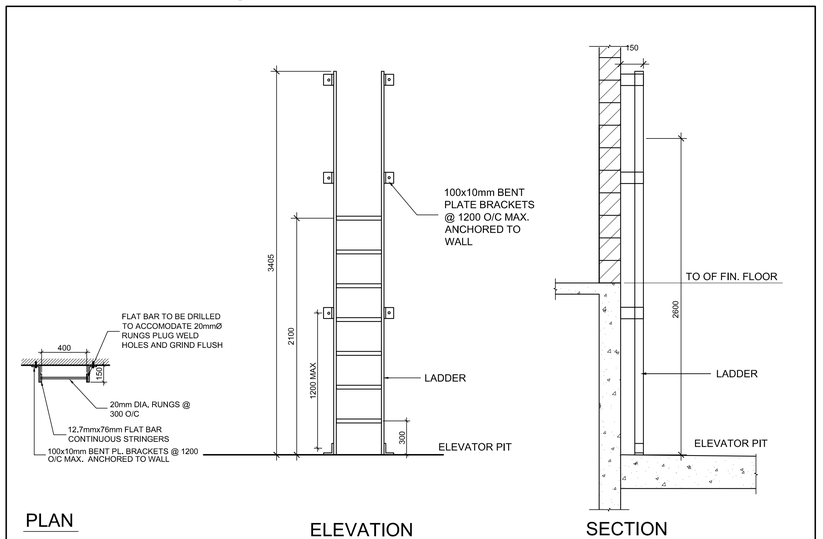
5 A3.01 DETAIL - TYPICAL ENTRANCE HEADER
SCALE: 1:10



6 A3.01 DETAIL - WALL AT SECOND FLOOR SLAB
SCALE: 1:10



4 A3.01 DETAIL - ELEVATOR ENTRANCE GROUND FLOOR
SCALE: 1:10



7 A3.01 DETAIL - ELEVATOR PIT LADDER
SCALE: 1:10

Halton District School Board

ABBREVIATIONS LEGEND

ACT	ACOUSTIC CEILING TILE
CONT	CONTINUOUS
EX	EXISTING
FIN	FINISH
GC	GENERAL CONTRACTOR
HR	HOUR
MAX	MAXIMUM
MIN	MINIMUM
O/C	ON CENTER
PL	PLATE
SIM	SIMILAR
THK	THICK
TYP	TYPICAL
T/O	TOP OF
U/S	UNDERSIDE
W/	WITH

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR BUILDING PERMIT	2022-12-16
1	ISSUED FOR CLIENT REVIEW	2022-12-14

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

WALL SECTIONS AND DETAILS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 2022-24
START DATE: AUG 2022	
DRAWN --	DRAWING A3.01
CHECKED JG	
PRINT DATE	

S:\Data\2022\2022-24-HDSB-White-Oaks-South-Elevator-Upgrades\05drawings\12-Working\A2.00_sections.dwg

NON-STRUCTURAL ELEMENTS — GN-011CS

1. "NON-STRUCTURAL" OR "SECONDARY STRUCTURAL" ELEMENTS ARE NOT PART OF THE STRUCTURAL DESIGN SHOWN ON THESE
DRAWINGS. SUCH ELEMENTS ARE DESIGNED, DETAILED AND REVIEWED IN THE FIELD BY OTHERS. THEY APPEAR ON DRAWINGS OTHER THAN THESE STRUCTURAL DRAWINGS BY exp. WHERE STRUCTURAL ENGINEERING RESPONSIBILITY IS REQUIRED FOR THESE ELEMENTS, THIS SHALL BE PROVIDED BY SPECIALTY STRUCTURAL ENGINEERS, WHO SHALL ALSO PROVIDE ANY DOCUMENTATION REQUIRED BY BUILDING PERMIT AUTHORITIES.

2. EXAMPLES OF NON-STRUCTURAL ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO:
   - a. ARCHITECTURAL COMPONENTS SUCH AS GUARDRAILS, HANDRAILS, MISCELLANEOUS STEEL STAIRS, FLAG POLES, CANOPIES, CEILINGS, MILLWORK, ETC.
   - b. LANDSCAPE ELEMENTS SUCH AS BENCHES, LIGHT POSTS, PLANTERS, ETC.
   - c. CLADDING, GLAZING, WINDOW MULLIONS, INTERIOR STUD WALLS AND EXTERIOR STUD WALLS.
   - d. ARCHITECTURAL PRECAST, PRECAST CLADDING.
   - e. SKYLIGHTS.
   - f. MECHANICAL AND ELECTRICAL EQUIPMENT, COMPONENTS, AND THEIR ATTACHMENT DETAILS. CONNECTIONS DESIGNED SEISMIC RESTRAINT ACCORDING TO OBC 2012 CLAUSE 4.1.8.18 OR NBC 2015 CLAUSE 4.1.8.18.
   - g. WINDOW WASHING EQUIPMENT, FALL ARREST ANCHORS AND THEIR ATTACHMENTS.
   - h. ESCALATORS, ELEVATORS, AND CONVEYING SYSTEMS.
   - i. GLASS BLOCK AND ITS ATTACHMENTC.
   - j. BRICK OR BLOCK VENEERS AND THEIR ATTACHMENTS.
   - k. NON-LOAD BEARING MASONRY.
   - l. NON-STRUCTURAL CONCRETE TOPPINGS.

3. SUBMIT SHOP DRAWINGS FOR NON-STRUCTURAL ELEMENTS WHICH MAY AFFECT THE PRIMARY STRUCTURAL SYSTEM TO exp. THESE DRAWINGS WILL BE REVIEWED ONLY FOR THE LOAD EFFECT OF THE ELEMENT ON THE PRIMARY STRUCTURAL SYSTEM.

STEEL DECK NOTES — GN-008

THE FOLLOWING NOTES ARE IN ADDITION TO THE GENERAL NOTES, THE SPECIFICATION, AND PLAN NOTES.

1. ROOF DECK DESIGN IS BASED ON THE FOLLOWING PROPERTIES OF STEEL DECK
   RD1: CANAM P-3615 & P-3606
2. STEEL DECK WITH THE SAME DEPTH AND SIMILAR PROPERTIES BY DIFFERENT MANUFACTURER MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
3. DESIGN DECK FOR GRAVITY LOADS NOTED IN PLANS, CONCENTRATED LOADS NOTED IN OBC AND WIND UPLIFT.
4. SEE ROOF FRAMING PLAN AND DIAPHRAGM DETAILS FOR ADDITIONAL REQUIREMENTS.
5. STEEL DECK CONTRACTOR MUST REINFORCE DECK FOR ALL OPENINGS 450 mm (18") IN SIZE OR SMALLER FOR ROOF DECK AND 300 mm (12") IN SIZE OR SMALLER FOR FLOOR DECK.
6. WHERE MECHANICAL EQUIPMENT IS SUPPORTED ON TIMBER SLEEPERS OR CURBS DIRECTLY ON ROOF DECK, PROVIDE WEDGES IN FLUTES OF DECK UNDER SLEEPER AT STRUCTURAL SUPPORT (BEAMS, JOISTS, WALLS).
7. DO NOT SUSPEND CEILINGS, LIGHTS, DUCTS, PIPES OR ANY OTHER ITEMS ITEMS FROM STEEL DECK.

SLAB ON GRADE NOTES — GN-004

THE FOLLOWING NOTES ARE IN ADDITION TO THE GENERAL NOTES, THE SPECIFICATION, AND PLAN NOTES.

1. SEE FOUNDATION PLAN NOTES FOR BEARING CONDITIONS.
2. WHERE FLOOR DEPRESSIONS OCCUR MAINTAIN SLAB THICKNESS SPECIFIED ON THE FOUNDATION PLANS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND AREAS.
3. EACH POUR MUST BE CONTAINED BY A VERTICAL BULKHEAD OR ABUTTING CONSTRUCTION JOINT. REFER TO TYPICAL DETAILS FOR CONSTRUCTION JOINTS AND CONTROL JOINTS.
4. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE OR ON SUBGRADE CONTAINING FROZEN MATERIAL. ASCERTAIN THAT FORMS, REINFORCING STEEL AND ADJACENT CONCRETE SURFACES ARE ENTIRELY FREE OF FROST, SNOW AND ICE BEFORE PLACING CONCRETE.
5. BEFORE PLACING SLAB-ON-GRADE VERIFY THAT:
   - a. SUBGRADE HAS BEEN COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.
   - b. TRENCHES, HOLES ETC. THAT WERE DUG AFTER THE PREPARATION OF THE SUBGRADE HAVE BEEN FILLED WITH NEW GRANULAR MATERIAL AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.
   - c. REINFORCING STEEL IS PROPERLY CHAIRED AND HELD SECURELY IN PLACE.
   - d. ALL EQUIPMENT FOR THE FINISHING OF CONCRETE AND THE SAW CUTTING OF CONTROL JOINTS IS ON SITE AND WORKING PROPERLY.

FOUNDATIONS NOTES — GN-005

THE FOLLOWING NOTES ARE IN ADDITION TO THE GENERAL NOTES, THE SPECIFICATION, AND PLAN NOTES.

1. SEE FOUNDATION PLAN NOTES FOR ASSUMED BEARING CONDITIONS. IF ACTUAL SITE OR SOIL CONDITIONS VARY FROM THOSE ASSUMED, OBTAIN WRITTEN INSTRUCTIONS FROM THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
2. CARRY EXTERIOR FOOTINGS DOWN MINIMUM 1200 mm (4') BELOW FINISHED GRADE. PROTECT FOOTINGS EXPOSED TO FROST DURING CONSTRUCTION WITH 1200 mm (4') OF EARTH OR ITS EQUIVALENT TO PREVENT FREEZING OF SOIL UNDER FOOTINGS. DO NOT PLACE FOOTINGS ON FROZEN SOIL.
3. KEEP EXCAVATIONS CONTINUOUSLY DRY BEFORE CONCRETE IS PLACED. IF SOIL IS SOFTENED BY WATER, EXTEND EXCAVATION BELOW SOFTENED MATERIAL AND LOWER FOOTINGS TO SUIT.
4. DO NOT EXCEED A RISE OF 7 IN RUN OF 10 IN THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS. MAXIMUM STEP 600 mm (24") APPROXIMATELY.
5. FOUND NEW FOOTINGS WHICH ARE LOCATED IMMEDIATELY ADJACENT TO EXISTING FOOTINGS AT THE SAME ELEVATION AS THE EXISTING FOOTING UNLESS NOTED OTHERWISE. AT LOCATIONS WHERE MECHANICAL SERVICES INTERFERE WITH FOOTINGS ESTABLISH TOP OF FOOTING A MINIMUM 200 mm (8") BELOW INVERT ELEVATION. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF SERVICES.
6. CAP DEPTHS GIVEN ARE FOR ASSUMED SUBSOIL CONDITIONS. RAISE OR LOWER FOOTING BASES AND ADJUST CAP DEPTHS IF ACTUAL CONDITIONS VARY, IN ACCORDANCE WITH THE FOLLOWING:
   MINIMUM CAP DEPTH IS 300 mm (12"), BUT NOT LESS THAN:
   - 6.1 UNDER STEEL COLUMN: TWICE THE HORIZONTAL PROJECTION OF THE CAP BEYOND THE COLUMN BASE PLATE.
   - 6.2 UNDER CONCRETE COLUMN, THE GREATER OF
   - 6.2.1 TWICE THE GREATER HORIZONTAL PROJECTION OF THE CAP BEYOND THE COLUMN;
   - 6.2.2 COMPRESSION DEVELOPMENT LENGTH OF COLUMN DOWEL PLUS 75 mm MINUS DEPTH OF FOOTING BASE.
7. WHERE FOUNDATION CONDITIONS REQUIRE LOWERING FOOTING BASES TO THE EXTENT THAT THE CAP DEPTH EXCEEDS 3 TIMES ITS LEAST DIMENSION, OBTAIN CAP REINFORCEMENT FROM THE CONSULTANT.
8. PLACE BASEMENT AND GROUND (FIRST) FLOOR SLABS AND WAIT UNTIL CONCRETE HAS REACHED 100% OF DESIGN STRENGTH BEFORE BACKFILLING AGAINST WALLS. PROVIDE SUPPORT AT TOP AND BOTTOM OF WALLS WHERE SLABS CANNOT BE POURED UNTIL BACKFILL HAS BEEN PLACED. WHERE BACKFILL IS PLACED ON EACH SIDE OF FOUNDATION WALLS, DO NOT EXCEED A GRADE DIFFERENCE OF 600 mm (24")

DESIGN LOADS — GN-002

1. UNIT FLOOR AND ROOF LOADINGS, SOIL BEARING PRESSURES AND FOUNDATION LOADS GIVEN ON PLANS ARE UNFACTORED. MEMBER FORCES GIVEN ON DRAWINGS ARE FACTORED.

2. GRAVITY LOADS: SUPERIMPOSED DEAD LOADS AND LIVE LOADS ARE GIVEN ON PLANS.

3. SNOW LOAD PARAMETERS, OBC 2012 (R 2019),OAKVILLE, ONTARIO
   Ss = 1.10 kPa
   Sr = 0.4 kPa
   Is ULS = 1.15
   Is SLS = 0.9

4. RAIN LOAD PARAMETER, OBC 2012 (R 2019),OAKVILLE, ONTARIO
   ONE DAY RAINFALL = 97 mm

5. WIND LOAD PARAMETERS, OBC 2012 (R 2019),OAKVILLE, ONTARIO
   q (1/10) = 0.36 kPa
   q (1/50) = 0.47 kPa
   Iw ULS = 1.15
   Iw SLS = 0.75

6. SEISMIC LOAD PARAMETERS, OBC 2012 (R 2019),OAKVILLE, ONTARIO

Sa (0.2) = 0.26	Sa (5.0) = 0.0070
Sa (0.5) = 0.129	Sa (10.0) = 0.0027
Sa (1.0) = 0.062	PGA = 0.167
Sa (2.0) = 0.029	

   SITE CLASSIFICATION = C
   Ie = 1.3
   IeFaSa(0.2)=0.34

7. LATERAL LOADS ON UNDERPINNING, FOUNDATION WALLS / RETAINING WALLS
   UNDERPINNING RETAININ EARTH HAVE BEEN DESIGNED TO SAFELY WITHSTAND HORIZONTAL EARTH PRESSURE. AND HYDROSTATIC PRESSURE

   EARTH PRESSURE Ps = K(yh + q) kPa

GENERAL NOTES — GN-001

1 **GENERAL**
1.1 CHECK DIMENSIONS ON STRUCTURAL DRAWINGS AGAINST ARCHITECTURAL DRAWINGS AND EXISTING SITE CONDITIONS. REPORT INCONSISTENCIES TO CONSULTANT BEFORE PROCEEDING WITH THE WORK.
1.2 READ DRAWINGS IN CONJUNCTION WITH SEPARATELY BOUND SPECIFICATIONS.
1.3 DO NOT EXCEED DURING CONSTRUCTION DESIGN LOADS SHOWN ON PLANS REDUCED AS NECESSARY UNTIL MATERIALS REACH DESIGN STRENGTH.
1.4 DO NOT SCALE DRAWINGS.
1.5 DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.

2 **DESIGN**
2.1 ALL REFERENCED STANDARDS LISTED SHALL BE THE CURRENT PUBLISHED EDITION OR THE EDITION REFERENCED BY THE APPLICABLE BUILDING CODE IN FORCE AT THE DATE NOTED ON THE STRUCTURAL DRAWINGS FOR THE BUILDING PERMIT APPLICATION.
2.2 DESIGN IS IN ACCORDANCE WITH THE ONTARIO BUILDING CODE (OBC) 2012 (R2019).
2.3 DESIGN STANDARDS.
2.3.1 CONCRETE MEMBERS ARE DESIGNED IN ACCORDANCE WITH CSA STANDARD A23.3.
2.3.2 STRUCTURAL STEEL IS DESIGNED IN ACCORDANCE WITH CSA STANDARD S16.
2.3.3 MASONRY IS DESIGNED IN ACCORDANCE WITH CSA STANDARD S304.
2.3.4 TIMBER IS DESIGNED IN ACCORDANCE WITH CSA STANDARD CAN/CSA O86.

3 **MATERIALS**
3.1 CONCRETE: SEE SCHEDULE OF CONCRETE PROPERTIES AND SPECIFICATION.
3.2 STRUCTURAL STEEL: UNLESS NOTED OTHERWISE TO CSA G40.20/G40.21 OR ASTM STANDARD A992/A992M OR ASTM A572.
W AND S SHAPES: GRADE 350W, FY = 345 MPa
PLATES: CSA G40.21 GRADE 350 W
CHANNELS AND ANGLES: CSA G40.21 GRADE 300W
HOLLOW STRUCTURAL SECTIONS: CSA G40.21 GRADE 350W CLASS C OR ASTM STANDARD A1085.
ANCHOR RODS: ASTM F1554 GRADE 36.
3.3 REINFORCING STEEL:
3.3.1 TO CONFORM TO CSA G30.18 GRADE 400W UNLESS NOTED OTHERWISE
3.3.2 REINFORCING BAR AREAS ARE 100, 200, 300, 500, 700, 1000, 1500 AND 2500 SQ. MM FOR BAR DESIGNATIONS 10M, 15M, 20M, 25M, 30M, 35M, 45M AND 55M RESPECTIVELY.
3.3.3 STRENGTH:
DEFORMED REINFORCING BARS: 400 MPa
WELDED WIRE FABRIC: 440 MPa
3.4 MASONRY:
3.4.1 CONCRETE BLOCKS, NORMAL WEIGHT LOAD BEARING UNITS:
STANDARD HOLLOW: TYPE H/20/A/M
75% SOLID: TYPE S/20/A/M
100% SOLID: TYPE Sc/20/A/M
3.4.2 GROUT:
MINIMUM STRENGTH: 20 MPa
3.4.3 MORTAR: TYPE S, MINIMUM STRENGTH AT 28 DAYS: 8.5 MPa.

4 **EXISTING CONSSTRUCTION NOTES**
4.1 INSPECT AND BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS AND THE STRUCTURE
4.2 PRIOR TO START OF WORK, PREPARE AND SUBMIT A SEQUENCE OF WORK TO THE CONSULTANT FOR REVIEW.
4.3 PROVIDE ALL NECESSARY SHORING (INCLUDING SHORING OF FLOORS AS REQUIRED TO SUPPORT CRANES, HOIST AND OTHER EQUIPMENT), BRACING AND OTHER SAFEGUARDS TO MAINTAIN ALL PARTS OF THE EXISTING WORK IN A SAFE CONDITION UNTIL ALL NEW WORK HAS BEEN COMPLETED AND REVIEWED BY THE CONSULTANT.
4.4 RETAIN A PROFESSIONAL ENGINEER TO DESIGN THE TEMPORARY SHORING AND TO REVIEW THIS WORK ON SITE.
4.5 PROTECT FROM DAMAGE THOSE PARTS OF THE EXISTING WORK WHICH ARE TO REMAIN.
4.6 FIELD VERIFY THE DIMENSIONS, ELEVATIONS, ETC. NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTIONS OF THE WORK TO THE EXISTING WORK.

ABBREVIATIONS — GN-010

AB	ANCHOR BOLT	F'c	COMPRESSIVE STRENGTH OF CONCRETE	P,T,C,V,M,R	UNFACTORED LOADS
ADD	ADDITIONAL	FF	FAR FACE	PC	PRECAST
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	GALV	GALVANIZED	PL	PLATE
				PSL	PARALLEL STRAND LUMBER
AIFB	ASPHALT IMPREGNATED FIBERBOARD	HB	HIGH BEAM	PVC	POLYVINYL CHLORIDE
ALT	ALTERNATIVE	HD	HANGER DOWN	REINF	REINFORCEMENT
AR	ANCHOR ROD	HEF	HORIZONTAL EACH FACE	RE	RIGHT END
ARCH	ARCHITECTURAL	HH	HOOK-HOOK (HOOK EACH END)	RTU	ROOF TOP UNIT
B, BOTT	BOTTOM	HIF	HORIZONTAL INSIDE FACE	S	STANDARD BEAM
BC	BOTTOM ELEVATION OF CAISSON	HL	HIGH LINE	SECT	SECTION
		HOF	HORIZONTAL OUTSIDE FACE	SF	SPRAY FIRE PROOFED
BEW	BOTTOM EACH WAY	FACE		SDF	STEP DOWN FOOTING
BLL	BOTTOM LOWER LAYER	HOR	HORIZONTAL	SIM	SIMILAR
BM	BEAM	HP	HIGH POINT	SJ	STEEL JOIST
BMB	BENDING MOMENT BAR	HSC	HORIZONTALLY SLOTTED CONNECTION	SL	SLAB
BPL	BEARING/BASE PLATE			SOG	SLAB ON GRADE
BRG	BEARING	HSS	HOLLOW STRUCTURAL SECTION	SP	SPANDREL, SPRUCE
BSMT	BASEMENT			SPF	SPRUCE PINE FIR
BUL	BOTTOM UPPER LAYER	HU	HANGER UP	ST	STRAIGHT
				STIRR	STIRRUP
C	STANDARD CHANNEL	ID	INSIDE DIAMETER	STRUCT	STRUCTURAL
C/C	CENTRE TO CENTRE	IF	INSIDE FACE		
C/W	COMPLETE WITH			t	THICKNESS
CA	COLUMN ABOVE	KB	KNEE BRACE	T	TOP
CB	COLUMN BELOW	kN	KILOWNEWTON	TC	TOP ELEVATION OF CAISSON
CANT/CANTIL	CANTILEVER	kPa	KILOPASCAL		
CF	CONCRETE FIREPROOFED	L	SINGLE ANGLE	TCAP	TOP ELEVATION OF CAP
				TDL	TENSION DEVELOPMENT LENGTH
CJ	CONTROL JOINT	2L	DOUBLE ANGLES		
CL	CLEAR	LB	LOWER BEAM	TEW	TOP EACH WAY
C.L.	CENTRE LINE	LE	LEFT END	T&J	TONGUE AND GROOVE
COMP	COMPOSITE	LG	LONG/LENGTH	TJ	TIE JOIST
COL	COLUMN	LL	LIVE LOAD	TLE	TOP LEFT END
CONC	CONCRETE	LL	LOW LINE	TLL	TOP LOWER LAYER
CONN	CONNECTION	LLV	LONG LEG VERTICAL	TOC	TOP OF CONCRETE
CONST JT	CONSTRUCTION JOINT	LLH	LONG LEG HORIZONTAL	TOS	TOP OF STEEL
CONT	CONTINUOUS	LP	LOW POINT	TRE	TOP RIGHT END
		LSSJ	LONG SPAN STEEL JOIST	TSA	TENSION LAP SPLICE CLASS 'A'
DET	DETAIL	LVL	LAMINATED VENEER LUMBER	TSB	TENSION LAP SPLICE CLASS 'B'
D FIR	DOUGLAS FIR				
DIA	DIAMETER				
DIM	DIMENSION	MAX	MAXIMUM	TUL	TOP UPPER LAYER
DL	DEAD LOAD	MC	MOMENT CONNECTION	TYP	TYPICAL
DP	DEEP	MC	MISCELLANEOUS CHANNEL		
DWG	DRAWING	MIN	MINIMUM	UB	UPPER BEAM
DWL	DOWEL	m	METER	U/S	UNDERSIDE
		m2	SQUARE METER	USD	UNDERSIDE OF DECK
EA	EACH	mm	MILLIMETER	UL	UPPER LAYER
ECR	EPOXY COATED REINFORCEMENT	mm2	SQUARE MILLIMETER	UIN	UNLESS NOTED
		MECH	MECHANICAL	UNO	UNLESS NOTED
EE	EACH END	MPa	MEGAPASCAL		OTHERWISE
EF	EACH FACE			UPT	UPTURNED
EJ, EXP. JT	EXPANSION JOINT	NBCC	NATIONAL BUILDING CODE OF CANADA	VERT	VERTICAL
EL, ELEV	ELEVATION			VBF	VERTICAL BRACED FRAME
ELECT	ELECTRICAL	NCB	NO COLUMN BELOW		
EMBED	EMBEDMENT	NF	NEAR FACE	VEF	VERTICAL EACH FACE
EQ	EQUAL	NIC	NOT IN CONTRACT	VIF	VERTICAL INSIDE FACE
EW	EACH WAY	No	NUMBER	VOF	VERTICAL OUTSIDE FACE
EX, EXIST	EXISTING	NTS	NOT TO SCALE	VSC	VERTICAL SLOTTED CONNECTION
FIN	FINISHED	OBC	ONTARIO BUILDING CODE		
FL	FLOOR	OC	ON CENTRE		
FTG	FOOTING	OD	OUTSIDE DIAMETER	W	WIDE FLANGE BEAM
FMC	FULL MOMENT CONNECTION	OF	OUTSIDE FACE	WP	WALL PLATE
		OPNG	OPENING	WT	STRUCTURAL TEE
Fy	YIELD STRENGTH	OWSJ	OPEN WEB STEEL JOIST	WWF	WELDED WIRE FABRIC
		Pf,Cf,Tf,Mf,Vf,Rf	FACTORED LOADS	WWE	WELDED WIDE FLANGE

CONCRETE & REINFORCING STEEL & FORMWORK — GN-003CS

1 GENERAL

1.1 THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION:
- 1.1.1 CSA A23.1, CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION
- 1.1.2 CSA A23.2, METHODS OF TEST FOR CONCRETE
- 1.1.3 CSA A3000, CEMENTITIOUS MATERIALS COMPENDIUM
- 1.1.4 ASTM A1064/A1064M STANDARD SPECIFICATION FOR CARBON-STEEL WIRE AND WELDED WIRE REINFORCEMENT, PLAIN AND DEFORMED, FOR CONCRETE.
- 1.1.5 CSA G30.18, CARBON STEEL BARS FOR CONCRETE REINFORCEMENT
- 1.1.6 CSA W186, WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION
- 1.1.7 ASTM D3963/D3963M, STANDARD SPECIFICATION FOR FABRICATION AND JOBSITE HANDLING OF EPOXY-COATED STEEL REINFORCEMENT BARS
- 1.1.8 ACI 315, MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES
- 1.1.9 RSIC REINFORCING STEEL MANUAL OF STANDARD PRACTICE, 2006.
- 1.1.10 ACI 117, STANDARD SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS AND COMMENTARY
- 1.1.11 CSA S269.1, FALSEWORK AND FORMWORK

1.2 SUBMITTALS
- 1.2.1 SUBMIT CONCRETE MIX DESIGNS
- 1.2.2 SUBMIT REINFORCING STEEL SHOP DRAWINGS
  - .1 PREPARE PLACING DRAWINGS AND BAR LISTS INDICATING REINFORCING, DOWELS, CONCRETE COVER, CONSTRUCTION JOINTS

2 PRODUCTS

2.1 PLYWOOD: DOUGLAS FIR, MINIMUM THICKNESS17 mm TO CSA O121, FINISHED ONE SIDE, FABRICATED SPECIALLY FOR USE AS CONCRETE FORM PANELS WITH SEALED EDGES.
2.2 ROUND COLUMN FIBRE FORMS: TO PRODUCE SMOOTH SURFACE WITHOUT FINS
2.3 VOIDFORM: HONEYCOMB CELLULAR CORE STRUCTURE MANUFACTURED FROM KRAFT FIBRE.
2.4 REINFORCING BARS: TO CAN/CSA-G30.18, GRADE 400W
2.5 WELDED WIRE FABRIC: TO ASTM A1064/A1064M AND IN FLAT SHEETS NOT ROLLS

2.6 CEMENTING MATERIALS
- 2.6.1 PORTLAND CEMENT: TO CSA A3000 TYPE GU OR GUL
- 2.6.2 CEMENTITIOUS HYDRAULIC SLAG AND FLY ASH: TO CSA A3000

2.7 AGGREGATE:
- 2.7.1 FINE AGGREGATE FOR SLABS ON GRADE: FINENESS MODULUS BETWEEN 2.6 AND 3.1
- 2.7.2 COARSE AGGREGATE: 20 mm TO 5 mm UNLESS OTHERWISE SPECIFIED

2.8 CORROSION INHIBITOR: CALCIUM NITRITE MEETING THE REQUIREMENTS OF CSA S413, APPENDIX C
2.9 VAPOUR BARRIER FOR SLABS ON GRADE: POLYETHYLENE MEMBRANE, 0.25 MM THICK TO ASTM E1745
2.10 CONTROL JOINT FILLER: SEMI-RIGID JOINT FILLER
- : QWIKJOINT UVR, BY EUCLID CANADA INC., TORONTO, ON.
- : LOADFLEX, BY SIKA CANADA INC., MISSISSAUGA, ON.
- : PLANIBOND JF, BY MAPEI INC., BRAMPTON, ON.

2.11 PREMIXED GROUT: DRYPACK NON-SHRINK NON-METALLIC

3 EXECUTION

3.1 CONCRETE TO BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

LOCATION	CLASS OF EXPOSURE	MIN. 28 DAY STRENGTH (MPa)	CEMENT SYMBOL	MAX. AGGREGATE SIZE (mm)	SLUMP (mm)	% AIR ENTRAINMENT
FOOTINGS	N	25	GU or GUL	20	80	N/A
FOUNDATION WALLS/ RAMP SLAB	F2	25	GU or GUL	20	80	4-7
INTERIOR SLAB	N	25	GU or GUL	20	80	N/A

3.2 ALL REINFORCEMENT SHALL BE SECURELY HELD IN PROPER POSITION WHILE PLACING CONCRETE. PROVIDE CHAIRS, TIES, SPACERS, ADDITIONAL SUPPORT BARS AND STIRRUPS AS MAY BE REQUIRED.
3.3 PROVIDE OPENINGS IN SLABS AND WALLS AS SHOWN ON STRUCTURAL DRAWINGS OR OTHERWISE REQUIRED BY VARIOUS TRADES. OBTAIN CONSULTANT'S APPROVAL FOR LOCATIONS AND SIZES OF OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. FORM ALL OPENINGS BEFORE CONCRETE IS PLACED; DO NOT CUT OR CORE ANY OPENINGS AFTER CONCRETING UNLESS APPROVED BY THE CONSULTANT.
3.4 PROVIDE SLEEVES IN SLABS AND WALLS FOR MECHANICAL PIPING WHEREVER POSSIBLE; AVOID CREATING OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. OBTAIN CONSULTANTS APPROVAL FOR ALL SLEEVES. SUBMIT SLEEVING DRAWINGS FOR APPROVAL A MINIMUM TWO WEEKS PRIOR TO PLACING CONCRETE.
3.5 ELECTRICAL CONDUIT IN SLABS, BEAMS, WALLS AND COLUMNS SHALL BE APPROVED BY THE CONSULTANT BEFORE PROCEEDING WITH THE WORK. REFER TO TYPICAL DETAILS FOR GUIDELINES.
3.6 CONSTRUCTION JOINTS FOR SLABS, BEAMS AND WALLS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE APPROVED BY THE CONSULTANT BEFORE CONSTRUCTION. REFER TO TYPICAL DETAILS.
3.7 COORDINATE AND INSTALL ALL REQUIRED EMBEDDED ITEMS, SLEEVES, INSERTS, FASTENING DEVICES ETC, BEFORE PLACING CONCRETE. INSTALL THESE ITEMS IN A MANNER THAT DOES NOT IMPAIR THE STRUCTURAL STRENGTH OF THE SYSTEM. DO NOT CUT OR BEND OR DISPLACE REINFORCEMENT OTHER THAN SHOWN ON THE STRUCTURAL DRAWINGS.
3.8 CONCRETE WALLS
- 3.8.1 REINFORCEMENT OF CONCRETE WALLS NOT SHOWN BY SECTION, PLAN OR SCHEDULE SHALL BE AS FOLLOWS:
- 3.8.2 UNLESS SHOWN OTHERWISE BY SECTION, PLAN OR SCHEDULE, ADD 2-15M HORIZONTAL BARS ABOVE AND BELOW OPENINGS IN HEAD AND SILL. EXTEND BARS 600 mm (24) PAST OPENING. ADD'J" BARS SAME SIZE AND SPACING AS VERTICAL BARS.
- 3.8.3 UNLESS SHOWN OTHERWISE BY SECTION, PLAN OR SCHEDULE, ADD 2 -15M VERTICAL BARS IN JAMBS OF OPENING AND EDGE TIES SAME SIZE AND SPACING OF HORIZONTAL BARS.
- 3.8.4 WALL DOWELS INTO SLAB NOT SHOWN BY SECTION, PLAN OR SCHEDULE SHALL BE SAME SIZE AND SPACING AS VERTICAL BARS.
- 3.8.5 DO NOT LOCATE HORIZONTAL JOINTS BETWEEN FLOORS UNLESS SHOWN ON DRAWINGS.
- 3.8.6 LEAVE CHASES IN WALLS FOR SLABS, BEAMS AND CONCRETE STAIRS.

3.9 MINIMUM REINFORCING FOR ANY SUSPENDED SLAB SHALL BE TEMPERATURE BARS BOTTOM EACH WAY AS SHOWN IN TYPICAL DETAIL C-003
3.10 ONE-WAY SLABS.
SLAB-ON-GRADE
- 3.10.1 SEE FOUNDATION PLAN NOTES FOR BEARING CONDITIONS.
- 3.10.2 WHERE FLOOR DEPRESSIONS OCCUR MAINTAIN SLAB THICKNESS SPECIFIED ON THE FOUNDATION PLANS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND AREAS.
- 3.10.3 EACH POUR SHALL BE CONTAINED BY A VERTICAL BULKHEAD OR ABUTTING CONSTRUCTION JOINT. REFER TO TYPICAL DETAILS FOR CONSTRUCTION JOINTS AND CONTROL JOINTS.
- 3.10.4 DO NOT PLACE CONCRETE ON FROZEN SUBGRADE OR ON SUBGRADE CONTAINING FROZEN MATERIAL. ASCERTAIN THAT FORMS, REINFORCING STEEL AND ADJACENT CONCRETE SURFACES ARE ENTIRELY FREE OF FROST, SNOW AND ICE BEFORE PLACING CONCRETE.
- 3.10.5 BEFORE PLACING SLAB-ON-GRADE VERIFY THAT:
  - .1 SUBGRADE HAS BEEN COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT;
  - .2 TRENCHES, HOLES ETC. THAT WERE DUG AFTER THE PREPARATION OF THE SUBGRADE HAVE BEEN FILLED WITH NEW GRANULAR MATERIAL AND COMPACTED TO THE REQUIREMENTS OF THE GEOTECHNICAL REPORT;
  - .3 REINFORCING STEEL IS PROPERLY CHAIRED AND HELD SECURELY IN PLACE;
  - .4 ALL EQUIPMENT FOR THE FINISHING OF CONCRETE AND THE SAW CUTTING OF CONTROL JOINTS IS ON SITE AND WORKING PROPERLY;
  - .5 USE EARLY ENTRY SAW (SOFF-CUT, BY HUSQVARNA). COMMENCE SAWCUTTING AS SOON AS CONCRETE CAN SUPPORT WEIGHT OF SAW AND OPERATOR WITHOUT MARRING CONCRETE SURFACE AND WITHIN 2 HOURS OF COMPLETION OF FINAL FINISHING;

3.11 FLOOR FINISH: HARD, SMOOTH, DENSE TROWELED SURFACE FREE FROM BLEMISHES.

4 FIELD QUALITY CONTROL

4.1 INSPECTION AND TESTING COMPANY SHALL PERFORM:
- 4.1.1 SAMPLING, INSPECTION AND TESTING IN ACCORDANCE WITH CSA A23.2 AND TO INCLUDE:
  - .1 MAKING STANDARD SLUMP TESTS;
  - .2 OBTAINING OF THREE STANDARD SPECIMENS FOR STRENGTH TESTS FROM EACH 100 CUBIC METRES OF CONCRETE, OR FRACTION THEREOF, OF EACH MIX DESIGN OF CONCRETE PLACED IN ANY ONE DAY;
  - .3 MAKING COMPRESSION TESTS OF EACH SET OF THREE SPECIMENS, ONE AT 7 DAYS AND TWO AT 28 DAYS;
  - .4 VERIFICATION OF AIR CONTENT OF AIR-ENTRAINED CONCRETE;
  - .5 VERIFICATION THAT CONCRETE CONTAINS CORROSION INHIBITOR WHERE SPECIFIED.
  - .6 DETERMINE CHLORIDE ION CONTENT IN ACCORDANCE WITH CSA STANDARDA23.2 TEST METHOD 4B.
  - .7 INSPECTION OF TOLERANCES.

Halton District School Board

EXP Services Inc.
t: 905.525.6069 | f: 905.528.7310
1266 South Service Road,
Suite C1-1, Stoney Creek,
ON, L8E 5R9
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR PERMIT	2022-12-12
1	ISSUED FOR CLIENT REVIEW	2022-11-18

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

REGISTERED PROFESSIONAL ENGINEER
S.A. ZUBERY
100073296
PROVINCE OF ONTARIO

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

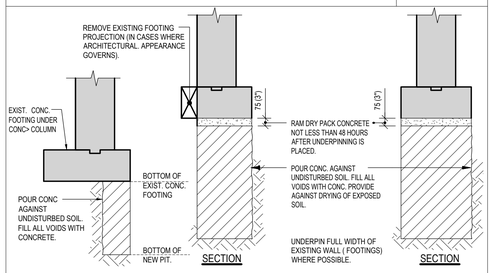
GENERAL NOTES

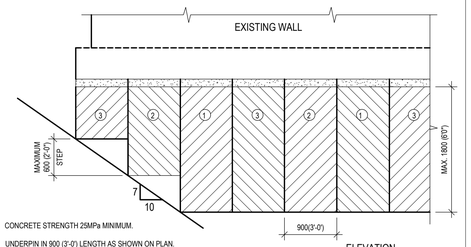
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED
START DATE: NOV. 2022
PROJECT: HAM-22025373
DRAWN CJ
CHECKED AE
DRAWING: S1.00
PRINT DATE

E:\GR\HAM-22025373-A0\60 Execution\65 Drawings_Struc HAM-22025373-A0.dwg

UNDERPINNING DETAIL — F-014





1. CONCRETE STRENGTH 25MPa MINIMUM.
2. UNDERPIN IN 900 (3'-0") LENGTH AS SHOWN ON PLAN.
3. NUMBERS ON ELEVATION(S) ABOVE INDICATE STAGES IN WHICH UNDERPINNING SHALL PROCEED, i.e. ALL SECTIONS #1 FOLLOWED BY ALL SECTIONS #2 etc. RAM DRY PACK CONC. GROUT IN PLACE AND LEAVE FOR 24 HOURS BEFORE PROCEEDING WITH NEXT STAGE.
4. UNDERPINNING FOR WALL IS SHOWN FOR ASSUMED CONDITIONS. REPORT ANY VARIATION TO CONSULT BEFORE PROCEEDING WITH WORK.
5. PROVIDE NECESSARY SHORING OR NEEDLING OF EXISTING MASONRY OR OTHER PART OF EXISTING STRUCTURE IN ORDER TO CARRY OUT THIS WORK.
6. DIMENSIONS ARE mm EXCEPT DIMENSIONS IN BRACKETS ARE INCHES.
7 STAGGER UNDERPINNING SECTION 2 CENTER TO UNDERPINNING SECTION 1 JOINTS.

STRUCTURAL GUIDELINES FOR DRILLING, CUTTING & CORING THROUGH EXISTING CONCRETE STRUCTURE — R-003

1. GENERAL

1.1 ALL OPENINGS THROUGH EXISTING STRUCTURE REQUIRED FOR MECHANICAL AND ELECTRICAL SERVICES ARE TO BE LOCATED AND CUT IN ACCORDANCE WITH THE REQUIREMENTS STIPULATED HEREIN. ALL PROPOSED NEW CORES AND OPENINGS THROUGH EXISTING STRUCTURE MUST BE REVIEWED ON SITE BY THE STRUCTURAL CONSULTANT PRIOR TO PROCEEDING WITH CUTTING OR CORING.

1.2 GENERAL CONTRACTOR IS RESPONSIBLE FOR SUBMITTING COORDINATED SLEEVING AND CORING DRAWINGS SHOWING LOCATION, SIZE AND SPACING FOR PROPOSED NEW OPENINGS FOR ALL MECHANICAL AND ELECTRICAL SERVICES AND ALL EXISTING OPENINGS WITHIN THREE FEET OF NEW ONES. THE COORDINATED DRAWINGS SHALL BE PREPARED ON STRUCTURAL FRAMING PLAN BACKGROUNDS. ALL OPENINGS TO BE REFERENCED TO GRID LINES. INDIVIDUAL SUBMISSIONS OF DRAWINGS SHOWING MECHANICAL CORES ONLY OR ELECTRICAL CORES ONLY WILL NOT BE ACCEPTED. DO NOT DRILL OR CUT HOLES THROUGH EXISTING STRUCTURE PRIOR TO SUBMISSION OF SLEEVING DRAWINGS AND FINAL REVIEW BY STRUCTURAL CONSULTANT.

1.3 PRIOR TO DRILLING FOR ANCHOR BOLTS OR CUTTING HOLES IN EXISTING REINFORCED CONCRETE STRUCTURES LOCATE ALL TOP AND BOTTOM EXISTING REINFORCING STEEL USING 'HILTI FERROSCAN OR 'GRAFSCAN RADAR RADAR DETECTION SYSTEMS. RESULTS OBTAINED BY X-RAY WILL NOT BE ACCEPTED. ALLOW CONSULTANT TO REVIEW ALL RESULTS BEFORE PROCEEDING.

1.4 CUTTING NEW RECTANGULAR OPENINGS THROUGH EXISTING STRUCTURE: CORE DRILL AT CORNERS OF OPENING AND SAW CUT OR CORE DRILL AROUND PERIMETER. DO NOT OVER CUT BEYOND MINIMUM DIMENSION REQUIRED.

1.5 WHERE HOLES ARE IN A GROUP, SPACE AT LEAST 3 TIMES THE DIAMETER OF THE LARGER ADJACENT HOLE, CENTER TO CENTER.

1.6 DO NOT CUT ANY EXISTING REINFORCING STEEL WITHOUT WRITTEN AUTHORIZATION BY STRUCTURAL CONSULTANT.

2. PROCEDURE FOR REVIEW OF NEW OPENINGS THROUGH EXISTING STRUCTURE

2.1 GENERAL CONTRACTOR TO SUBMIT COORDINATED CORING DRAWINGS TO ALL CONSULTANTS FOR REVIEW.

2.2 MARK PROPOSED CORE LOCATION ON EXISTING STRUCTURE.

2.3 SCAN EXISTING STRUCTURE TO IDENTIFY ALL REINFORCING STEEL IN AREA OF PROPOSED CORES. SCANNING CONTRACTOR SHALL CLEARLY MARK AND DISTINGUISH BETWEEN ALL TOP AND BOTTOM BARS.

2.4 ALLOW STRUCTURAL CONSULTANT TO REVIEW EACH PROPOSED CORE LOCATION AND REINFORCING STEEL SCAN RESULTS ON SITE. ADJUSTMENTS TO FINAL POSITION OF CORE MAY BE NECESSARY TO MINIMIZE EFFECTS TO EXISTING REINFORCING STEEL.

STRUCTURAL MASONRY NOTES — GN-009CS

1 GENERAL

1.1 THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION:
- 1.1.1 CSA S304, DESIGN OF MASONRY STRUCTURES
- 1.1.2 CSA A370, CONNECTORS FOR MASONRY
- 1.1.3 CSA A371, MASONRY CONSTRUCTION FOR BUILDINGS
- 1.1.4 CSA A165 SERIES, CSA STANDARDS ON CONCRETE MASONRY UNITS
- 1.1.5 CSA A179, MORTAR AND GROUT FOR UNIT MASONRY

1.2 CONSTRUCT MASONRY IN ACCORDANCE WITH CSA STANDARD A371.
1.3 MASONRY IS DESIGNED IN ACCORDANCE WITH CSA STANDARD S304.
1.4 DESIGN OF UNREINFORCED MASONRY IS IN ACCORDANCE WITH CSA STANDARD S304 ANNEX F, EMPIRICAL DESIGN FOR UNREINFORCED MASONRY.

2 MATERIALS

2.1 CONCRETE MASONRY UNITS: CONFORMING TO CSA A165.
- 2.1.1 CONCRETE BLOCKS, NORMAL WEIGHT LOAD BEARING UNITS:
  - STANDARD HOLLOW: TYPE H/20/A/M
  - 75% SOLID: TYPE S/20/A/M
  - 100% SOLID: TYPE Sc/20/A/M

2.2 MORTAR: CONFORMING TO CSA A179, TYPE S, MINIMUM STRENGTH AT 28 DAYS: 8.5 MPa
2.3 HORIZONTAL JOINT REINFORCEMENT: CONFORMING TO CSA A370
2.4 GROUT: CONFORMING TO CSA A179, MINIMUM STRENGTH 20 MPa, 200 mm SLUMP

3 EXECUTION

3.1 DO NOT CUT HOLES IN MASONRY WALLS, OTHER THAN SHOWN ON STRUCTURAL DRAWINGS, UNLESS APPROVED BY THE CONSULTANT.
3.2 PROVIDE LINTELS FOR ALL OPENINGS AND/OR RECESSES IN MASONRY WALLS SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS, INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICES OR EQUIPMENT.
3.3 BEARING ON MASONRY:
- 3.3.1 MINIMUM BEARING ON MASONRY UNLESS NOTED OTHERWISE:
  - BEAMS (STEEL, CONCRETE, TIMBER) 200 mm (8')
  - MASONRY LINTELS 200 mm (8')
  - STEEL LINTELS 150 mm (6')
  - JOISTS 100 mm (4")
  - SLABS: PRECAST 100 mm (4")
  - CAST IN PLACE, 150 (6") THICK 140 mm (5 ½")
  - CAST IN PLACE, 150 (6") THICK 190 mm (7 ½")
  - STEEL DECKING (ON WELD PLATE) 100 mm (4")
- 3.3.2 MASONRY BEARINGS SHALL BE 100 % SOLID MASONRY OR HOLLOW UNITS GROUTED SOLID OR BRICKS LAID IN MORTAR. ALL JOINTS ARE TO BE FULLY FILLED WITH TYPE S MORTAR.
- 3.3.3 MINIMUM SIZE OF SOLID BEARING AT BEAMS AND LINTELS UNLESS NOTED OTHERWISE SHALL BE LENGTH EQUAL TO TWICE THE LENGTH OF BEARING OR BEARING PLATE AND HEIGHT EQUAL TO LENGTH OF BEARING PLATE PARALLEL TO WALL AND IN NO CASE LESS THAN 400 mm (¶ LONG X 200 mm (8') DEEP, SYMMETRICAL UNDER BEARING POINT.
- 3.3.4 LOCATE BEARING PLATES 12 mm (1/2) MINIMUM FROM FACE OF WALL.

3.4 PROVIDE MASONRY JOINT REINFORCEMENT OF GALVANIZED CONTINUOUS LADDER TYPE, 50 mm (2") NARROWER THAN WALL THICKNESS, FABRICATED FROM 4.76 mm DIAMETER WIRE AND CONFORMING TO CSA G30.3 UNLESS SHOWN OTHERWISE ON DRAWINGS. PROVIDE REINFORCEMENT AS FOLLOWS:
- 3.4.1 IN FIRST THREE JOINTS ABOVE FLOOR LEVEL.
- 3.4.2 IN FIRST THREE JOINTS BELOW TOP OF WALL.
- 3.4.3 IN FIRST AND SECOND BED JOINTS IMMEDIATELY ABOVE AND BELOW WALL OPENING OR TO END OF PANEL, WHICHEVER IS LESS.
- 3.4.4 AT 400 mm (16") o/c ELSEWHERE
- 3.4.5 WITH 16 mm (5/8") CLEAR COVER FROM FACE OF MASONRY AND CENTRED ON WEBS OF UNITS.
- 3.4.6 WITH 300 mm (12") LAP SPLICE MINIMUM. STAGGER LAPS MINIMUM 750 mm (30").
- 3.4.7 USE PREFABRICATED CORNER AND T-TYPE REINFORCEMENT.
- 3.4.8 DO NOT EXTEND REINFORCEMENT THROUGH CONTROL JOINTS. TERMINATE 25 mm (1") SHORT OF CONTROL JOINT.

3.5 USE LOW LIFT GROUTING, LIMITING HEIGHT OF EACH LIFT TO 1400 mm.
3.6 PROVIDE HORIZONTAL CONSTRUCTION JOINTS WHEN WORK IS STOPPED FOR ONE HOUR OR LONGER, BY STOPPING THE GROUT POUR 25 mm (1") BELOW THE TOP OF THE MASONRY UNIT TO FORM A KEY WITH THE NEXT POUR.
3.7 PROVIDE A MINIMUM OF ONE CONTINUOUS COURSE, 200 mm (8") OF SOLID OR GROUTED BLOCKS OR BRICKS LAID IN MORTAR AT TOP COURSE IMMEDIATELY BELOW ALL FLOOR AND ROOF BEARING LEVELS.
3.8 FOR LOCATION AND DETAILS OF MASONRY CONTROL JOINTS, REFER TO ARCHITECTURAL DRAWINGS.
3.9 ALL NEW MASONRY WALLS TO BE GROUT FILLED

4 FIELD QUALITY CONTROL

4.1 INSPECTION AND TESTING COMPANY SHALL PERFORM:
- 4.1.1 TESTING OF MORTAR AND GROUT;
- 4.1.2 INSPECTION OF REINFORCEMENT FOR SIZE AND PLACEMENT;
- 4.1.3 INSPECTION OF GROUT PLACEMENT.

STRUCTURAL STEEL NOTES — GN-006CS

1 GENERAL

1.1 THE FOLLOWING REFERENCE STANDARDS SHALL GOVERN THE WORK OF THIS SECTION:
- 1.1.1 ASTM A108, SPECIFICATION FOR STEEL BAR, CARBON AND ALLOY, COLD FINISHED
- 1.1.2 CSA S16, DESIGN OF STEEL STRUCTURES
- 1.1.3 CSA S136, NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
- 1.1.4 CSA W47.1, CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL
- 1.1.5 CSA W59, WELDED STEEL CONSTRUCTION
- 1.1.6 CSA W178.1, CERTIFICATION OF WELDING INSPECTION ORGANIZATIONS
- 1.1.7 CSA W178.2, CERTIFICATION OF WELDING INSPECTORS

1.2 DESIGN OF CONNECTIONS SHALL BE BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
1.3 DESIGN CRITERIA
- 1.3.1 AXIAL LOADED MEMBERS THAT MEET AT A JOINT SHALL HAVE THEIR CENTROIDAL AXES INTERSECT AT A COMMON POINT UNLESS SHOWN OTHERWISE.
- 1.3.2 DESIGN AND DETAIL ALL CONNECTIONS AS FLEXIBLE EXCEPT WHERE NOTED OTHERWISE ON THE DRAWINGS. CONNECTIONS MAY BE WELDED OR BOLTED.
- 1.3.3 PROVIDE CONNECTIONS ADEQUATE TO RESIST REACTION OF BEAM, WHEN IT IS LOADED TO MAXIMUM FLEXURAL CAPACITY UNDER UNIFORMLY DISTRIBUTED LOAD, UNLESS REACTION OR CONNECTION DETAIL IS SHOWN ON DRAWINGS. FOR COMPOSITE BEAM CONSTRUCTION, USE FLEXURAL CAPACITY OF COMPOSITE SECTION BASED ON 100 PERCENT SHEAR CONNECTION OF BEAM TO SLAB.
- 1.3.4 WHERE MOMENT CONNECTIONS ARE CALLED FOR BUT DESIGN FORCES ARE NOT INDICATED, DESIGN MOMENT CONNECTION FOR THE FULL MOMENT CAPACITY OF THE WEAKER MEMBER JOINED.
- 1.3.5 FOR BOLTED CONNECTIONS USE SNUG TIGHT HIGH STRENGTH BOLTS, ASTM F3125/F3125M (A325 OR A490) EXCEPT USE PRETENSIONED HIGH STRENGTH BOLTS IN LOCATIONS SPECIFIED IN CSA-S16 CLAUSE 22.2.2
  - .1 SLIP-CRITICAL CONNECTIONS WHERE SLIPPAGE CANNOT BE TOLERATED;
  - .2 SHEAR CONNECTIONS PROPORTIONED IN ACCORDANCE WITH SEISMIC REQUIREMENTS;
  - .3 ALL ELEMENTS RESISTING CRANE LOADS;
  - .4 CONNECTIONS SUBJECT TO IMPACT OR CYCLIC LOADING;
  - .5 CONNECTIONS WHERE THE BOLTS ARE SUBJECT TO TENSILE LOADING;
  - .6 CONNECTIONS USING OVERSIZE OR LONG SLOTTED HOLES (UNLESS SPECIFICALLY DESIGNED TO ACCOMMODATE MOVEMENT).

1.4 SUBMITTALS
- 1.4.1 SUBMIT STRUCTURAL SHOP DRAWINGS.
  - .1 EACH SHOP DRAWING SUBMITTED SHALL BEAR THE SIGNATURE AND SEAL OF THE PROFESSIONAL ENGINEER RESPONSIBLE FOR CONNECTION DESIGN.

2 PRODUCTS

2.1 MATERIAL
- 2.1.1 PROVIDE NEW MATERIALS IN ACCORDANCE WITH REFERENCE STANDARDS, OF STRENGTH AND QUALITY NOTED IN GENERAL NOTES.
- 2.1.2 STUDS: ASTM A108
- 2.1.3 GALVANIZING: ASTM A123/A123M, STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS.
- 2.1.4 GALVANIZING: HOT-DIP TO ASTM A153 / A153M-16 STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE.
- 2.1.5 PAINT:
  - .1 INTERIOR: SHOP COAT FOR STEEL THAT WILL NOT RECEIVE A FINISH COAT: TO CISC/CPMA PROVIDE MASONRY JOINT REINFORCEMENT OF GALVANIZED CONTINUOUS LADDER TYPE, 50 mm (2") STANDARD 1-73A, A QUICK-DRYING ONE-COAT PAINT FOR USE ON STRUCTURAL STEEL.
  - .2 INTERIOR: PRIME PAINT: TO MEET THE REQUIREMENTS OF CISC/CPMA STANDARD 2-75, A QUICK DRYING PRIMER FOR USE ON STRUCTURAL STEEL
  - .3 EXTERIOR: ZINC-RICH PAINT READY MIX TO SPCC-PAINT 20 STANDARD

3 EXECUTION

3.1 PROVIDE WELDED STIFFENER PLATES MINIMUM 10 mm THICK ON BOTH SIDES OF WEB OF BEAMS AT POINTS OF CONCENTRATED LOADS INCLUDING BEAMS SUPPORTING COLUMNS OR BEAMS SUPPORTED ON TOP OF COLUMNS.
3.2 ALL EXPOSED WELDS SHALL BE CONTINUOUS AND GROUND SMOOTH.
3.3 PROVIDE STRUCTURAL STEEL FOR LATERAL SUPPORT OF MASONRY WALLS.
3.4 CLEAN STEEL IN ACCORDANCE WITH PAINT SYSTEM SPECIFIED. ZINC-RICH PAINT REQUIRES CLEANING TO SSPC-SP6, COMMERCIAL BLAST CLEANING.
3.5 PAINTING:
- 3.5.1 PAINT INTERIOR STEEL SURFACES WITH INTERIOR PAINT SPECIFIED
- 3.5.2 PAINT EXTERIOR STEEL SURFACES WITH EXTERIOR PAINT SPECIFIED.
- 3.5.3 DO NOT PAINT:
  - .1 SURFACES AND EDGES WITHIN 50 mm OF FIELD WELDS
  - .2 SURFACES ENCASED IN OR IN CONTACT WITH CONCRETE
  - .3 SURFACES TO BE SPRAY FIREPROOFED.
- 3.5.4 AFTER ERECTION IS COMPLETE GIVE ONE COAT TOUCH-UP PAINT TO FIELD BOLTS, FIELD CONNECTIONS, BURNT AREAS AND DAMAGED AREAS. USE SAME PAINT AS SHOP PAINT.

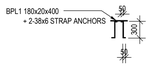
3.6 GALVANIZE LINTELS, BRICK SUPPORT ANGLES, ARCHITECTURAL BLOCK SUPPORT ANGLES AND OTHER MEMBERS INDICATED AS GALVANIZED ON DRAWINGS AFTER SHOP WELDING IS COMPLETE.
3.7 COMPLY WITH THE REQUIREMENTS OF REFERENCE STANDARDS AND REQUIREMENTS OF REGULATORY AUTHORITIES IN ERECTION OF STRUCTURAL STEEL.
3.8 PROVIDE MINIMUM BEARING FOR ALL STEEL BEAMS:
- 3.8.1 200 mm (8') ON CONCRETE AND MASONRY
- 3.8.2 100 mm (4') ON STEEL

4 FIELD QUALITY CONTROL

4.1 INSPECTION AND TESTING COMPANY SHALL PERFORM:
- 4.1.1 INSPECTION OF ERECTION AND FIT-UP INCLUDING PLACING, PLUMBING AND LEVELLING;
- 4.1.2 INSPECTION OF BOLTED CONNECTIONS INCLUDING VERIFICATION OF BOLT GRADE AND IF SNUG TIGHT AND PRETENSIONED BOLTS HAVE BEEN USED APPROPRIATELY;
- 4.1.3 INSPECTION OF WELDED JOINTS;
- 4.1.4 GENERAL INSPECTION OF FIELD CUTTING AND ALTERATIONS;
- 4.1.5 GENERAL INSPECTION OF COATING TOUCH-UP.

MASONRY CORE FILL SCHEDULE — M102

TYPE	SIZE	REINF	GROUT	REMARK
MC1	190x800	4-15M	20 MPa	BM. BEARING PL 1



MASONRY CORE FILL NOTES

1. CORE FILLS EXTEND FULL HEIGHT OF WALL, FLOOR TO FLOOR UNLESS NOTED.
2. INSTALL ALL REINFORCEMENT FULL. HEIGHT BETWEEN FLOORS AND GROUT CORE SOLID FULL HEIGHT BETWEEN FLOORS.
3. WHERE CORE FILL CONTINUES ON FLOOR ABOVE, EXTEND INDICATED VERTICAL REINF. TO PROVIDE SPECIFIED LAP SPLICE WITH REINFORCEMENT OF CORE ABOVE.
4. PROVIDE LAP SPLICE FOR:
   15M 600 LAP
   20M 800 LAP
5. CONCRETE MASONRY UNITS TO CSA A 165.1-07 REQUIREMENTS. CLASSIFICATION H/20/A/M.
6. PLACE REINF. IN CENTRE OF MASONRY UNIT U/N REFER TO SCHEDULE FOR REINF. BAR SIZE AND REQUIRED GROUT STRENGTH.

MINIMUM REINFORCEMENT FOR REINFORCED MASONRY WALLS — M-007

1. MINIMUM REINFORCEMENT FOR REINFORCED MASONRY WALLS, SEISMIC HAZARD INDEX(I_E Fa Sa (0.2)) < 0.35:

WALL THICKNESS	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT
140	10 @ 800	STANDARD (3.66mm) @ 400
190	15 @ 1000	STANDARD (3.66mm) @ 400
240	20 @ 1000	STANDARD (3.66mm) @ 400
290	2-15 @ 1000 (1 each face)	STANDARD (3.66mm) @ 400

2. MINIMUM LAP LENGTHS:

BAR SIZE	LAP LENGTH(mm)
10	450
15	650
20	850
SMOOTH WIRE	300

NOTES:
1. PROVIDE MINIMUM REINFORCEMENT AS INDICATED UNLESS SHOWN OTHERWISE ON DRAWINGS.
2. GROUT FILL CORES WHERE VERTICAL REINFORCEMENT LOCATED.
3. PROVIDE DOWELS TO MATCH VERTICALS.
4. HORIZONTAL REINFORCEMENT : GALVANIZED CONTINUOUS LADDER, 50mm NARROWER THAN WALL THICKNESS

Halton District School Board

EXP Services Inc.
t: 905.525.6069 | f: 905.528.7310
1266 South Service Road,
Suite C1-1, Stoney Creek,
ON, L8E 5R9
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY • • INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR PERMIT	2022-12-12
1	ISSUED FOR CLIENT REVIEW	2022-11-18

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

REGISTERED PROFESSIONAL ENGINEER
S.A. ZUBERY
100073296
PROVINCE OF ONTARIO

WHITE OAKS SOUTH
ELEVATOR UPGRADES

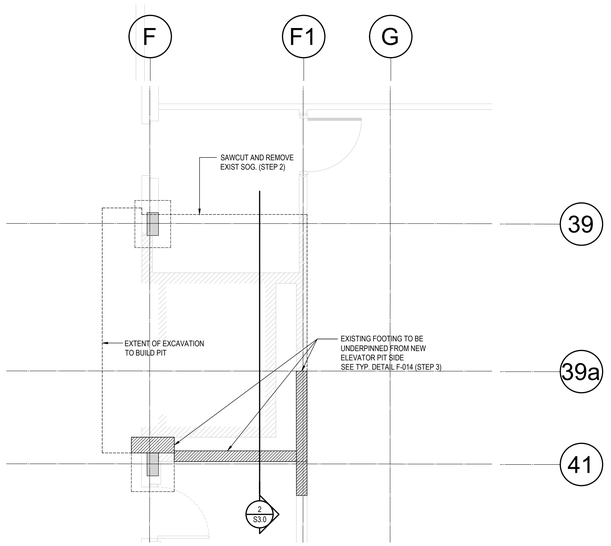
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

GENERAL NOTES
AND TYPICAL DETAILS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: HAM-22025373
START DATE: NOV. 2022	
DRAWN CJ	DRAWING S1.01
CHECKED AE	
PRINT DATE	

E:\GR8\HAM-22025373-A0\60 Execution\65 Drawings_Struc\
HAM-22025373-A0.dwg

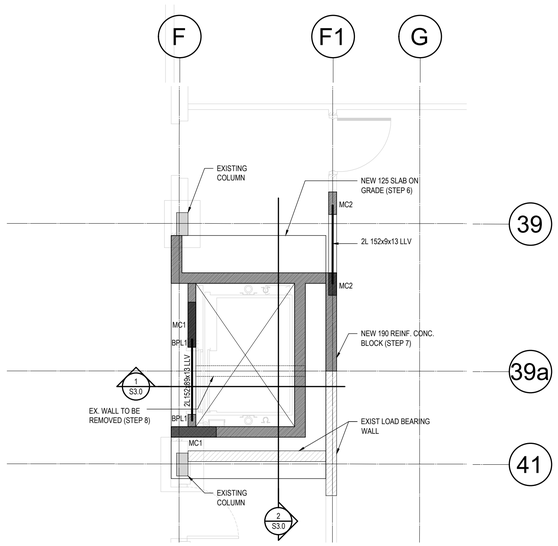


PARTIAL FOUNDATION PLAN - UNDERPINNING

SCALE: 1:50

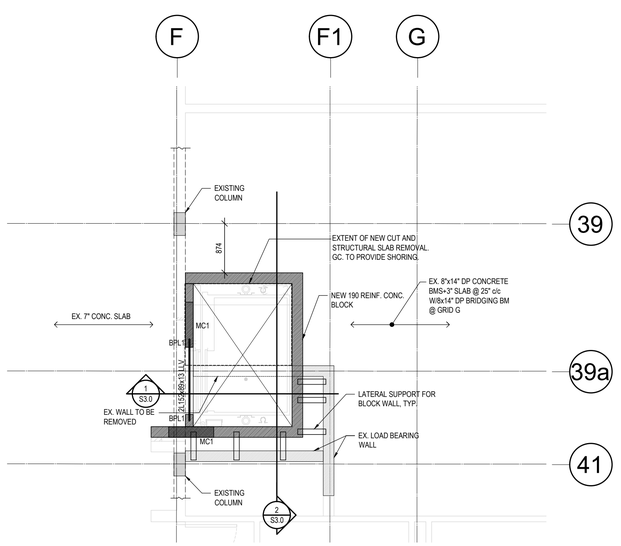
PLAN NOTES:

1 SEE ARCHITECTURAL DRAWING FOR EXITING FINISH FLOOR ELEVATION.
2 ALL NEW MASONRY WALLS TO BE FULLY GROUT FILLED WITH 15M @ 400 VERT. REBAR.
3 FOR UNDERPINNING OF EX. STRUCTURE SEE UNDERPINNING PLAN TYP. CONTRACTOR TO SUBMIT UNDERPINNING SCHEME AND METHODOLOGY TO CONSULTANT FOR REVIEW AND APPROVAL BEFORE COMMENCING THE WORK.
4 REFER TO EXISTING ELEVATOR STRUCTURAL DRAWING S1, AND S2 ISSUED BY PHILIPS ENGINEERING ON 06.29.2000.
5 REFER TO EXISTING WHITE OAKS SECONDARY SCHOOL DRAWING S1 (CAFETORIUM FOUNDATION PLAN & DETAIL), S3, AND S4 (CLASSROOM WING FOUNDATION AND FRAMING PLANS) ISSUED BY SHORE & MOFFAT AND PARTNERS ON AUG. 1964.
6 CONTRACTOR TO SITE VERIFY ALL SHOWN EXISTING STRUCTURE PRIOR TO CONDUCTING THE WORK. ANY DISCREPANCY BETWEEN EXISTING STRUCTURE AND DRAWINGS TO BE REPORTED TO CONSULTANT.
7 FIELD VERIFY THE DIMENSIONS, ELEVATIONS, ETC. NECESSARY FOR THE PROPER CONSTRUCTION AND ALIGNMENT OF THE NEW PORTION OF WORK TO THE EXISTING WORK.
8 CONTRACTOR TO INSPECT AND BECOME FAMILIAR WITH THE EXISTING SITE CONDITION AND STRUCTURE, PROTECT FROM DAMAGE THOSE PARTS OF THE EXISTING WORK WHICH ARE TO REMAIN.
9 REFER TO ARCHITECTURAL DRAWING FOR FIRE PROOFING REQUIREMENT.
10 CONTRACTOR TO PROVIDE SHORING AS REQUIRED FOR CONSTRUCTION.
11. THE FOUNDATION DESIGN IS BASED ON THE DESIGN BEARING CAPACITY SPECIFIED IN THE ORIGINAL DESIGN DOCUMENT BY MOFAT & PARTNERS. NEW FOOTING TO BEAR ON UNDISTURBED SOIL. GEOTECHNICAL CONSULTANT TO SITE VERIFY MINIMUM BEARING CAPACITY 240 kPa (ULS) AND 185 kPa (SLS) AND NOTIFY CONSULTANT DESIGN BEARING CAPACITY IF THE CAPACITY IS LESS THAN EXPECTED VALUE.



PARTIAL GROUND LEVEL PLAN

SCALE: 1:50

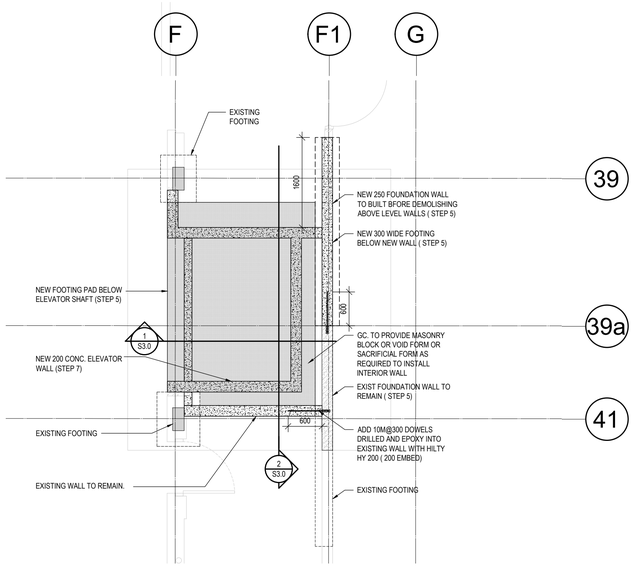


PARTIAL THIRD FLOOR PLAN

SCALE: 1:50

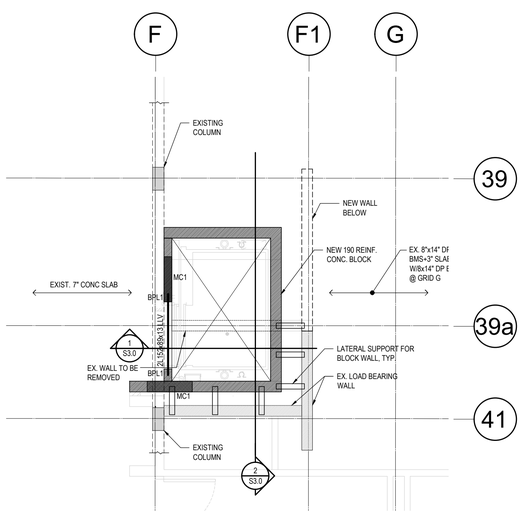
RECCOMENDED SEQUENCE OF WORK:

1. PROVIDE NECESSARY SUPPORT FOR COLUMNS AND WALLS FOR UNDERPINNING WORK.
2. SAW CUT AND REMOVE SOG AS NECESSARY FOR NEW FDN AND UNDERPINNING WORK
3. UNDRPIN FTGS, SEE DETAIL F-014
4. EXCAVATE TO THE USF LEVEL OF THE NEW PIT AND NEW WALL FDN
5. CONSTRUCT NEW PIT, FOOTING AND FDN WALL UP TO U/S OF GROUND FLOOR
6. POUR NEW SOG.
7. CONSTRUCT NEW REINF. BLOCK WALL FROM GF TO UNDERSIDE OF 2ND FL. SLAB. DRY PACK WITH NON SHRINK GROUT FOR FIRM SUPPORT OF EXISTING SLAB.
8. CUT SLAB TO SUIT REQUIRED OPENING.
9. REPEAT STEP 7 FOR 2ND FL. TO 3RD FL.



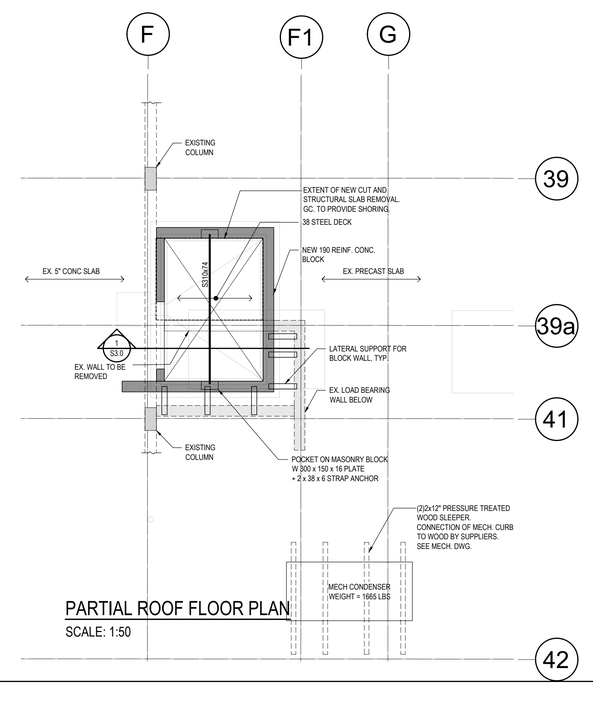
PARTIAL FOUNDATION PLAN

SCALE: 1:50



PARTIAL SECOND FLOOR PLAN

SCALE: 1:50



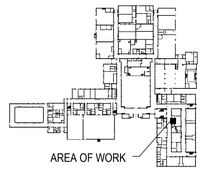
PARTIAL ROOF FLOOR PLAN

SCALE: 1:50

Halton District School Board

EXP Services Inc.
t: 905.525.6069 | f: 905.528.7310
1266 South Service Road,
Suite C1-1, Stoney Creek,
ON, L8E 5R9
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

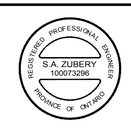


KEY PLAN

SCALE: N.T.S.

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR PERMIT	2022-12-12
1	ISSUED FOR CLIENT REVIEW	2022-11-18

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT, ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.



WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

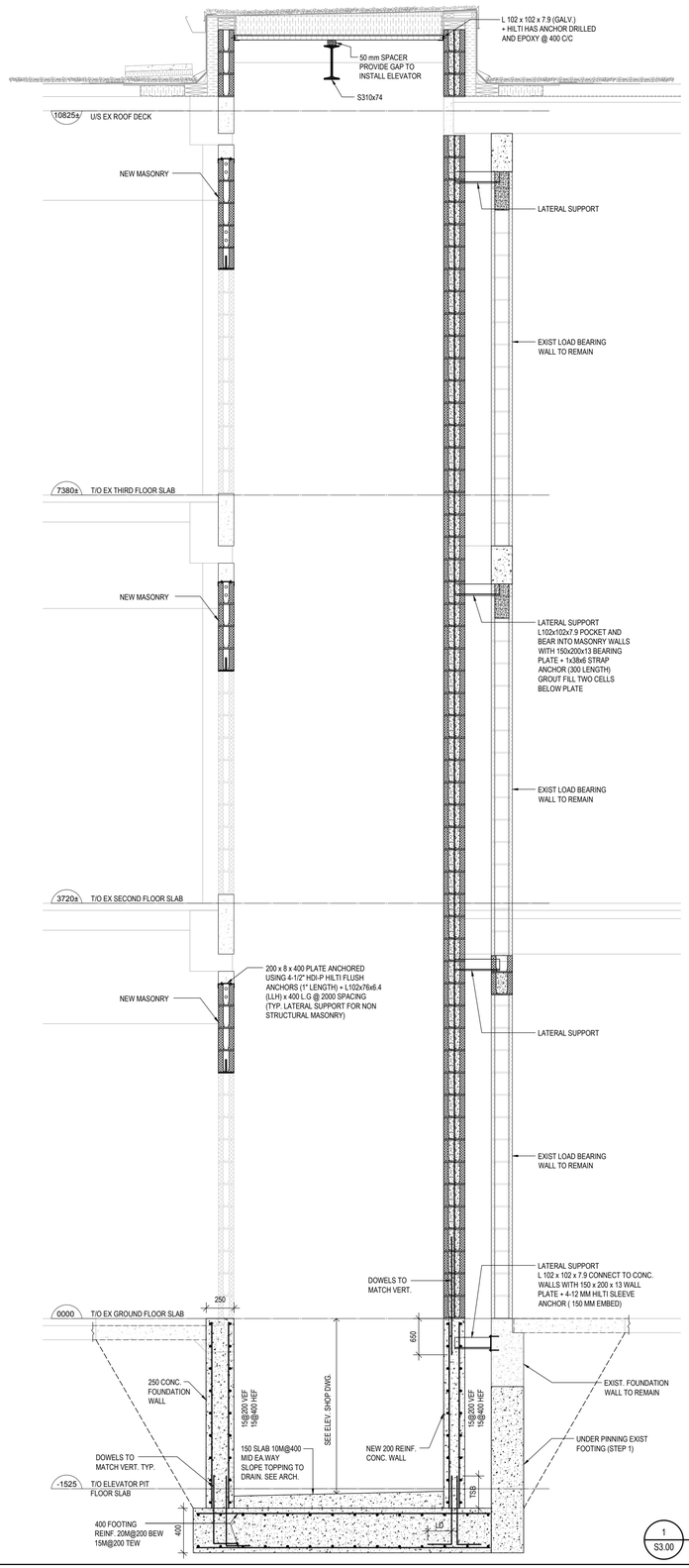
FLOOR FRAMING PLANS

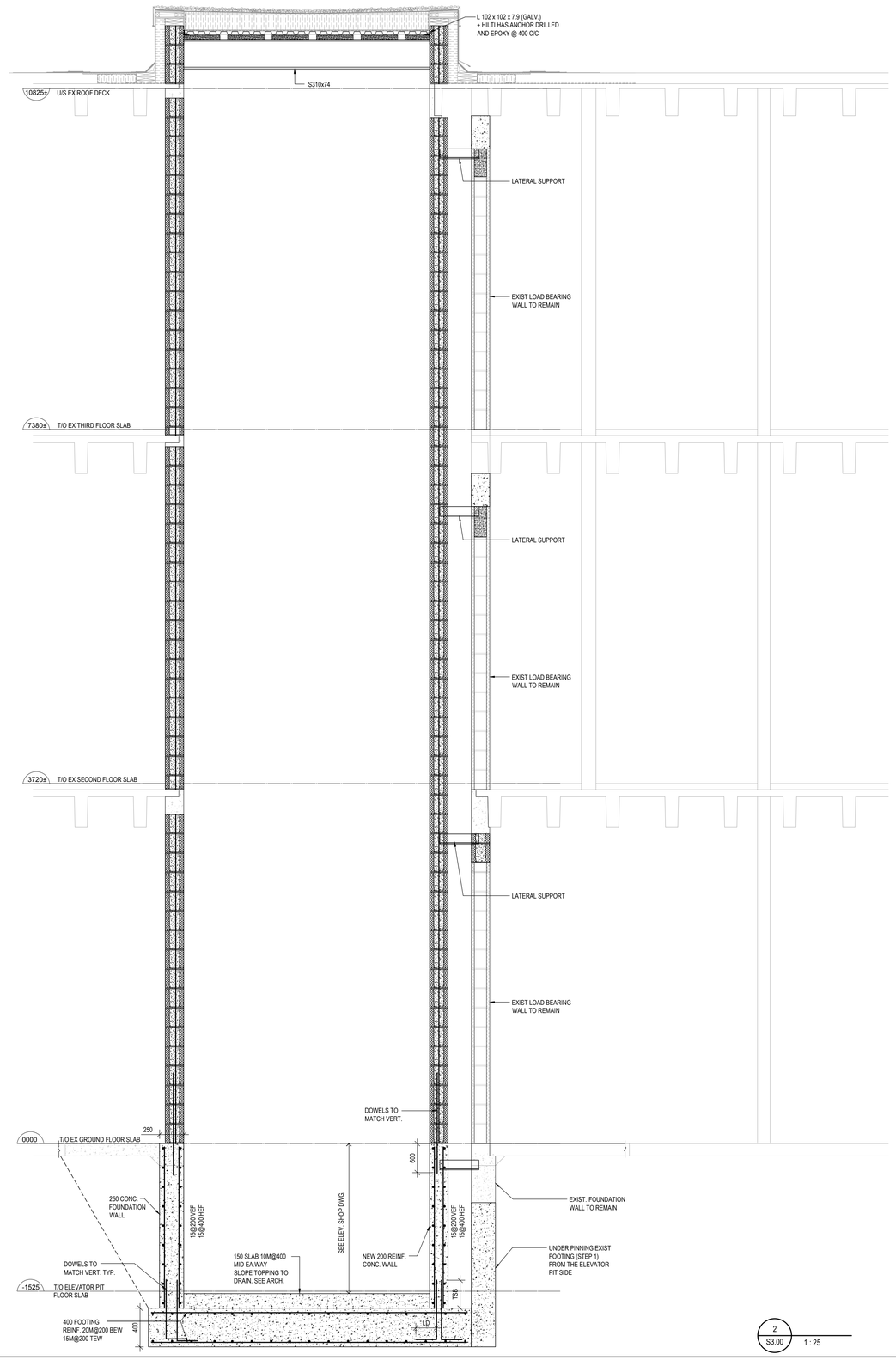
GRGURIC ARCHITECTS INCORPORATED

28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: HAM-22025373
START DATE: NOV. 2022	
DRAWN CJ	DRAWING S2.00
CHECKED AE	
PRINT DATE	

E:\GRB\HAM 22025373-A0\60 Execution\65 Drawings_Struc\HAM-22025373-A0.dwg





Halton District School Board

EXP Services Inc.
t: 905.525.6069 | f: 905.528.7310
1266 South Service Road,
Suite C1-1, Stoney Creek,
ON, L8E 5R9
Canada
www.exp.com

• BUILDINGS • EARTH & ENVIRONMENT • ENERGY •
• INDUSTRIAL • INFRASTRUCTURE • SUSTAINABILITY •

NO	REVISIONS	DATE
3	ISSUED FOR TENDER	2023-01-25
2	ISSUED FOR PERMIT	2022-12-12
1	ISSUED FOR CLIENT REVIEW	2022-11-18

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

REGISTERED PROFESSIONAL ENGINEER
S.A. ZUBERY
100073296
PROVINCE OF ONTARIO

WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

SECTIONS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: HAM-22025373
START DATE: NOV. 2022	
DRAWN CJ	DRAWING S3.00
CHECKED AE	
PRINT DATE	

E:\GRB\HAM-22025373-A0\60 Execution\05 Drawings_Struc\HAM-22025373-A0.dwg

MECHANICAL SPECIFICATION

MECHANICAL CONTRACTOR SHALL SUBMIT PRICE FOR THE COST OF SUPPLY AND INSTALLATION OF EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE AND OPERATING MECHANICAL PACKAGE. MECHANICAL PACKAGE TO CONSIST OF EQUIPMENT AND MATERIALS AS DESCRIBED IN THIS OUTLINE SPECIFICATION. REFER TO MECHANICAL PLANS FOR ACTUAL REQUIREMENTS OF EQUIPMENT.

A. GENERAL CONDITIONS

1. PROVIDE ALL LABOUR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON DRAWINGS M0.01 TO M2.01 INCLUSIVE AND AS SPECIFIED HEREIN.
2. ALL NECESSARY PERMITS SHALL BE OBTAINED AND ALL FEES SHALL BE PAID TO CARRY OUT THE SPECIFIED WORK. PROVIDE ALL REQUIRED LOCAL PROVINCIAL ENGINEERING SEALS FOR DRAWINGS AND DESIGNS TO OBTAIN BUILDING CONSTRUCTION PERMITS, ETC.
3. ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF COMPLETED WORK ACCEPTANCE BY THE ARCHITECT. SUBMIT DOCUMENTATION IDENTIFYING ADDITIONAL EQUIPMENT WARRANTY COVERAGE AND TIME FRAMES.
4. ALL WORK SHALL COMPLY IN EVERY RESPECT WITH ALL NATIONAL, PROVINCIAL, AND LOCAL BY-LAWS AND CODES, WHICH SHALL BE CONSIDERED PART OF THIS SPECIFICATION.
5. ALL CUTTING, PATCHING, FLASHING FOR WORK AS REQUIRED HEREIN SHALL BE BY THE GENERAL CONTRACTOR.
6. THE MECHANICAL CONTRACTOR SHALL INSTALL HEATING, AIR CONDITIONING, AND PLUMBING SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE ASHRAE, NATIONAL WARM AIR STANDARDS, SMACNA LATEST EDITION DUCT STANDARDS, AND LOCAL PLUMBING CODES.
7. CO-ORDINATE WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICT.
8. ALTER THE LOCATION OF DUCTS OR PIPES AT THE DIRECTION OF THE ENGINEER WITHOUT CHARGE TO THE OWNER, PROVIDED THE CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE ADDITIONAL MATERIALS.
9. TENDER QUOTATIONS SHALL BE BASED ON THE USE OF SPECIFIED MANUFACTURERS, UNLESS APPROVAL FOR THE USE OF EQUAL MANUFACTURERS IS OBTAINED FROM THE ENGINEER PRIOR TO SUBMISSION OF TENDERS. ALTERNATE MANUFACTURERS MAY BE QUOTED AS AN INCREASE OR DECREASE AMOUNT TO THE TENDER PRICE, WITHOUT PRIOR APPROVAL OF THE ENGINEER. THE USE OF AN EQUAL OR ALTERNATE MANUFACTURER SHALL IN NO WAY RELIEVE THE MECHANICAL CONTRACTOR FROM THE RESPONSIBILITY OF PROVIDING ALL WORK THAT MAY BE REQUIRED BY REASON OF DIFFERENT SPACE, WEIGHT, ELECTRICAL, OR OTHER REQUIREMENTS FROM THAT OF THE SPECIFIED MANUFACTURER.
10. FURNISH TO THE ENGINEER THREE (3) HARD-COVERED LOOSE-LEAF BINDERS CONTAINING THEREIN ONE (1) COMPLETE SET OF MANUFACTURERS' OPERATING AND MAINTENANCE INSTRUCTIONS SHOWING ALL MAJOR EQUIPMENT, AND APPARATUS REQUIRING MAINTENANCE. INSTRUCTIONS SHALL BE COMPLETE FOR INSTALLATION, OPERATION AND MAINTENANCE AND SHALL INCLUDE PERTINENT INFORMATION SUCH AS DETAILED DRAWINGS AND OPERATION CURVES. SPARE PARTS, SUPPLIER LISTS AND ADDRESSES SHALL BE SUPPLIED. INSTRUCTIONS SHALL BE REQUIRED WITH THE OWNERS' REPRESENTATIVE TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.
11. ALL WIRING AND SUPPLY AND INSTALLATION OF DISCONNECT SWITCHES FOR EQUIPMENT SPECIFIED HEREIN SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
12. PRIOR TO SUBMITTING TENDER PRICE, CONTRACTOR SHALL EXAMINE THE SITE AND CONDITIONS AFFECTING WORK, METHODS OF CONNECTION AND LOCATION OF ALL SERVICES INVOLVED UNDER THIS CONTRACT. FAILURE TO MAKE THIS VISIT IN NO WAY ALLEVIATES THE MECHANICAL CONTRACTOR FROM RESPONSIBILITY FOR COMPLETING THE MECHANICAL WORK OF THIS CONTRACT IN A WORKMANLIKE MANNER. NO ALLOWANCE WILL BE MADE AFTER CONTRACT AWARD FOR ANY EXPENSE INCURRED THROUGH A FAILURE TO MAKE THIS EXAMINATION AND INVESTIGATION.
13. SCHEDULING OF ALL WORK SHALL BE ARRANGED WITH THE OWNER, AND THE OWNER SHALL BE NOTIFIED AND HIS APPROVAL OBTAINED PRIOR TO SHUTTING OFF EXISTING SERVICES FOR PURPOSES OF CONNECTING NEW WORK.
14. PROVIDE AN AUTOCAD DISK COPY OF THE CONTRACT DRAWINGS FOR RECORD 'AS-BUILT' DRAWINGS, REVISED AS REQUIRED TO SHOW ANY DEVIATIONS OF LAYOUTS FROM THAT ORIGINALLY SHOWN.
15. PROVIDE ONE SET OF SPECIAL TOOLS REQUIRED TO SERVICE EQUIPMENT AS RECOMMENDED BY MANUFACTURERS.
16. PROVIDE DIELECTRIC COUPLINGS WHEREVER PIPES OF DISSIMILAR METALS ARE JOINED.
17. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROVIDE TEMPORARY HEATING AS REQUIRED FOR THE PROPER AND PROGRESS OF THE WORK.
18. THE MECHANICAL CONTRACTOR SHALL PROVIDE SIX (6) SETS OF SHOP DRAWINGS FOR ALL EQUIPMENT FOR REVIEW AND APPROVAL BY ENGINEERS.
19. PIPE HANGERS WHERE REQUIRED SHALL BE GRINNELL FIG. 65 FOR STEEL PIPE AND FIG. CP65 FOR COPPER PIPE, ALL WITH FIG. 140 THREADED ROD ATTACHED TO FIG. 117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE, OR ATTACHED TO FIG. 225 OR 227 CLAMP ATTACHED TO FLOOR JOIST AND ROOF JOIST. FOR INSULATED PIPING, PROVIDE PROTECTION SADDLES SIZE HANGER TO ACCOMMODATE INSULATION WHERE APPLIED. (NO PERFORATED STRAP HANGERS WILL BE ACCEPTED FOR SUPPORT METHOD.)

B. SHOP DRAWINGS

1. SHOP DRAWINGS AND DATA SHEETS FOR EQUIPMENT INTENDED FOR INSTALLATION UNDER THIS CONTRACT SHALL BE SUBMITTED FOR REVIEW. AFTER CHECKING AND WHEN REVIEWED, COPIES WILL BE RETURNED TO THE CONTRACTOR.

C. GUARANTEE

1. THE CONTRACTOR SHALL EXECUTE AND DELIVER TO THE OWNER, BEFORE FINAL PAYMENT, A WRITTEN GUARANTEE IN FORM SATISFACTORY TO THE OWNER THAT ALL LABOUR AND MATERIALS FURNISHED AND WORK PERFORMED BY THE CONTRACTOR ARE IN ACCORDANCE WITH THE CONTRACT. CONTRACT DRAWINGS, SPECIFICATIONS AND AUTHORIZED ALTERATIONS AND ADDITIONS THERETO AND, SHOULD ANY DEFECT DEVELOP DURING THE CONTRACT GUARANTEE PERIOD, AS HEREINAFTER DEFINED DUE TO IMPROPER MATERIALS, WORKMANSHIP OR ARRANGEMENT, THE SAME TOGETHER WITH ANY OTHER WORK AFFECTED IN CORRECTING SUCH DEFECT SHALL, UPON WRITTEN NOTICE BE MADE GOOD BY THE CONTRACTOR WITHOUT EXPENSE TO THE OWNER.
2. THE CONTRACTOR'S AFORESAID GUARANTEE SHALL COVER ALL WORK UNDER THE CONTRACT, WHETHER OR NOT ANY PORTION OR TRADE HAS BEEN ASSIGNED OR SUBLET. IN THE EVENT ANY PORTION OF THE WORK IS PERFORMED BY ASSIGNEES AND SUBCONTRACTORS THEIR WRITTEN GUARANTEE TO THE OWNER COVERING THEIR RESPECTIVE PORTIONS OF THE WORK FOR THE PERIODS SPECIFIED AND SHALL DELIVER SAME, TOGETHER WITH HIS OWN GUARANTEE, TO THE OWNER. ASSIGNEES AND SUBCONTRACTORS' GUARANTEES SHALL EXPRESSLY PROVIDE THAT THE SAME SHALL BE ENFORCEABLE DIRECTLY BY THE OWNER AND SHALL RUN CONCURRENTLY WITH THE CONTRACTOR'S GUARANTEE.

D. CLOSE-OUT DOCUMENTS AND INSTRUCTIONS

- AS-BUILT DRAWINGS
- ALL TEST REPORTS
- WARRANTIES
- ALL APPROVAL AND VERIFICATION CERTIFICATES
- THREE (3) COPIES OF MAINTENANCE MANUALS
- INSTRUCT OWNER IN THE OPERATION OF ALL EQUIPMENT AND MAKE FAMILIAR WITH SYSTEM.

E. COMMISSIONING AND DEMONSTRATION

1. THE COMMISSIONING PROCESS REQUIRES THE COMPLETE PROCESS TO TEST, ADJUST AND BALANCE SYSTEMS TO PERFORM IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND TO DO ALL OTHER WORK AS SPECIFIED IN THIS SECTION.
2. THE MECHANICAL CONTRACTOR SHALL ACT AS THE COMMISSIONING AGENT FOR THIS PROJECT.
3. TO ADJUST AND REGULATE EQUIPMENT AND SYSTEMS SO AS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS AND TO ACHIEVE SPECIFIED INTERACTION WITH ALL OTHER RELATED SYSTEMS UNDER ALL NORMAL AND EMERGENCY LOADS AND OPERATING CONDITIONS.
4. BALANCE SYSTEMS AND EQUIPMENT TO REGULATE FLOW RATES TO MATCH LOAD REQUIREMENTS OVER FULL OPERATING RANGES.

F. HEATING, VENTILATION & AIR CONDITIONING

1. PROVIDE SUPPLY AIR, RETURN AIR, AND EXHAUST AIR DUCT SYSTEMS AS SHOWN.
2. ALL DUCTWORK INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH SMACNA LATEST EDITION DUCT STANDARDS.
3. THIS CONTRACTOR SHALL SUPPLY AND INSTALL ALL DUCTWORK INCLUDING APPURTENANCES, HANGERS, DAMPERS, ETC.

   ALL EXPOSED ROUND DUCTWORK SHALL BE ROUND SPIRAL CONDUIT CONSTRUCTED OF ZINC COATED STEEL: ACCEPTABLE PRODUCT: UNITED SHEET METAL CO. SHOP FABRICATED DUCTWORK AND FITTINGS CONSTRUCTED IN A MANNER SIMILAR TO THE FACTORY TYPE SPECIFIED WILL BE ACCEPTED.

CONDUIT SIZE	GAUGE OF METAL
8" AND SMALLER	26
9" TO 22"	24
24" TO 36"	22

   RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED SHEET METAL OF THE FOLLOWING U.S. STANDARD GAUGES:

DUCTS UP TO 12" ON LONGEST DIMENSION	26 GA.
DUCTS 13" TO 28" ON LONGEST DIMENSION	24 GA.
DUCTS 29" TO 48" ON LONGEST DIMENSION	22 GA.

4. BALANCING DAMPERS SHALL BE CONSTRUCTED FROM GALVANIZED STEEL 2 GAUGES HEAVIER THAN THE DUCTWORK IN WHICH THEY ARE INSTALLED C/W LOCKING QUADRANT AND INDICATING DEVICE.
5. PROVIDE FIRE DAMPERS WHICH CONFORM TO NFPA REGULATIONS, BEAR ULC LABEL, AND HAVE APPROVAL OF DFC. DAMPERS TO BE TYPE 'B' AND INSTALLED IN DUCTWORK AT FIRE SEPARATIONS WHETHER SHOWN OR NOT.
6. ALL DUCTWORK SHALL BE SEALED USING DURO-DYNE S-2 DUCT SEALER THROUGHOUT ALL SEAMS AND JOINTS.
7. PROVIDE ACCESS DOORS WHERE REQUIRED FOR SERVICING OR OPERATING OF MECHANICAL EQUIPMENT.
8. PROVIDE 4" FLEXIBLE DUCT CONNECTIONS ON BOTH INLET AND OUTLET DISCHARGE SIDES OF EACH FAN, AIR HANDLING ROOFTOP UNIT, ETC.
9. DUCTWORK SHOWN CROSS HATCHED SHALL BE ACOUSTICALLY LINED WITH 1" THICK RIGID FIBERGLASS COVERED WITH BLACK PLASTIC COATED MAT FACING. SEAL ENDS. STANDARD OF ACCEPTANCE JOHNS-MANVILLE LINACOUSTIC OR APPROVED EQUAL.

G. AIR TESTING AND BALANCING

1. BALANCE AND AS SYSTEM. SYSTEM VOLUMES SHALL BE WITHIN 5% OF REQUIREMENTS SHOWN. ADJUST AND SET BALANCE DAMPERS, FANS AND DRIVES TO GIVE THE SPECIFIED VOLUMES AT ALL OUTLETS. THE BALANCING OF AIR SYSTEMS IS TO BE DONE BY A BALANCING FIRM SPECIALIZING IN THIS WORK. CLEAN DUCT SYSTEMS, FILTERS, ETC., BEFORE TESTING IS DONE.
2. PROVIDE TWO BOUND COPIES OF THE AIR BALANCING REPORT. AIR QUANTITIES AT EACH OUTLET SHALL BE AS INDICATED IN THE DRAWINGS. THIS REPORT SHALL SHOW THE QUANTITIES, VELOCITIES AND AREA OF EACH OUTLET, TYPE AND MODEL. NUMBER OF FANS AND MOTOR INSTALLED, ACTUAL AIR DELIVERED BY THE FAN WITH TOTAL STATIC PRESSURE AND VOLTAGE DRAWN BY THE MOTORS. ADJUST AND RETEST TO THE SATISFACTION OF THE PROJECT COORDINATOR. PROVIDE ADDITIONAL COPY OF THE AIR BALANCE REPORT TO THE MECHANICAL CONSULTANT.
3. UPON COMPLETION OF THE AIR BALANCE TEST, SUBMIT THE AIR BALANCE REPORT TO THE OWNER. THIS CONTRACTOR SHALL PROVIDE, IF CALLED FOR, A SPOT CHECK ON THE SYSTEM WITH THE CONSULTANT. IF ACTUAL AIR QUANTITIES DO NOT AGREE WITH THE AIR BALANCE REPORT DATA, THIS CONTRACTOR MAY BE CALLED UPON TO COMPLETELY REBALANCE THE SYSTEM UNTIL REQUIREMENTS ARE ACHIEVED AND ACCEPTED BY THE CONSULTANT.

H. PIPING INSULATION

1. ALL WATER LINES LISTED BELOW SHALL BE INSULATED WITH 25mm THICK DUAL TEMPERATURE GLASS FIBRE PIPE INSULATION. INSULATION SHALL BE MANUFACTURED BY FIBREGLASS OF CANADA.
2. THIS INSULATION SHALL BE SUPPLIED COMPLETE WITH FLAME RETARDANT VAPOUR BARRIER JACKET CONSISTING OF GLASS FIBRE, REINFORCED LAMINATE OF ALUMINUM FOIL AND KRAFT PAPER. LONGITUDINAL SEAMS OF THE VAPOUR BARRIER JACKET SHALL BE SEALED WITH VAPOUR-PROOF ADHESIVE, FLINTKOTE TYPE 32. INSULATE AND TAPE ALL VALVES AND FITTINGS. EXPOSED PIPING INSULATION TO BE FINISHED WITH 8 OZ. FATTAL U.L.C. LISTED CANVAS AND CHILDERS LAGGING. NON-U.L.C. LISTED CANVAS WILL NOT BE ACCEPTED.
3. INSULATE THE FOLLOWING PIPING:
   - DOMESTIC COLD WATER
   - DOMESTIC HOT WATER

I. DUCT INSULATION

1. NEW CONCEALED SUPPLY AIR, RETURN AIR AND EXHAUST AIR DUCTS : 25 MM THICK GLASS FIBRE 12 KG/M3 DENSITY DUCT INSULATION WITH REINFORCED FOIL FACED FLAME RESISTANT KRAFT VAPOUR BARRIER.
2. DUCTWORK ACOUSTIC INSULATION REQUIREMENTS:
   - ACOUSTIC DUCT LINER 25mm (1") THICK SHALL BE APPLIED TO THE RETURN AIR DUCT OF AC-1 AS SHOWN ON HVAC DRAWINGS. PROVIDE METAL RETAINER STRIPS TO ALL LEADING EDGES AND SUPPLY LINER WITH 3M #33 ADHESIVE AND WELDED PINS AND CLIPS.
   - DUCT DIMENSIONS SHALL BE CLEAR INSIDE DIMENSIONS AFTER LINING. SEAL ALL JOINTS AND EXPOSED LINER MATERIAL WITH MASTIC.

J. PLUMBING

1. PROVIDE COMPLETE FUNCTIONAL PLUMBING SYSTEM COMPRISED OF DOMESTIC WATER PIPING, NATURAL GAS PIPING, VENT PIPING, SANITARY DRAINAGE PIPING, ETC.
2. SANITARY DRAINAGE AND VENT PIPING SHALL BE CERTIFIED TO CAN/CSA-B181.2 "PVC DRAIN, WASTE, AND VENT PIPE AND PIPE FITTINGS".
3. IPEX SYSTEM XFR 15-50 PIPE AND FITTINGS C/W APPROVED FIRE STOPS IN AREA WHERE THE CEILING SPACE IS UTILIZED AS RETURN AIR PLENUM.
4. DOMESTIC HOT AND COLD WATER PIPING SHALL BE TYPE "L" HARD COPPER TUBING WITH SOLDERED FITTINGS.
5. DRAINS AND VENT PIPING ABOVE GROUND INSIDE BUILDING SHALL BE DWV COPPER, CAST IRON CLASS 4000 OR PLASTIC PIPE WHERE APPLICABLE OR APPROVED BY LOCAL AUTHORITIES. JOINTS SHALL BE SOLDERED FOR COPPER, MECHANICAL JOINT FOR CAST IRON PIPE, AND SOLVENT CEMENT FOR PLASTIC PIPE.
6. MECHANICAL CONTRACTOR SHALL VERIFY ON SITE ALL CONNECTION POINTS TO EXISTING SERVICES. EXTEND ALL SERVICES INSIDE BUILDING AS SHOWN ON DRAWINGS. CONNECT SEWER AND WATER SERVICES TO EXTERIOR BUILDING SERVICES. CONFIRM AND VERIFY EXACT LOCATIONS AND INVERTS OF BUILDING SERVICES WITH SITE CONDITIONS. ALL CONNECTIONS TO BE MADE IN ACCORDANCE WITH LOCAL PROVINCIAL CODE REQUIREMENTS.
7. USE 95.5 TIN ANTINONY BRAZING SOLDER ON ALL HOT AND COLD WATER PIPING. USE NON-CORROSIVE NON-LEADED FLUX.
8. ALL VALVES TO BE BY ONE MANUFACTURER.
9. MECHANICAL CONTRACTOR SHALL ALLOW FOR IN TENDER QUOTATION ANY ADDITIONAL LABOUR, MATERIALS, ETC. DEEMED NECESSARY DUE TO EXACT SITE CONDITIONS WHICH HAVE NOT BEEN REFLECTED ON MECHANICAL DRAWING OR IN MECHANICAL SPECIFICATION.
10. MECHANICAL CONTRACTOR SHALL CONNECT DOMESTIC WATER LINES, VENT LINES, SANITARY DRAIN SERVICES AS SHOWN FOR ALL PLUMBING FIXTURE INSTALLATIONS.
11. PROVIDE ACCESS DOORS, CLEANOUT COVERS, ETC FOR ALL EQUIPMENT REQUIRING ACCESS FOR SERVICING OR OPERATING PURPOSES. ACCESS DOORS TO BE PROVIDED BY DIVISION 15 FOR INSTALLATION BY SUB-TRADE PROVIDING WALL, CEILING, FLOORING, ETC.
12. PROVIDE SHUT-OFF VALVES ON BOTH DOMESTIC WATER LINES SERVING EACH PIECE OF EQUIPMENT, PLUMBING FIXTURE, ETC.
13. PROVIDE ESCUTCHEON PLATE COVERS OVER ANY DOMESTIC WATER LINES, DRAIN LINES, ETC PENETRATING WALLS.
14. PROVIDE TRAP PRIMERS AS PER LOCAL CODE REQUIREMENTS.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COORDINATION	2022-12-02
A	ISSUED FOR COORDINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN SP	DRAWING M0.01
CHECKED CK	
PRINT DATE	

MECHANICAL LEGEND

PIPING/PLUMBING	
	EXISTING SANITARY DRAIN
	NEW SANITARY DRAIN
	EXISTING DOMESTIC COLD WATER LINE (CW)
	EXISTING DOMESTIC HOT WATER LINE (HW)
	PIPES TURNING DOWN
	PIPES TURNING UP
CO	CLEANOUT
HVAC	
	DUCTWORK
BD	BALANCING DAMPER
R.A.D.	RETURN AIR DUCT
S.A.D.	SUPPLY AIR DUCT
E.A.D.	EXHAUST AIR DUCT
T	THERMOSTAT
FD	FIRE DAMPER
	SUPPLY DUCT UP
	RETURN OR EXHAUST UP
	SUPPLY TURNING DOWN
	RETURN OR EXHAUST DOWN
	FLEXIBLE DUCT
EF-1	HVAC EQUIPMENT TAG
	DIFFUSER
	RETURN AIR GRILLE
A 200 / 300	200–CFM A–TYPE 300–SIZE (MM)

ABBREVIATIONS LEGEND

ED	EXISTING TO BE DEMOLISHED
ER	EXISTING TO BE RELOCATED
EX	EXISTING TO REMAIN
N	NEW TO MATCH EXISTING
REL	EXISTING AT RELOCATED LOCATION
c/w	DENOTES COMPLETE WITH
CTE	DENOTES CONNECT TO EXISTING
NTS	DENOTES NOT TO SCALE
TYP	DENOTES TYPICAL

DRAWING LIST

M0.01	MECHANICAL SPECIFICATIONS
M0.02	MECHANICAL SCHEDULES, KEYPLAN, LEGENDS, AND DETAILS
M0.03	MECHANICAL SITE REFERENCES
M1.01	MECHANICAL DEMOLITION PLAN
M2.01	MECHANICAL NEW PLAN

PUMP SCHEDULE

TAG	SERVICE	MANUFACTURER	MODEL	DISCHARGE (IN)	FLOW (USGPM)	TOTAL FT. HEAD	ELECTRICAL V/PH/HZ	MCA	MOCP	HP	FLA	WEIGHT (LBS)	REMARKS
P–1	ELEVATOR SUMP PUMP	LIBERTY	ELV290	1–1/2"	50	26	115/1/60	–	–	3/4	10.4	42	SEE NOTES BELOW

NOTES:
1. C/W OILTECTOR CONTROL & ALARM (OTCV–115)
2. C/W ALARM PANEL, PUMP OFF/AUTO SWITCH, LEVEL SENSOR & FLOAT SWITCHES.
3. SUMP PIT IS 36"ø IN DIAMETER. THE DEPTH TO BE DETERMINED ON SITE.

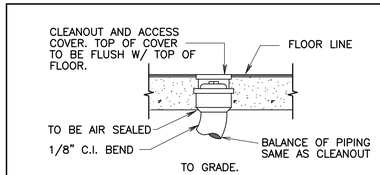
SPLIT AC SCHEDULE

TAG	SERVICE	MANUFACTURER	OUTDOOR UNIT MODEL NO.	INDOOR UNIT MODEL NO.	CAPACITY (BTU/HR)	ELECTRICAL (OUTDOOR) V/PH/HZ	MCA	MOCP	ELECTRICAL (INDOOR) V/PH/HZ	MCA	MOCP
AC–1 CU–1	ELEVATOR MACHINE ROOM	MITSUBISHI	PUY–A12NKA7	PKA–A12LA–TH	12,000	208/1/60	11	15	–	1	–

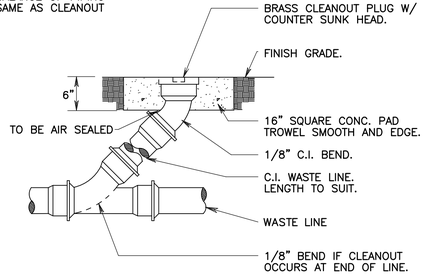
NOTES:
1. UNIT TO BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. ALL EXPOSED CONDENSATE AND REFRIGERANT PIPING TO RUN CONCEALED WITHIN LINE–SET COVERS.
3. OUTDOOR UNIT TO BE MOUNTED ON MINIMUM 350MM HIGH STANDS (MODEL DJ–1200) PER MANUFACTURER'S WRITTEN INSTRUCTIONS, ABOVE SNOW LEVEL, AND C/W WINDSCREEN.
4. REFRIGERANT PIPE SIZES AND INSTALLATION PER MANUFACTURER RECOMMENDATIONS.
5. C/W DISCONNECT SWITCH, ADVANCED WIRED CONTROLLER (PAR–40MAAU).
6. C/W ISOLATION VALVES.
7. PROVIDE CONDENSATE PUMP PER SITE CONDITIONS.
8. ACCEPTABLE EQUIVALENT: DAIKIN

PLUMBING FIXTURE SCHEDULE

TYPE	SPECIFICATION	ACCESSORIES	WASTE	REMARKS
SD	ZURN Z1717 SCUPPER DRAIN w/STAINLESS STEEL BODY AND CAST OBLIQUE GRATE AND TWO PIECE CLAMP COLLAR.	–	2"	
CO	WATTS NH–R–1CO–200–34G EPOXY COATED CAST IRON CLEAN OUT WITH 5" NICKEL BRONZE COVER OR EQUIVALENT.		–	

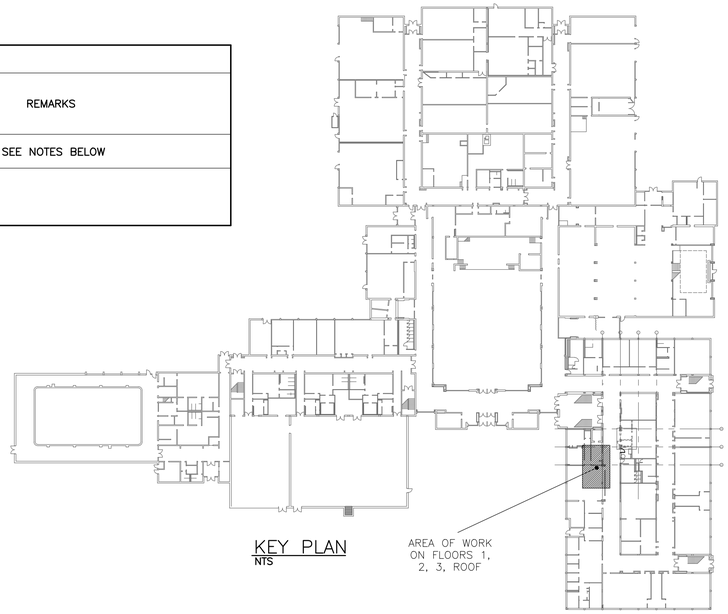


FLOOR CLEANOUT (FCO)

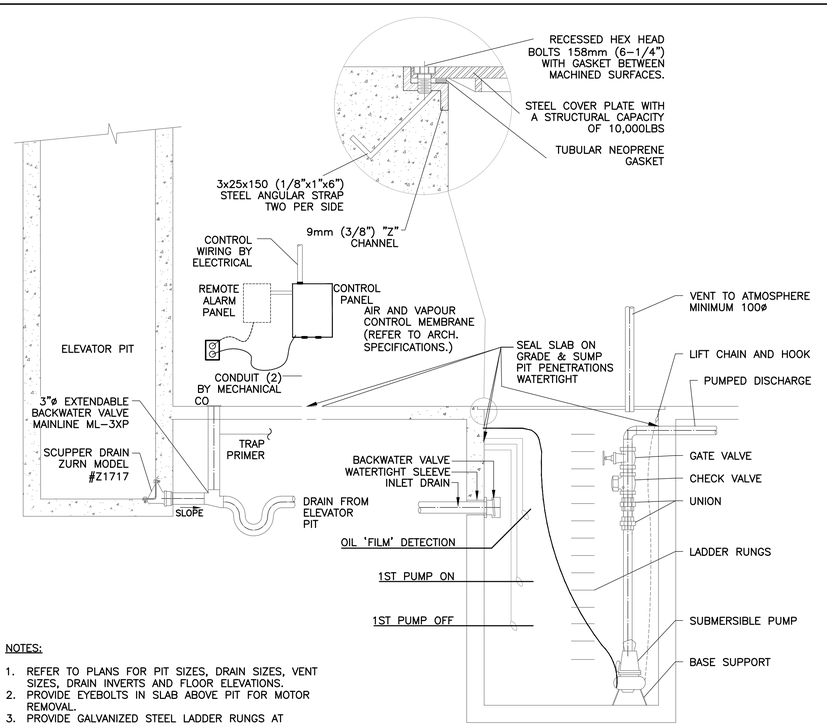


CLEANOUT TO GRADE (COTG)

FLOOR CLEANOUT DETAIL
N.T.S.



KEY PLAN
NTS



NOTES:
1. REFER TO PLANS FOR PIT SIZES, DRAIN SIZES, VENT SIZES, DRAIN INVERTS AND FLOOR ELEVATIONS.
2. PROVIDE EYEBOLTS IN SLAB ABOVE PIT FOR MOTOR REMOVAL.
3. PROVIDE GALVANIZED STEEL LADDER RUNGS AT 300mm (12") CENTRES FOR PITS DEEPER THAN 1050mm (42")
4. SUMP PUMP COVER TO BE MECHANICALLY ATTACHED WITH FULL GASKET SEAL TO CONTROL AIR INFILTRATION.
5. PROVIDE 4" OF XPS (R5/INCH) INSULATION INSULATION ON UNDERSIDE OF SUMP COVER
6. COORDINATE PIT DEPTH AT SITE.

ELEVATOR DRAIN SUBMERSIBLE SUMP PUMP DETAIL
N.T.S.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COORDINATION	2022-12-02
A	ISSUED FOR COORDINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

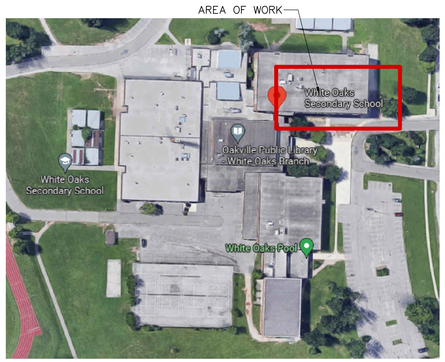
WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

MECHANICAL SCHEDULES, KEYPLAN, LEGENDS, AND DETAILS

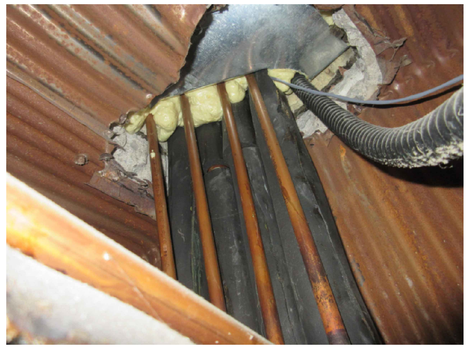
GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN SP	DRAWING M0.02
CHECKED CK	
PRINT DATE	



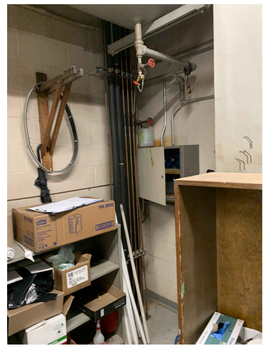
KEYPLAN
N.T.S.

ROOF–CONDENSER TO BE RELOCATED
N.T.S.



THIRD FLOOR–CEILING
N.T.S.

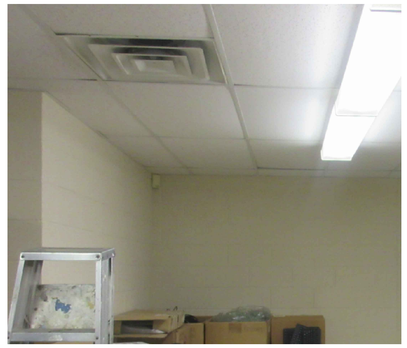
THIRD FLOOR–GRILLE TO BE RELOCATED
N.T.S.



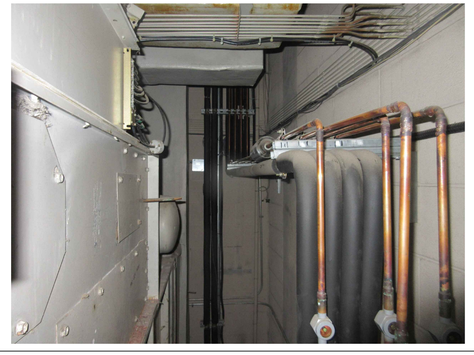
THIRD FLOOR–REFRIGERATION PIPES IN A301
N.T.S.

ROOF–GOOSENECK TO STAY
N.T.S.

SECOND FLOOR–DUCT TO BE RE–ROUTED
N.T.S.



SECOND FLOOR–DIFFUSER TO REMAIN
N.T.S.



SECOND FLOOR–REFRIGERANT PIPES IN A201
N.T.S.

GROUND FLOOR–DUCTS TO REMAIN
N.T.S.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COORDINATION	2022-12-02
A	ISSUED FOR COORDINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

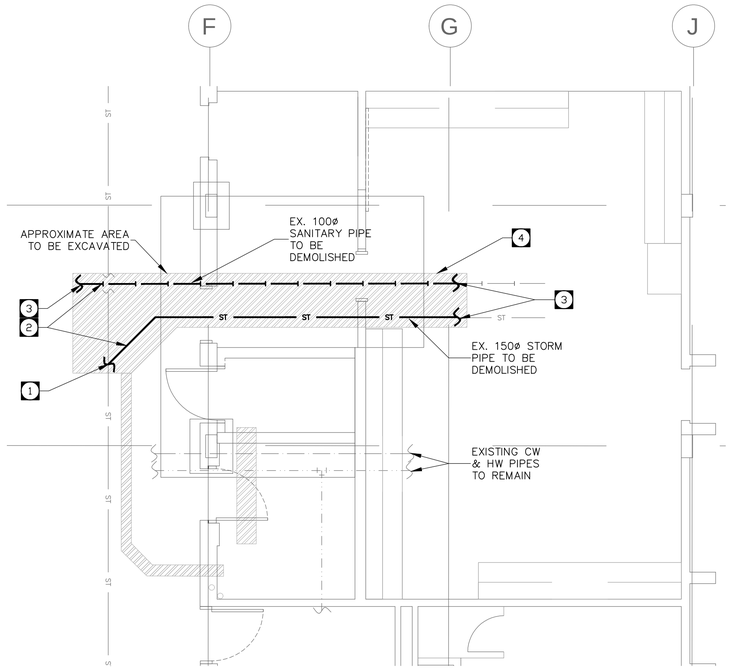
WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

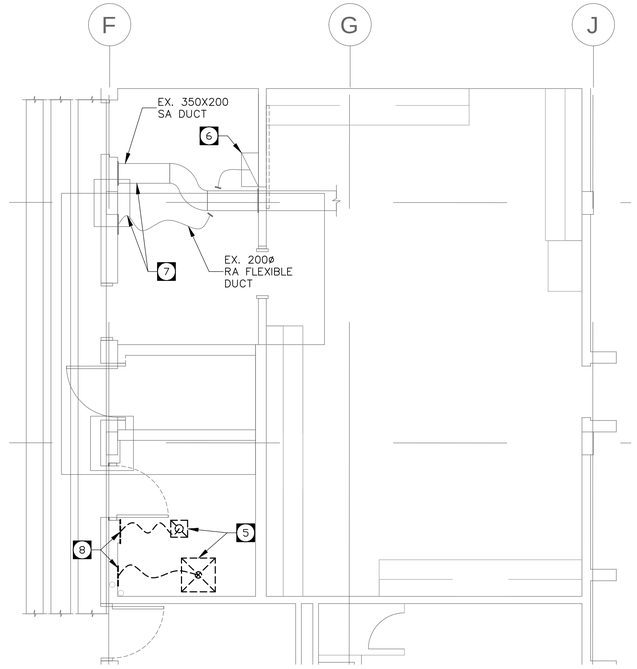
MECHANICAL SITE
REFERENCES

GRGURIC
ARCHITECTS
INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

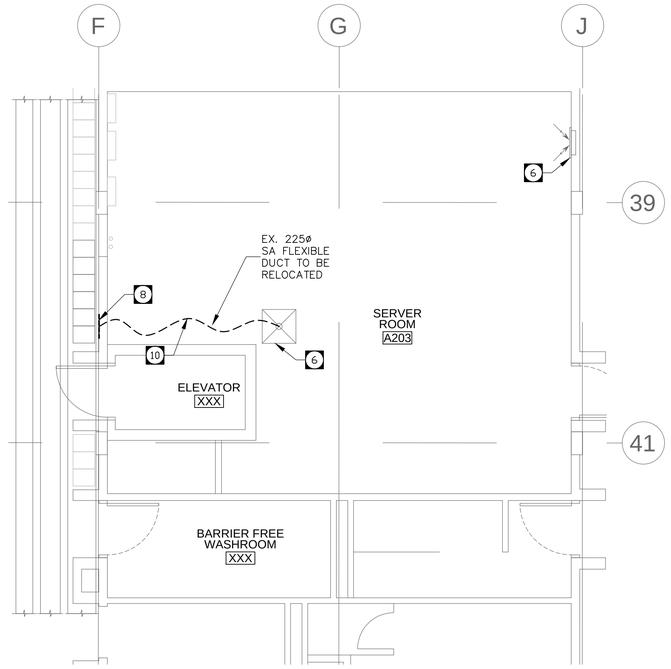
SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN SP	DRAWING M0.03
CHECKED CK	
PRINT DATE	



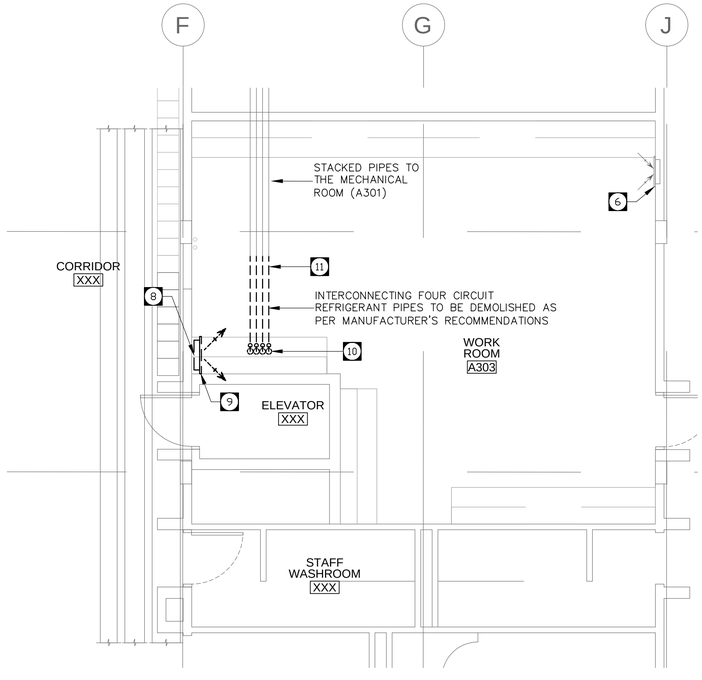
GROUND FLOOR PLUMBING – DEMO PLAN
SCALE: 1:50



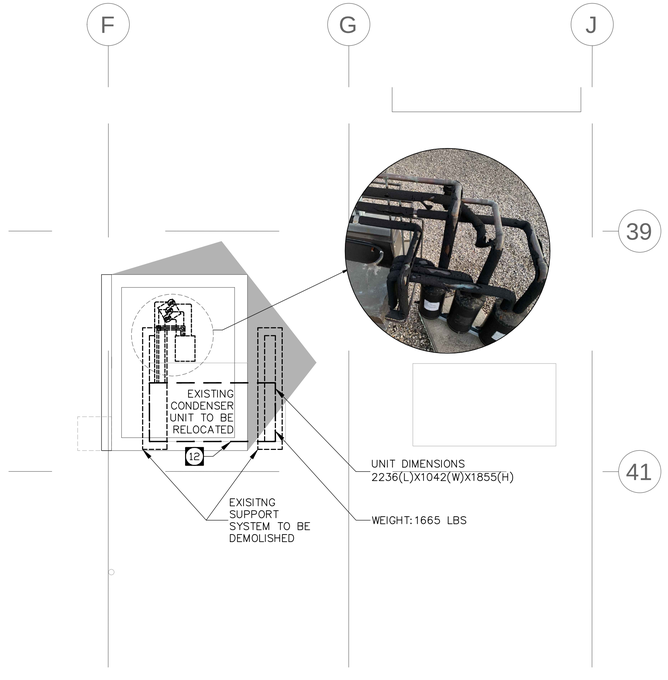
GROUND FLOOR HVAC – DEMO PLAN
SCALE: 1:50



SECOND FLOOR – DEMO PLAN
SCALE: 1:50



THIRD FLOOR – DEMO PLAN
SCALE: 1:50



ROOF – DEMO PLAN
SCALE: 1:50

DEMOLITION DRAWING NOTES

1. CONTRACTOR TO PATCH/REPAIR THE PIPE OPENING UPON COMPLETING THE DEMOLITION.
2. THESE PIPES ARE ASSUMED TO BE BURIED WITHIN THE SHAFT EXPANSION AREA AND HENCE CALLED FOR DEMOLITION. THE CONTRACTOR IS TO FIELD VERIFY.
3. EXISTING BURIED STORM & SANITARY LINE INTERFERING WITH A NEW ELEVATOR LOCATION. CONTRACTOR TO FILED INVESTIGATE AND SCAN EXISTING STORM & SANITARY LINE LOCATIONS. CONTRACTOR TO RELOCATE THE SAME AS SHOWN ON MECHANICAL DRAWING M2.01
4. SANITARY AND STORM PIPES MAY DEVIATE BY UP TO 15 FEET DURING EXCAVATION. THE CONTRACTOR SHOULD TAKE THIS FACTOR INTO CONSIDERATION FOR THE CONSTRUCTION PRICE. NO EXTRA ALLOWANCES WILL BE PROVIDED.
5. REMOVE EXISTING CEILING MOUNTED SUPPLY DIFFUSER, EXHAUST FAN AND ASSOCIATED DUCTWORK AND ACCESSORIES. COORDINATE WITH ELECTRICAL CONTRACTOR TO DISCONNECT POWER.
6. EX. GRILLE AND DIFFUSER TO REMAIN.
7. EX. MAIN SUPPLY AND RETURN DUCTWORK TO REMAIN.
8. PATCH/REPAIR THE DUCT OPENING AND EXISTING WALL OPENING AS REQUIRED. THE WALL OPENING TO BE PATCHED BY GENERAL CONTRACTOR.
9. REMOVE EX. GRILLES AND DIFFUSER AT LOCATION SHOWN. CAP DUCTWORK FOR REWORK AS PER NEW HVAC PLAN.
10. PLEASE REFER TO THE SITE PHOTO ON MECHANICAL DRAWING M0.03 FOR REFERENCE.
11. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT THE PIPES HAVE BEEN DRAINED PROPERLY AND THAT ANY REMAINING REFRIGERANT HAS BEEN REMOVED. THE CONTRACTOR WILL NEED TO RECLAIM THE EXISTING REFRIGERANT FROM EACH CIRCUIT AND RE-PIPE THE LINE SETS TO THE NEW POSITION OF THE CU. ONCE PIPED, THEY NEED TO PULL A VACUUM ON THE LINE SETS AND THEN RECHARGE BASED ON IOM. CONTRACTORS WILL NEED TO REGISTER THE INSTALLATION WITH TSSA WHEN BRAZING ON SITE.
12. EXISTING ENGINEERED AIR CONDENSER UNIT MODEL #CUEA184-0 SHALL BE RELOCATED TO NEW LOCATION TO FACILITATE NEW ELEVATOR INSTALLATION. CONTRACTOR SCOPE TO INCLUDE (A) SAFE REMOVAL OF ALL ASSOCIATED REFRIGERANT PIPES, (B) RELOCATE THE UNIT TO NEW LOCATION ALONG WITH NEW REFRIGERANT PIPING, (C) RECHARGE NEW REFRIGERANT TO MATCH MANUFACTURER WRITTEN INSTRUCTIONS, AND (D) COMMISSION THE UNIT BY A QUALIFIED AC TECHNICIAN AND SUBMIT TESTING AND COMMISSIONING REPORT TO ENGINEER REVIEW.

GENERAL MECHANICAL NOTES

A. PRIOR TO COMMENCING THE DEMOLITION WORK EXAMINE CAREFULLY THE ELEMENTS OF THE COOLING SYSTEM THAT NEED TO BE REMOVED. FOR REASONS OF CLARITY, THE DRAWING DOES NOT SHOW ALL BUILDING SERVICES, CONDUITS AND STRUCTURAL ELEMENTS IN THE MECHANICAL ROOM. ALL EXISTING BUILDING SERVICES AND UTILITIES NOT AFFECTED BY THIS WORK SHALL REMAIN OPERATIONAL. ANY DAMAGE TO THE EXISTING BUILDING SERVICES NOT AFFECTED BY THIS WORK SHALL BE PROMPTLY REPAIRED AT NO COST TO THE OWNER.

B. THE SIZES INDICATED ON THE DRAWINGS HAVE BEEN SITE MEASURED OR TAKEN FROM THE DRAWINGS AVAILABLE FROM THE BOARD'S ARCHIVE. MAKE ANY CHANGES REQUIRED TO SUIT THE ACTUAL SITE CONDITIONS AT NO COST TO THE OWNER.

C. DO NOT SCALE DRAWINGS IN THIS PACKAGE. DRAWINGS IS DIAGRAMMATIC IN PART OR IN WHOLE AND IS INTENDED TO CONVEY THE GENERAL ARRANGEMENT OF COMPONENTS ONLY. VERIFY ALL DIMENSIONS, CLEARANCES, DISTANCES AND OTHER FACTORS AFFECTING WORK ON SITE AND PRIOR TO ORDERING EQUIPMENT OR START WORK.

D. THIS DRAWING DOES NOT SHOW ALL HIDDEN OR CONCEALED PIPING, PLUMBING AND EQUIPMENT. CONTRACTOR SHALL VISIT THE SITE AND MAKE THEIR OWN EVALUATION AND ESTIMATE OF THE EXTENT AND MAGNITUDE OF THE WORK INVOLVED PRIOR TO SUBMITTING PROPOSAL.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COORDINATION	2022-12-02
A	ISSUED FOR COORDINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

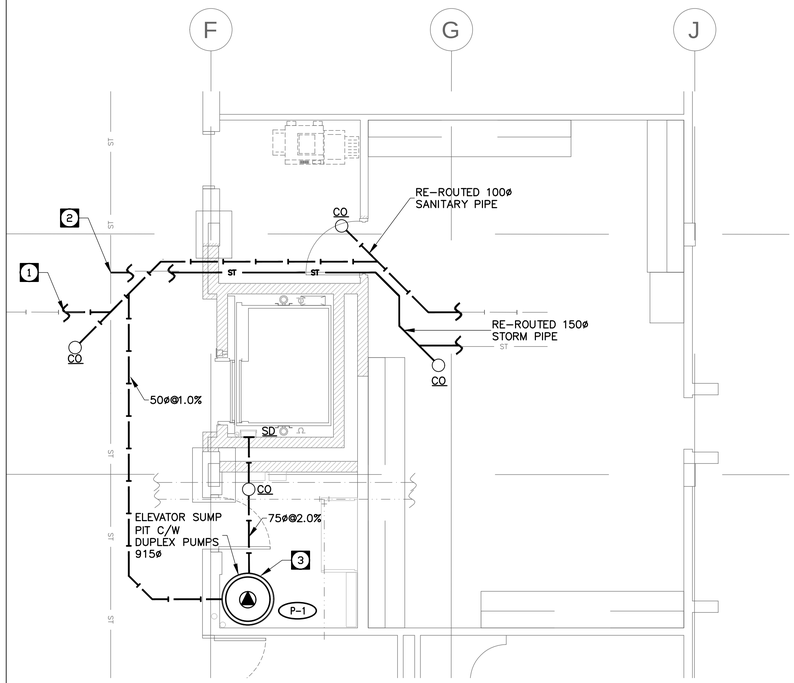
WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

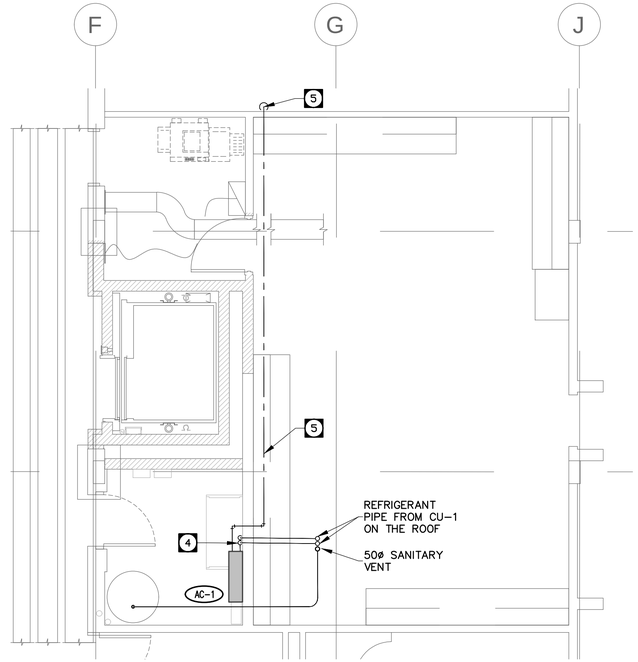
MECHANICAL DEMOLITION PLAN

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

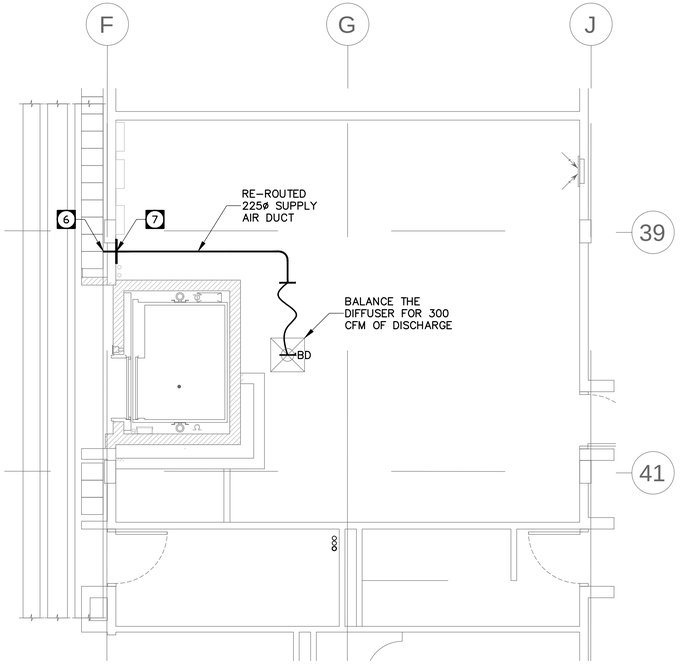
SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN SP	DRAWING M1.01
CHECKED CK	
PRINT DATE	



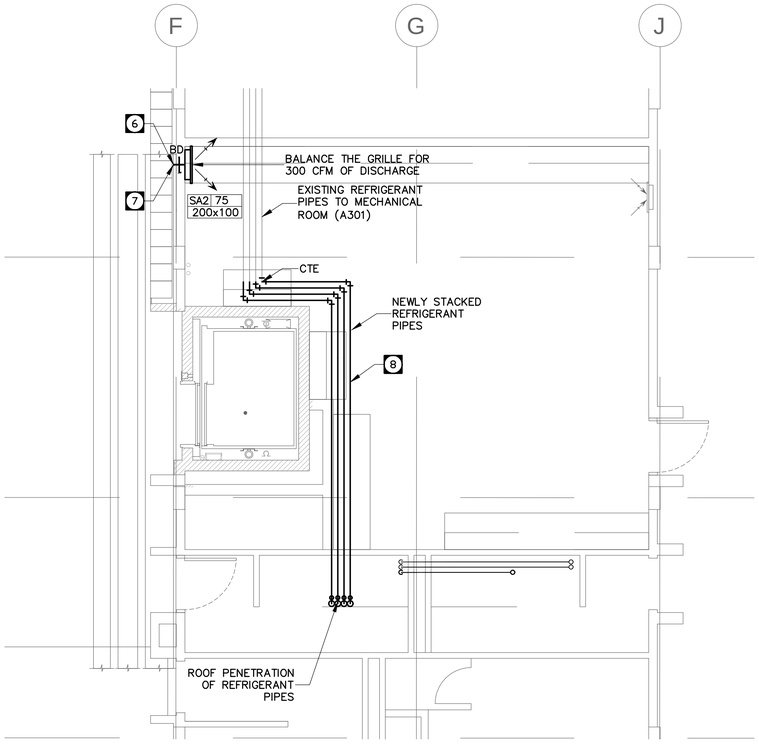
GROUND FLOOR PLUMBING – NEW PLAN
SCALE: 1:50



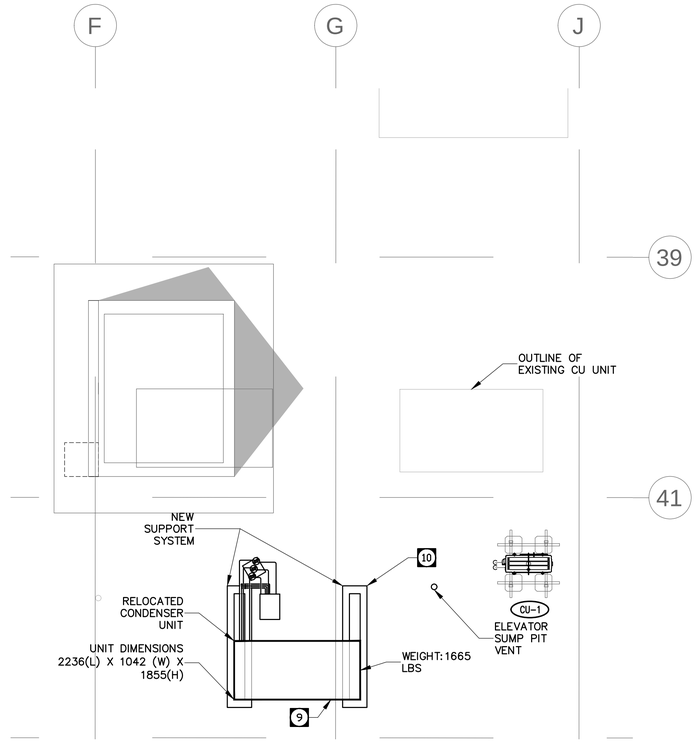
GROUND FLOOR HVAC – NEW PLAN
SCALE: 1:50



SECOND FLOOR – NEW PLAN
SCALE: 1:50



THIRD FLOOR – NEW PLAN
SCALE: 1:50



ROOF – NEW PLAN
SCALE: 1:50

DRAWING NOTES

1. COUPLE WITH THE PIPES AT ROUGH–INS CAPPED OFF DURING DEMOLITION.
2. MAKE A NEW CONNECTION TO THE EXISITNG STORM PIPE.
3. REFER TO THE SUMP PIT DETAIL ON MECHANICAL DRAWING M0.02.
4. RUN REFRIGERANT PIPING ABOVE CEILING AND DROP AT LOCATION SHOWN TO SERVE WALL MOUNTED AC UNIT. REFRIGERANT PIPING BELOW CEILING TO RUN WITHIN LINESET COVERS.
5. PROVIDE PUMPED CONDENSATE LINE C/W 25 MM THICK INSULATION, FROM AC–1 WITHIN LINESET COVER AND TERMINATE ABOVE EXISTING FLOOR DRAIN OR SERVICE SINK C/W AIR–GAP. CONTRACTOR TO SITE VERIFY TERMINATION LOCATION AND THE EXTENT OF WORK PRIOR TO PRICING.
6. CONTRACTOR TO FIELD VERIFY THE CORRIDOR DUCT PROVIDING THE SUPPLY AND USE THE SAME DUCT TO CONNECT THE BRANCH DUCT FEEDING DIFFUSER INSIDE THE ROOM.
7. DUCT WORK MUST NEED TO BE C/W FIRE DAMPERS.
8. CONTRACTOR MUST FIELD VERIFY AND INSTALL INTERCONNECTING FOUR CIRCUIT REFRIGERANT PIPES AS PER MANUFACTURER'S RECOMMENDATIONS.
9. FOR THE NEW LOCATION OF CONDENSER UNIT, CONTRACTOR TO REVIEW THE ADEQUACY OF EXISTING ROOF STRUCTURE WITH STRUCTURAL ENGINEER.
10. DIMENSIONS AND LOCATION OF SLIPPERS ARE ARBITRARY. PLEASE COORDINATE WITH STRUCTURAL ENGINEERS FOR THE ACCURATE.

GENERAL MECHANICAL NOTES

A. DO NOT SCALE DRAWINGS IN THIS PACKAGE. DRAWINGS IS DIAGRAMMATIC IN PART OR IN WHOLE AND IS INTENDED TO CONVEY THE GENERAL ARRANGEMENT OF COMPONENTS ONLY. VERIFY ALL DIMENSIONS, CLEARANCES, DISTANCES AND OTHER FACTORS AFFECTING WORK ON SITE AND PRIOR TO ORDERING EQUIPMENT OR START WORK.

B. THIS DRAWING DOES NOT SHOW ALL HIDDEN OR CONCEALED PIPING, PLUMBING AND EQUIPMENT. CONTRACTOR SHALL VISIT THE SITE AND MAKE THEIR OWN EVALUATION AND ESTIMATE OF THE EXTENT AND MAGNITUDE OF THE WORK INVOLVED PRIOR TO SUBMITTING PROPOSAL.

C. THE MECHANICAL CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING ALL ITEMS ON SITE PRIOR TO PRICING THE PROJECT. IF THERE ARE ERRORS OR OMISSIONS ON THE DRAWINGS, THE CONTRACTOR WILL MODIFY THE DRAWINGS AND NOTIFY THE ENGINEER OF ANY MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS.

D. THE EXISTING SERVICES SHOWN ON THIS DRAWING HAVE BEEN TAKEN FROM THE ORIGINAL AS–BUILT DRAWINGS. THIS INFORMATION MUST NOT ASSUMED TO BE COMPLETE OR UP–TO–DATE. THIS MECHANICAL CONTRACTOR SHALL CARRYOUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM THE SIZE AND LOCATION OF THESE SERVICES, BEFORE THE COMMENCEMENT OF ANY WORK.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COORDINATION	2022-12-02
A	ISSUED FOR COORDINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON, L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

MECHANICAL NEW PLAN

GRGURIC
ARCHITECTS
INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN SP	DRAWING M2.01
CHECKED CK	
PRINT DATE	

ELECTRICAL SPECIFICATIONS

A. GENERAL CONDITIONS

1. CONFORM WITH LATEST EDITION OF THE ONTARIO BUILDING CODE (OBC), ONTARIO ELECTRICAL SAFETY CODE (OESC), CANADIAN STANDARDS ASSOCIATION (CSA), UNDERWRITERS LABORATORIES OF CANADA (ULC) AND LOCAL BY-LAWS AND AUTHORITIES HAVING JURISDICTION.
2. MATERIALS & EQUIPMENT SHALL CARRY APPROVAL AND CONFORM WITH CSA OR ULC STANDARDS. INSTALLATION SHALL COMPLY WITH ALL RULES AND REGULATIONS REGARDING MATERIALS AND WORKMANSHIP CONFORMING TO CSA, OESC, OBC AND LOCAL AUTHORITIES HAVING JURISDICTION.
3. VISIT JOB SITE PRIOR TO SUBMITTING TENDER AND EXAMINE ALL EXISTING CONDITIONS WHICH AFFECT THE WORK. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO DO SO.
4. SUPPLY AND INSTALL COMPLETE ELECTRICAL SYSTEMS AS SHOWN AND/OR SPECIFIED HEREIN. DRAWINGS SHALL BE USED FOR ROUTING PURPOSES ONLY, DO NOT SCALE DRAWINGS. PROVIDE ALL NECESSARY MATERIAL AND LABOUR ETC. TO PROVIDE COMPLETE SYSTEMS.
5. FURNISH ALL REQUIRED LABOUR AND MATERIALS, MACHINERY, AND TOOLS, WITH ALL PROPER AND REQUIRED FACILITIES FOR MOVING AND TRANSPORTING SAME, SO THAT THE CONTRACT AND ALL WORK TO BE DONE UNDER IT, CAN AND WILL BE CARRIED OUT IN A PROFESSIONAL MANNER, PROPERLY, SATISFACTORILY, CONTINUOUSLY, AND EXPEDITIOUSLY, TO COMPLETION, IN ALL RESPECTS, TO THE SATISFACTION OF THE OWNER.
6. MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTER LINE OF EQUIPMENT, UNLESS SPECIFIED OR INDICATED OTHERWISE. IF MOUNTING HEIGHT OF EQUIPMENT IS NOT INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION. THE FOLLOWING IS GENERAL MOUNTING HEIGHTS:
   - 6.1. GENERAL SWITCHES, DIMMERS, CARD READERS: 1100mm (43")
   - 6.2. WALL RECEPTACLES (GENERAL): 450mm (18")
   - 6.3. DATA, VOIP, TELEPHONE OUTLETS: 450mm (18")
   - 6.4. OUTLET ABOVE COUNTER: 150mm (6")
   - 6.5. EMERGENCY REMOTE DC HEAD(S): 2440mm (96") A.F.F. WHERE CEILING HEIGHT IS LESS THAN 3660mm (12ft). WHERE CEILING HEIGHT IS 3660mm (12ft) OR GREATER, MOUNT DEVICE AT 3050mm (10ft) A.F.F.
7. CO-ORDINATE ON SITE THE LOCATION OF EQUIPMENT, CONTROL DEVICES, SERVICE DISTRIBUTION SYSTEMS, ETC. COORDINATE WORK AND SCHEDULE WITH OTHER TRADES.
8. AT ALL TIMES KEEP THE OWNER'S PROPERTY CLEAN AND IN TIDY CONDITION. CLEAN AFFECTED WORK AREA AND REMOVE ALL DEBRIS FROM EQUIPMENT. FOLLOW MANUFACTURERS' INSTALLATION AND STARTUP INSTRUCTIONS.
9. PROVIDE WARNING SIGNS AND BARRIERS AS REQUIRED TO MEET INSPECTION DEPARTMENT'S REQUIREMENTS.
10. DRAWINGS SHOW GENERAL INTENT OF WORK AND NOT THE DETAILS OF THE INSTALLATION.
11. GUARANTEE IN WRITING ALL MATERIAL AND WORKMANSHIP INCLUDING THE MANUFACTURER'S GUARANTEE FOR THE MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE UNLESS NOTED OTHERWISE IN MAIN FRONT END CONTRACT DOCUMENTS.
12. NO EXTRA CHARGES SHALL BE HONOURED EXCEPT WHERE THE CONTRACTOR RECEIVES A WRITTEN ORDER COUNTER-SIGNED OR OTHERWISE APPROVED BY THE OWNER.
13. AFTER THE APPROVAL OF DRAWINGS, THE RIGHT IS RESERVED TO MAKE REASONABLE CHANGES IN THE DESIGN OF THE WORK OR TO OMIT ANY SUCH PARTS AS THE OWNER MAY REQUIRE. IN THE CASE WHERE WORK OR MATERIAL IS ADDED TO OR DEDUCTED FOR THE WORK HEREIN SPECIFIED, A FAIR AND REASONABLE VALUATION OF THE SAME SHALL BE ADDED TO OR DEDUCTED FROM THE AMOUNT OF THIS CONTRACT.
14. THE CONSULTANT RESERVES THE RIGHT TO SELECT THE FINAL PRODUCT AND OR OPTIONS/ACCESSORIES DURING SHOP DRAWING REVIEW AT NO ADDITIONAL COST TO THE OWNER IN THE CASE OF ANY DISCREPANCIES LISTED BETWEEN CATALOGUE NUMBERS, WRITTEN PRODUCT DESCRIPTIONS AND/OR DETAILS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE CONSULTANT IN WRITING BEFORE TENDER CLOSES OF ANY DISCREPANCIES THAT MAY BE SHOWN ON THE DRAWINGS REGARDING LISTED PRODUCT SPECIFICATIONS AND CATALOGUE NUMBERS THAT MAY AFFECT PRICING AND GET CLARIFICATION ON THESE ITEMS BEFORE SUBMITTING FINAL TENDER PRICE. FAILURE OF THE ELECTRICAL CONTRACTOR TO REQUEST CLARIFICATIONS ON SUCH ITEMS DURING TENDER MAKES NULL AND VOID ANY FUTURE CLAIMS RELATING TO FINAL PRODUCT SELECTION BY THE CONSULTANT.
15. ALL ELECTRICAL EQUIPMENT TO BE SPRINKLER PROOF.
16. SUPPLY AND INSTALL ALL 3/4" THICK FIRE RETARDANT PLYWOOD BACKBOARDS SHOWN ON THE DRAWINGS.

B. SUBMITTALS

1. BEFORE FABRICATION OF ANY MATERIALS OR EQUIPMENT, SUBMIT ONE (1) COPY OF DETAILED MANUFACTURER'S SHOP DRAWINGS OF EQUIPMENT AND APPARATUS FOR REVIEW. DO NOT ORDER MATERIALS UNTIL CONSULTANT HAS REVIEWED THE SHOP DRAWINGS. IF CORRECTIONS ARE REQUIRED, COPIES WILL BE RETURNED WITH CORRECTIONS NOTED. CORRECTED COPIES SHALL BE RESUBMITTED FOR REVIEW AND DISTRIBUTION. SUBMISSIONS SHALL BE MADE IN AMPLE TIME TO AVOID DELAYS IN THE WORK. THE REVIEW OF THE SHOP DRAWINGS SHALL BE, AND IS MUTUALLY UNDERSTOOD TO BE, IN REFERENCE TO GENERAL DESIGN ONLY. IF ERRORS IN THE DETAILED DIMENSIONS OR INTERFERENCE WITH THE WORKS ARE NOTICED, THE ATTENTION OF THE CONTRACTOR WILL BE CALLED TO SUCH ERRORS OR INTERFERENCE, BUT REVIEW OF THE DRAWINGS SHALL NOT IN ANY WAY RELIEVE THIS CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR INTERFERENCE, OR FROM THE NECESSITY OF FURNISHING SUCH WORKS AND MATERIALS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK AT ANY TIME UNTIL FORMAL ACCEPTANCE.
2. THE ELECTRICAL CONTRACTOR IS TO REVIEW, DATE AND SIGN ALL ELECTRICAL SHOP DRAWINGS PRIOR TO SUBMITTING TO THE CONSULTANT FOR REVIEW.
3. THE ELECTRICAL CONTRACTOR TO SUBMIT MAIN ELECTRICAL SWITCHBOARD INCLUDING ANY METERING ENCLOSURES OR METERING EQUIPMENT SHOP DRAWINGS TO LOCAL HYDRO UTILITY FOR REVIEW AND APPROVAL.
4. THE ELECTRICAL CONTRACTOR SHALL SUBMIT A DETAILED PROGRESS DRAW BREAKDOWN IN THE FOLLOWING CATEGORIES AND INVOICE A PERCENTAGE AGAINST EACH CATEGORY MONTHLY OR AS REQUIRED UNDER THE CONTRACT.
   - 4.1. PERMITS AND MOBILIZATION
   - 4.2. DISTRIBUTION EQUIPMENT – MATERIAL
   - 4.3. DISTRIBUTION EQUIPMENT – LABOUR
   - 4.4. INTERIOR LIGHT FIXTURES AND CONTROLS – MATERIAL
   - 4.5. INTERIOR LIGHT FIXTURES AND CONTROLS – LABOUR
   - 4.6. INTERIOR CONDUIT AND BRANCH WIRING POWER AND LIGHTING – MATERIAL
   - 4.7. INTERIOR CONDUIT AND BRANCH WIRING POWER AND LIGHTING – LABOUR
   - 4.8. INTERIOR CONDUIT AND WIRING FIRE ALARM – MATERIAL
   - 4.9. INTERIOR CONDUIT AND WIRING FIRE ALARM – LABOUR
   - 4.10. FIRE ALARM VERIFICATION
   - 4.11. FIRE ALARM INTEGRATED TESTING PLAN AND REPORT
   - 4.12. CLOSE OUT MANUALS, REPORTS AND TESTS
   - 4.13. NETWORK/DATA SYSTEM – MATERIAL
   - 4.14. NETWORK/DATA SYSTEM – LABOUR, SET UP AND COMMISSIONING
   - 4.15. AS-BUILT AUTO CAD AND PDF DRAWINGS AND ELECTRICAL CONTRACTOR CLOSEOUT DOCUMENTS
5. THE ELECTRICAL CONTRACTOR TO PREPARE RECORD DRAWINGS (IN AUTOCAD AND PDF FORMATS) INCLUDING ALL CHANGES AND DEVIATIONS IN COLOUR RED FROM CONSTRUCTION SET AND SUBMIT THEM TO THE CONSULTANT AND THE OWNER UPON THE COMPLETION OF THE PROJECT. AUTOCAD FILES CAN BE SUPPLIED BY THE CONSULTANT UPON REQUEST. THE CONSULTANT CAN PREPARE AS BUILT AUTOCAD DRAWINGS FOR THE ELECTRICAL CONTRACTOR FOR A NOMINAL FEE.
6. THE FOLLOWING ITEMS ARE TO BE SUBMITTED TO THE CONSULTANT AND THE OWNER AT THE END OF THE PROJECT IN A HARD COVER, THREE-RING BINDER WITH TABS INDICATING EACH SECTION:
   - 6.1. FINAL INSPECTION/VERIFICATION REPORTS FROM THE INSPECTION AUTHORITIES AND TESTING AGENCIES
   - 6.2. MANUFACTURER'S SPECIFICATION SHEETS AND PHOTOMETRIC DATA FOR LIGHT FIXTURES
   - 6.3. A COPY OF ALL FINAL REVIEWED SHOP DRAWINGS
   - 6.4. AUTOCAD AND PDF RECORD DRAWINGS
   - 6.5. OPERATING INSTRUCTIONS FOR EACH SYSTEM INCLUDING CONTROL AND WIRING DIAGRAMS
   - 6.6. MANUFACTURER RECOMMENCED MAINTENANCE PROCEDURES AND SCHEDULES
   - 6.7. LIGHTING VERIFICATION AND COMMISSIONING DOCUMENT FROM THIRD PARTY
   - 6.8. WARRANTY LETTER FOR ALL MATERIAL AND WORKMANSHIP
   - 6.9. ALL PANELBOARD TYPEWRITTEN DIRECTORIES
   - 6.10. USB DRIVE WITH ELECTRONIC COPY OF ITEMS 6.1 TO 6.9

C. PERMITS, TEST, REGULATIONS, ETC.

1. CARRY OUT ALL CHANGES AND ALTERATIONS REQUIRED BY THE AUTHORIZED INSPECTOR OF ANY AUTHORITY HAVING JURISDICTION WITHOUT DELAY TO THE PROGRESS OF THE WORK AND WITHOUT EXTRA COST.
2. PROVIDE WARNING SIGNS AND ARC FLASH LABELS AS SPECIFIED OR TO MEET REQUIREMENTS OF O.E.S.C, INSPECTION DEPARTMENT AND THE CONSULTANT.
3. UPON COMPLETION OF THE CONTRACT, ISSUE TO THE OWNER A FORMAL CERTIFICATION OF COMPLETION OF WORK BEFORE FINAL PAYMENT FOR WORK MAY BE CONSIDERED DUE.
4. PAYMENTS FOR ALL PERMITS, DEPOSITS, INSPECTION, SERVICES, AND OTHER FEES NECESSARY FOR THE WORK SHALL BE INCLUDED IN THE TENDER.

D. MATERIALS

1. ALL MATERIALS AND EQUIPMENT (PRODUCTS) TO BE NEW AND FREE OF DEFECTS, CSA, ULC OR CANADIAN RECOGNIZED CERTIFICATION.
2. THIS IS A BASE BID SPECIFICATION. ITEMS ON THE DRAWINGS AND SUBSEQUENT DIVISIONS OF THESE SPECIFICATIONS ARE LISTED WITH THE NAMES OF A SPECIFIC MANUFACTURER, THE FIRST OF WHICH IS BASE BID AND HAS BEEN USED IN THE DESIGN AND IS THE EQUIPMENT SHOWN ON THE DRAWINGS. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT SPECIFIED AS THE BASE BID.
3. WHERE MORE THAN ONE MANUFACTURER IS LISTED FOR A PARTICULAR ITEM OR GROUPS OF ITEMS, THE CONTRACTOR SHALL STATE IN HIS TENDER FORM COST SAVINGS (IF ANY) FOR THE USE OF ALTERNATE PRODUCTS, AND SHALL NAME THE ALTERNATE MANUFACTURERS. HOWEVER, THESE PROPOSED MATERIALS MUST NOT BE USED IN CALCULATING THE BASE TENDER PRICE. THE CONSULTANT AND/OR OWNER SHALL HAVE THE FINAL OPTION OF ACCEPTING OR REJECTING ALTERNATE EQUIPMENT.
4. WHERE OTHER THAN A FIRST-NAMED PRODUCT IS PROPOSED, THE BIDDER WILL BE DEEMED TO REPRESENT THAT NAMED PRODUCT CONFORMS TO THE PERFORMANCE, QUALITY, SPACE AND WEIGHT CHARACTERISTICS OF THE BASE BID PRODUCT. THIS CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL DESIGN OR CONSTRUCTION COSTS GENERATED BY THE USE OF THE NON-FIRST NAMED BID MATERIAL. ACCEPTANCE OF NON-BASE MANUFACTURERS WITH RESPECT TO THEIR EQUIVALENCY SHALL BE SUBJECT TO THE CONSULTANT'S REVIEW OF SHOP DRAWINGS.
5. THE CATALOG NUMBER OF THE SPECIFIED DEVICE MAY NOT DESIGNATE ALL THE ACCESSORY PARTS AND APPURTENANCES REQUIRED FOR THE PARTICULAR USE OR FUNCTION. THE ELECTRICAL CONTRACTOR SHALL ARRANGE WITH THE MANUFACTURER FOR THE PURCHASE OF ALL PARTS REQUIRED FOR THE COMPLETE INSTALLATION AND OPERATION WITHOUT EXTRA COST TO THE OWNER.

E. WIRES AND CABLES

1. ALL WIRING SHALL BE MINIMUM COPPER NO. 12 AWG WITH 600V INSULATION FOR 120/208V WIRING AND 1000V FOR 600V WIRING OF CHEMICALLY CROSS-LINKED THERMOSETTING POLYETHYLENE (XLPE) MATERIAL SUITABLE FOR 90° OPERATION. CONDUCTORS NO. 10 AWG AND LARGER SHALL BE STRANDED. CONDUCTOR SIZES SHALL BE IN ACCORDANCE WITH THE OESC AND AS INDICATED ON THE DRAWINGS.
2. ALUMINUM WIRING IS NOT ACCEPTABLE UNLESS NOTED OTHERWISE.
3. NMD90 (PVC JACKETED) WIRING SHALL NOT BE USED AND IS NOT ACCEPTABLE.
4. ALL LOW VOLTAGE 6-24VDC EMERGENCY LIGHTING WIRING SHALL BE MINIMUM COPPER NO.10 AWG.
5. AC90 CABLE MAY ONLY BE USED FOR SHORT RUNS WITH MAXIMUM DISTANCE OF 3660mm (12ft) TO LIGHT FIXTURES AND RECEPTACLES IN CONCEALED AREAS ONLY UNLESS NOTED OTHERWISE ON DRAWINGS. AC90 CABLE (INCLUDING FIRE ALARM) IS NOT TO BE USED IN OPEN CEILING AREAS, ELEVATOR SHAFT AND STAIRWELL.
6. WHERE CONDUCTOR SIZES ARE NOT INDICATED THEY SHALL BE SIZED TO ENSURE THE VOLTAGE DROP DOES NOT EXCEED 2% FOR BRANCH CIRCUIT AND 3% FOR MAIN FEEDER AND THE REQUIREMENTS OF THE OESC.
7. ALL WIRING TO BE INSTALLED IN CONDUIT OR RACEWAY AND SHALL BE EQUIPPED WITH A GREEN INSULATED BOND CONDUCTOR SIZED TO MEET THE REQUIREMENTS OF THE OESC.

F. CONDUIT

1. EMT AND RIGID GALVANIZED STEEL (RGS) CONDUIT TO BE CONCEALED IN FINISHED AREAS OF THE BUILDING.
2. RIGID PVC CONDUIT TO BE USED ONLY FOR DIRECT BURIED INSTALLATIONS.
3. DB2 CONDUIT TO BE USED ONLY FOR CONCRETE ENCASED INSTALLATIONS.
4. FLEXIBLE METALLIC CONDUIT MAY BE USED FOR SHORT CONNECTIONS TO VIBRATING MECHANICAL EQUIPMENT.
5. MINIMUM CONDUIT SIZE SHALL BE 21mm (3/4") UNLESS NOTED OTHERWISE ON THE DRAWINGS.
6. WHERE SLEEVES OR OPENINGS ARE INSTALLED IN WALLS, FLOORS, ROOF OR PARTITIONS TO ACCOMMODATE RACEWAYS OR CABLES, PROVIDE ALL NECESSARY SEALS, FITTINGS, BARRIERS AND FIRE-RESISTANT MATERIALS TO RESTORE THE INSTALLATION TO ITS ORIGINAL FIRE RATING TO THE SATISFACTION OF THE GOVERNING AUTHORITIES.
7. WHERE CONDUIT MUST BE SURFACE MOUNTED TO EXPOSED CEILING/WALL SURFACES, PROVIDE EMT CONDUIT PAINTED TO MATCH CEILING/WALL SURFACES UNLESS NOTED OTHERWISE.
8. WHERE CONDUIT MUST BE SURFACE MOUNTED TO EXPOSED CEILING/WALL SURFACES, PROVIDE METALLIC WIREMOLD PAINTED TO MATCH CEILING/WALL SURFACES UNLESS NOTED OTHERWISE.
9. ALL CONDUITS THAT PENETRATE EXTERIOR WALLS/ROOF ARE TO BE SEALED AIR/LIQUID TIGHT AFTER INSTALLATION AT BOTH ENDS OF THE CONDUIT.
10. ALL LOW VOLTAGE WIRING IS TO BE INSTALLED IN CONDUIT UNLESS NOTED OTHERWISE ON DRAWINGS

G. OUTLETS AND JUNCTION BOXES

1. PROVIDE STICK ON LABELS (BLACK LETTERING ON WHITE BACKGROUND) INDICATING THE PANEL AND CIRCUIT NUMBER FOR ALL RECEPTACLES AND CONTROL DEVICES. LABELS SHALL BE NEATLY PLUMB AND LEVEL ON THE COVER PLATE. POORLY POSITIONED LABELS WILL NOT BE ACCEPTED.
2. THE OWNER/CONSULTANT RESERVES THE RIGHT TO CHANGE LOCATIONS OF OUTLETS TO WITHIN 3660mm (12ft) OF LOCATION INDICATED ON THE DRAWINGS WITHOUT EXTRA CHARGE, PROVIDING CONTRACTOR IS ADVISED PRIOR TO INSTALLATION.
3. ALL PULL/JUNCTION BOXES MUST BE ACCESSIBLE AFTER THE BUILDING IS COMPLETE. INSTALL PULL ROPE IN ALL EMPTY CONDUITS.
4. ALL JUNCTION BOXES AND CONDUIT SUPPORT SYSTEM SHALL BE SECURED TIGHT TO THE UNDERSIDE OF THE BUILDING STRUCTURE. SUSPENDED JUNCTION BOXES AND CONDUITS WILL NOT BE ACCEPTED.
5. ALL DEVICE BOXES TO BE RECESSED WHEREVER POSSIBLE. ALL JUNCTION BOXES SHALL BE SIZED TO ACCOMMODATE THE NUMBER OF RACEWAYS AND CONDUCTORS AND BE EASILY ACCESSIBLE AFTER INSTALLATION.
6. WHERE BOXES MUST BE SURFACE MOUNTED TO EXPOSED CEILING/WALL SURFACES, PROVIDE SURFACE MOUNTED WIREMOLD BOXES PAINTED TO MATCH CEILING/WALL SURFACES UNLESS NOTED OTHERWISE.

H. WIRING DEVICES

1. SWITCHES, RECEPTACLES AND OUTLETS TO BE DECORA STYLE, WHITE COLOR WITH STAINLESS STEEL COVER PLATES.
2. DUPLEX RECEPTACLES
   - 2.1. 15 OR 20 AMP, 120 VOLT SPECIFICATION GRADE COMPLETE WITH BACK BOX
   - 2.2. EXTERIOR RECEPTACLES TO HAVE WET LOCATION LISTED WITH "EXTRA DUTY" WHILE-IN-USE COVER
3. TOGGLE SWITCHES TO BE 15 OR 20 AMP, 120 OR 347 VOLT AS REQUIRED COMPLETE WITH BACK BOX.
4. LOW VOLTAGE SWITCHES, SENSORS OR DEVICES TO BE INSTALLED COMPLETE WITH DEVICE BACK BOX. ALL BOXES FOR CEILING MOUNTED DEVICES TO BE OCTAGON TYPE.
5. MAINTAIN A MINIMUM OF 150mm HORIZONTAL CLEARANCE BETWEEN BOXES INSTALLED BACK-TO-BACK IN WALL.

I. GROUNDING

1. GROUND THE SERVICE AND ALL NON-CURRENT CARRYING METAL PARTS IN ACCORDANCE WITH OESC.
2. PROVIDE COMPLETE GROUNDING AND BONDING SYSTEM AS REQUIRED BY OESC.
3. PROVIDE GROUND CONNECTION TO TELEPHONE PANEL, WATER MAIN AND ALL METALLIC PIPING.

J. FIRE STOPPING

1. SEALS FOR CABLES AND CONDUIT:
   - PROVIDE FIRE RATED SEALS FOR CONDUITS AND WIRING AT ALL FIRE RATED WALL/FLOOR PENETRATIONS.
   - APPLY FIRE SEALANT 3M CP 25WB+ , 4 HR FIRE BARRIER, L RATED, STC 54 TO SEAL ALL PENETRATIONS THROUGH ANY FIRE RATED ASSEMBLIES. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS FOR ALL FIRE RATED ASSEMBLIES.

K. DISCONNECT SWITCHES

1. INSTALL FUSED OR NON FUSED HORSE POWER RATED HEAVY DUTY DISCONNECT SWITCHES AS REQUIRED BY CODE OR AS SHOWN ON DRAWINGS. CSA TYPE RATINGS OF DISCONNECT SWITCHES TO BE AS INDICATED ON DRAWINGS.
2. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL FUSES IN ANY FUSED DISCONNECT SWITCH.

L. FIRE ALARM SYSTEM RENOVATIONS

1. THE ELECTRICAL CONTRACTOR SHALL HIRE A FIRE ALARM SYSTEM COMPANY TO TEST AND VERIFY ANY NEW OR RELOCATED FIRE ALARM DEVICES AND PROVIDE WRITTEN VERIFICATION REPORT INDICATING THE DEVICES HAVE BEEN TESTED AND VERIFIED TO THE LATEST APPLICABLE CODES AND STANDARDS.
2. THE ELECTRICAL CONTRACTOR SHALL CARRY ALL COSTS ASSOCIATED WITH TESTING AND VERIFICATION AS REQUIRED BY THE FIRE ALARM WORK INDICATED ON THE ELECTRICAL DRAWINGS.
3. THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH THE LATEST EDITION OF CAN/ULC-S524, "INSTALLATION OF FIRE ALARM SYSTEMS".
4. THE FIRE ALARM SYSTEM SHALL BE VERIFIED IN CONFORMANCE WITH THE LATEST EDITION OF CAN/ULC-S537, "VERIFICATION OF FIRE ALARM SYSTEM" TO ENSURE SATISFACTORY PERFORMANCE.
5. THE FIRE ALARM SYSTEM SHALL BE VERIFIED AND MONITORED BY SECURITY COMPANY IN CONFORMANCE TO CAN/ULC-S561, "INSTALLATION AND SERVICES FOR FIRE SIGNAL RECEIVING CENTERS AND SYSTEMS". CERTIFICATE OF FIRE ALARM MONITORING TO BE PROVIDED BY SECURITY COMPANY UPON COMPLETION OF PROJECT.

a. ALL LIFE SAFETY SYSTEMS INTEGRATED WITH THE FIRE ALARM SYSTEM MUST BE VERIFIED AND DOCUMENTED IN ACCORDANCE WITH OBC 3.2.10.1 AND THE LATEST EDITION OF CAN/ULC-S1001, "STANDARD FOR INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS". THE FOLLOWING IS TO BE PREPARED AND SUBMITTED BY THE ELECTRICAL CONTRACTOR AND SIGNED BY A P.ENG TO THE CONSULTANT FOR REVIEW AT THE START OF THE PROJECT
   - a.a. INTEGRATED TESTING PLAN – A WRITTEN SPECIFIC DOCUMENT, PREPARED BY THE INTEGRATED TESTING COORDINATOR, OUTLINING THE REQUIRED TESTS AND NECESSARY FUNCTIONAL RESULTS TO CONDUCT INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS TESTING
   - a.b. INTEGRATED TESTING REPORT – A WRITTEN PROJECT SPECIFIC DOCUMENT, PREPARED BY THE INTEGRATED TESTING COORDINATOR, DOCUMENTING THE IMPLEMENTATION OF THE INTEGRATED TESTING PLAN.
   - a.c. THE FOLLOWING SYSTEMS (WHERE APPLICABLE) ARE TO BE INTEGRATED INTO THE TESTING PLAN AND TESTING REPORT.
     - a.c.a. FIRE ALARM SYSTEM (INCLUDING SEQUENCE OF OPERATION)
     - a.c.b. ELEVATOR

M. LIGHTING

1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHT FIXTURES AS SPECIFIED ON PLANS. ALTERNATE LIGHT FIXTURES SHALL NOT BE USED IN CALCULATING BASE TENDER PRICE. THE ELECTRICAL CONTRACTOR MAY SUBMIT AN ALTERNATE LIGHTING PACKAGE WITH TENDER PRICE IF THERE IS A COST SAVING OVER THE BASE SPECIFIED LIGHT FIXTURES. THE CONTRACTOR SHALL STATE THE COST SAVING FOR THE ALTERNATE FIXTURES WITH TENDER AND THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT THE ALTERNATE FIXTURES PACKAGE COST SAVING.
2. SUPPLY AND INSTALL ALL MOUNTING HARDWARE AND ACCESSORIES TO SUIT THE CEILING AND INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND PROVIDE REQUIRED MOUNTING ACCESSORIES AS REQUIRED. ALL FIXTURES TO BE CSA OR ULC LISTED.
3. ALL LIGHT FIXTURES THAT ARE NOT SUPPORTED DIRECTLY BY AN OUTLET BOX AS PER OESC 30-302, ARE TO BE SECURED TO BUILDING STRUCTURE INDEPENDENTLY BY JACK CHAINS OR AIRCRAFT CABLES.
4. ALL LOW VOLTAGE LIGHTING CONTROL DEVICES TO BE CSA OR ULC LISTED.

ELECTRICAL DRAWING LIST	
E0.1	SPECIFICATIONS AND DRAWING LIST SHEET 1 OF 2
E0.2	SPECIFICATIONS SHEET 2 OF 2
E0.3	LEGENDS, ABBREVIATIONS AND SCHEDULES
E0.4	DEVICE SCHEDULES AND DETAILS
E0.5	REFERENCE PHOTOS
E1.1	ELECTRICAL DEMO PLANS
E2.1	ELECTRICAL NEW PLANS
E3.1	FIRE ALARM RISER DIAGRAM – NEW

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

SPECIFICATIONS AND
DRAWING LIST SHEET 1 OF 2

GRGURIC
ARCHITECTS
INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E0.1
CHECKED PI	
PRINT DATE	

ELECTRICAL SPECIFICATIONS

N. LIGHTING CONTROLS

1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHTING CONTROL DEVICES AS SPECIFIED ON PLANS. ALTERNATE LIGHTING CONTROL DEVICES SHALL NOT BE USED IN CALCULATING BASE TENDER PRICE. THE ELECTRICAL CONTRACTOR MAY SUBMIT AN ALTERNATE LIGHTING CONTROL PACKAGE WITH TENDER PRICE IF THERE IS A COST SAVING OVER THE BASE SPECIFIED LIGHTING CONTROL PACKAGE. THE CONTRACTOR SHALL STATE THE COST SAVING FOR THE ALTERNATE LIGHTING CONTROL DEVICES WITH TENDER AND THE OWNER RESERVE THE RIGHTS TO ACCEPT OR REJECT THE ALTERNATE LIGHTING CONTROL PACKAGE COST SAVING.

2. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LOW VOLTAGE LIGHTING CONTROL DEVICES INCLUDING WIRING, ACCESSORIES, COVER PLATES, ETC. ALL LOW VOLTAGE WIRING DETAILS TO BE CONFIRMED BY LIGHTING CONTROL MANUFACTURER AND ALL LIGHTING CONTROL WIRING TO BE INSTALL IN CONDUIT/BOXES.

3. ALL LOW VOLTAGE LIGHTING CONTROL WIRING TO BE INSTALLED IN CONDUIT WHERE INSTALLED IN EXPOSED AREAS. LOW VOLTAGE WIRING INSTALLED ABOVE ACCESSIBLE CEILING SPACES TO BE PROPERLY SUPPORTED SECURED TO STRUCTURE.

4. ELECTRICAL CONTRACTOR TO SUBMIT DETAILED OCCUPANCY SENSOR, LOW VOLTAGE SWITCHING AND POWER PACK WIRING DIAGRAMS SPECIFIC TO THIS PROJECT DURING SHOP DRAWING SUBMISSION STAGE FOR REVIEW BY THE CONSULTANT.

5. ELECTRICAL CONTRACTOR TO FIELD ADJUST AIMING, SENSITIVITY AND TIME DELAY AS REQUIRED.

6. LIGHTING CONTROL DEVICES AND CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH DRAWINGS AND MANUFACTURES INSTALLATION INSTRUCTIONS. WHERE OCCUPANT SENSORS, TIME SWITCHES, PROGRAMMABLE SCHEDULE CONTROLS, OR PHOTOSENSORS ARE INSTALLED, AT A MINIMUM, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:

   6.1. CERTIFY THAT OCCUPANT SENSORS HAVE BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS.

   6.2. OCCUPANCY SENSORS AND EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY.

      6.2.1. STATUS INDICATOR OPERATES PROPERLY
      6.2.2. CONTROLLED LIGHTS TURN OFF OR DOWN TO THE PERMITTED LEVEL WITHIN REQUIRED TIME
      6.2.3. FOR AUTO–ON OCCUPANT SENSORS, THE LIGHTS TURN ON TO THE PERMITTED LEVEL WITH THE TIME REQUIRED
      6.2.4. FOR MANUAL–ON SENSORS, THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED
      6.2.5. THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT IN NEARBY AREAS OR BY HVAC OPERATION

O. NETWORK AND SYSTEMS

1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL COMPLETE RACEWAY (CONDUIT) SYSTEM c/w PULL STRING AND NETWORK/DATA OUTLET BOXES. COORDINATE ALL WORK WITH THE HALTON DISTRICT SCHOOL BOARD APPROVED I.T. CONTRACTOR.

2. ALL VOICE AND DATA CABLING TO BE INSTALLED IN 3/4" EMT CONDUIT FROM EACH VOICE/DATA OUTLET TO ACCESSIBLE CEILING SPACE. ALL DATA CABLING TO BE INSTALLED IN EXPOSED CEILING SPACES TO BE INSTALLED IN EMT CONDUIT AND PULL BOXES AND SIZED ACCORDING TO NUMBER OF DATA CABLES LOCATED IN THAT SPACE. WHERE VOICE AND DATA CABLING IS INSTALLED ABOVE DROPPED ACCESSIBLE CEILING SPACES, SUPPLY AND INSTALL 'J HOOKS' AND/OR BASKET CABLE TRAY AS REQUIRED TO SUPPORT ALL VOICE AND DATA CABLING. UNDER NO CIRCUMSTANCES SHOULD VOICE OR DATA CABLING BE INSTALLED LOOSE OR ON TOP OF T–BAR CEILINGS.

3. MAXIMUM NUMBER OF VOICE AND DATA CABLES IN CONDUIT:

3.1. 21mm (3/4") = 3 CABLES	3.6. 63mm (2–1/2") = 42 CABLES
3.2. 27mm (1") = 6 CABLES	3.7. 78mm (3") = 60 CABLES
3.3. 35mm (1–1/4") = 10 CABLES	3.8. 91mm (3–1/2") = 82 CABLES
3.4. 41mm (1–1/2") = 15 CABLES	3.9. 103mm (4") = 107 CABLES
3.5. 53mm (2") = 27 CABLES	

THE HALTON DISTRICT SCHOOL BOARD APPROVED I.T. CONTRACTOR SHALL BE RESPONSIBLE FOR;

5. PROVIDE ALL CABLING FOR NETWORK/DATA SYSTEM.

6. PROVIDE ALL CATEGORY 6 WIRING FOR DATA OUTLETS AND WIRELESS ACCESS POINTS.

7. ALL DATA CABLING SHALL BE BLUE IN COLOR, AND SHALL BE FT–6 RATED UTP CABLE. ALL CABLE RUNS SHALL BE UNIQUELY NUMBERED AT BOTH ENDS. MAXIMUM LENGTH OF CATEGORY 6 DATA CABLE SHALL BE 90 METERS.

8. ALL CATEGORY 6 DATA WIRING SHALL BE TERMINATED AT FIELD INSTALLED RJ45 (WHITE) KEYSTONE JACKS/OUTLETS (SIGNAMAX KJ458MT–C6C–WH) AND THE NETWORK PATCH PANEL (SIGNAMAX 24U0HDMMP) IN IDF CLOSET 225. NETWORK PATCH PANEL SHALL BE PROVIDED BY CONTRACTOR. NETWORK PATCH PANEL SHALL HAVE MINIMUM 25% SPARE CAPACITY.

9. RJ45 OUTLETS SHALL BE DECORA STYLE AND FLUSH MOUNTED/RECESSED IN THE WALLS. EACH RJ45 OUTLET SHALL BE LABELED. PROVIDE BLACK LETTER ON WHITE BACKGROUND P–TOUCH TYPE LABELS.

10. ALL CATEGORY 6 NETWORK WIRING SHALL BE TESTED TO CURRENT ANSI/TIA/EIA STANDARDS. CABLE TEST RESULTS SHALL BE SUBMITTED TO THE OWNER.

P. FIELD QUALITY CONTROL

1. TEST ALL WORK. REMEDY AND MAKE GOOD ANY DEFECTS DISCLOSED BY SUCH TESTS AND TEST THE WORK AGAIN. TEST IN ACCORDANCE WITH APPROVED PROCEDURE.

2. TEST EACH POWER AND CONTROL CONDUCTOR FOR CONTINUITY AND GROUNDS. IMMEDIATELY FOLLOWING THIS TEST, CONNECT CONDUCTOR TO ITS PERMANENT TERMINAL.

3. INSPECT ALL CONNECTIONS, PROTECTIVE AND SAFETY DEVICES PRIOR TO ENERGIZING ANY EQUIPMENT AND MAKE NECESSARY ADJUSTMENTS, WHERE REQUIRED, TO ASSURE A PROPER AND SAFE OPERATION.

4. ALL EQUIPMENT SHALL BE WIPED CLEAN AND VACUUMED.

Q. MECHANICAL EQUIPMENT

1. PROVIDE LINE VOLTAGE CONNECTIONS AS REQUIRED FOR ALL MECHANICAL EQUIPMENT. CONFIRM FINAL CONNECTIONS, LOADS AND LOCATIONS PRIOR TO INSTALLATION. NO EXTRAS WILL BE ALLOWED FOR ELECTRICAL CONTRACTOR NOT THOROUGHLY REVIEWING ALL MECHANICAL DRAWINGS DURING TENDER AND SHOP DRAWINGS DURING CONSTRUCTION.

2. FUSES PROTECTING MOTOR FEEDERS TO BE TIME–DELAY TYPE UNLESS NOTED OTHERWISE.

3. PROVIDE ALL NECESSARY LINE VOLTAGE CONTROL WIRING FOR MECHANICAL CONTROLS CONTRACTOR AS REQUIRED. PROVIDE CONTROL WIRING AS SHOWN ON THE ELECTRICAL AND MECHANICAL DRAWINGS.

4. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL NECESSARY COMBINATION STARTERS FOR MECHANICAL EQUIPMENT UNLESS NOTED OTHERWISE ON MECHANICAL DRAWINGS.

R. EXECUTION

RACEWAYS:

1. INSTALL CONDUIT AS A COMPLETE SYSTEM WITHOUT WIRES. CONTINUE CONDUIT FROM FITTING TO FITTING AND FASTEN SECURELY TO PLACE. CLEAN AND SEAL CONDUIT SYSTEM UNTIL WIRING IS INSTALLED.

2. INSTALL CONDUIT PARALLEL OR AT RIGHT ANGLES TO PROPERTY LINES, CURBS, ETC., WHERE PRACTICAL.

3. CUT ALL CONDUITS SQUARE AND REAM TO REMOVE SHARP EDGES AND BURRS. FIT CONDUITS CLOSELY AND TIGHTLY IN COUPLINGS.

4. INSTALL A PULL WIRE IN EACH EMPTY CONDUIT PROVIDED FOR FUTURE USE BY OTHERS.

5. CAP ALL CONDUITS WITH METAL, CARDBOARD OR PLASTIC, DURING CONSTRUCTION.

WIRES AND CABLES:

1. DO NOT PULL THE WIRES BEFORE THE ENTIRE CONDUIT SYSTEM IS COMPLETED AND CLEANED.

2. ENSURE THAT WIRES INSTALLED IN THE INTERIOR OF EQUIPMENT ARE NEATLY LACED WITH PLASTIC TIES AND GRASPED AND SECURED IN PLACE.

3. RUN POWER CONDUCTORS FULL LENGTH WITHOUT SPLICES OR TAPS FROM ORIGIN TO DESTINATION, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS. NO CABLE SPLICING ALLOWED IN UNDERGROUND INSTALLATION.

4. IDENTIFY EACH CABLE AND WIRE AT BOTH ENDS WITH PROPER CABLE AND WIRE NUMBER AS SHOWN ON THE DRAWINGS AND CABLE SCHEDULES IN ALL CONTROL PANELS, CONTROL DEVICES, DISTRIBUTION PANELS, PULL AND JUNCTION BOXES, ETC., USING APPROVED CABLE AND WIRE MARKERS.

5. FOLLOW NORMAL RECOMMENDED PRACTICES WHEN INSTALLING CABLES IN CABLE TRAYS TO AVOID DAMAGE TO CABLE SHEATHS, CONDUCTORS OR INSULATION. ENSURE THAT CABLES ARE NOT DAMAGED BY EXCESSIVE TENSION WHEN PULLING. REPLACE ANY DAMAGED AND REJECTED CABLE WITHOUT COST TO THE OWNER.

6. USE SUITABLE NON–HARDENING CABLE LUBRICANTS, WHERE REQUIRED, WHICH DO NOT CONTAIN ANY MATERIALS SUCH AS OIL, GREASE OR OTHER COMPOUNDS HARMFUL TO RUBBER, PVC OR POLYETHYLENE.

7. MAKE SPLICES AND TAPS FOR CONTROL CONDUCTORS AT APPROVED TERMINAL BLOCKS IN JUNCTION BOXES.

AB. ELECTRICAL PRICE BREAKDOWN

1. ELECTRICAL CONTRACTOR TO SUBMIT TOTAL BID/TENDER WITH PRICE BREAKDOWN AS FOLLOWS;
   1.1. PERMITS AND MOBILIZATION
   1.2. DISTRIBUTION EQUIPMENT – MATERIAL
   1.3. DISTRIBUTION EQUIPMENT – LABOUR
   1.4. INTERIOR LIGHT FIXTURES AND CONTROLS – MATERIAL
   1.5. INTERIOR LIGHT FIXTURES AND CONTROLS – LABOUR
   1.6. INTERIOR CONDUIT AND BRANCH WIRING POWER AND LIGHTING – MATERIAL
   1.7. INTERIOR CONDUIT AND BRANCH WIRING POWER AND LIGHTING – LABOUR
   1.8. INTERIOR CONDUIT AND WIRING FIRE ALARM – MATERIAL
   1.9. INTERIOR CONDUIT AND WIRING FIRE ALARM – LABOUR
   1.10. FIRE ALARM VERIFICATION
   1.11. FIRE ALARM INTEGRATED TESTING PLAN AND REPORT
   1.13. CLOSE OUT MANUALS, REPORTS AND TESTS
   1.14. NETWORK/DATA SYSTEM – MATERIAL
   1.15. NETWORK/DATA SYSTEM – LABOUR, SET UP AND COMMISSIONING
   1.16. AS–BUILT AUTO CAD AND PDF DRAWINGS AND ELECTRICAL CONTRACTOR CLOSEOUT DOCUMENTS
   1.17. CONTRACTOR TO CARRY CASH ALLOWANCE OF $10 000 FOR RELOCATION OF BRANCH WIRING, CONDUIT, PULL BOXES, JUNCTION BOXES ON THE THIRD FLOOR.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

SPECIFICATIONS
SHEET 2 OF 2

GRGURIC
ARCHITECTS
INCORPORATED

28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E0.2
CHECKED PI	
PRINT DATE	

ELECTRICAL SPECIFICATIONS

CONTROL DEVICE	
SYMBOL	DESCRIPTION
$X	120V OR 347V SINGLE GANG, SINGLE POLE SWITCH, UNLESS NOTED WITH CONTROL DEVICE TYPE DESIGNATION LETTER. 'X' DENOTES CONTROL DEVICE TYPE
X$X	120V OR 347V DOUBLE GANG, TWO SINGLE SWITCHES, UNLESS NOTED WITH CONTROL DEVICE TYPE DESIGNATION LETTER. 'X' DENOTES CONTROL DEVICE TYPE
(MX)	CEILING MOUNTED VACANCY/OCCUPANCY SENSOR. 'X' DENOTES CONTROL DEVICE TYPE
MX	WALL MOUNTED VACANCY/OCCUPANCY SENSOR. 'X' DENOTES CONTROL DEVICE TYPE
PPX	POWER PACK. 'X' DENOTES CONTROL DEVICE TYPE
T	LINE VOLTAGE THERMOSTAT
GENERAL NOTE: 1. REFER TO CONTROL DEVICE SCHEDULE FOR DETAILED SPECIFICATION.	

GENERAL LIGHTING	
SYMBOL	DESCRIPTION
LX	2'X4' (610mmX1220mm) LIGHT FIXTURE. 'X' DENOTES TYPE
LX	1'X4' (305mmX1220mm) LIGHT FIXTURE. 'X' DENOTES TYPE
LX	CEILING MOUNTED STRIP LIGHT FIXTURE. 'X' DENOTES TYPE
LX	WALL MOUNTED STRIP LIGHT FIXTURE. 'X' DENOTES TYPE
LX	TRACK LIGHT FIXTURE. QUANTITY OF TRACK HEADS AND LENGTH OF TRACK TO BE AS SHOWN ON DRAWINGS. 'X' DENOTES TYPE
LX	LED TAPE LIGHT. LENGTH OF TAPE LIGHT TO BE AS SHOWN ON DRAWINGS. 'X' DENOTES TYPE
(LX)	ROUND DOWN LIGHT FIXTURE. 'X' DENOTES TYPE
GENERAL NOTE: 1. REFER TO GENERAL LIGHTING SCHEDULE FOR DETAILED SPECIFICATIONS.	

POWER AND SYSTEMS	
SYMBOL	DESCRIPTION
	120VAC, 15 AMP DUPLEX RECEPTACLE
	120VAC, 15 AMP DUPLEX GROUND FAULT CIRCUIT INTERRUPT RECEPTACLE
	120VAC, 15 AMP DUPLEX ISOLATED GROUND RECEPTACLE
	120VAC, 15 AMP SPLIT DUPLEX RECEPTACLE
	120VAC, 20 AMP T–SLOT DUPLEX RECEPTACLE
	120VAC, 20 AMP T–SLOT DUPLEX GROUND FAULT CIRCUIT INTERRUPT RECEPTACLE
	HARD WIRED POWER CONNECTION RATED PER EQUIPMENT SPECIFICATION
	SURFACE MOUNTED ELECTRICAL PANEL BOARD
	RECESSED ELECTRICAL PANEL BOARD
	FAN OR MOTOR
	NON–FUSED DISCONNECT SWITCH
	FUSED DISCONNECT SWITCH
JB	JUNCTION BOX
PB	PULL BOX
XD	DATA OUTLET. 'X' DENOTES NUMBER OF DATA OUTLET(S)
XV	TELEPHONE OUTLET. 'X' DENOTES NUMBER OF TELEPHONE CABLE(S)
WA	WIRELESS ACCESS POINT
GENERAL NOTE: 1. REFER TO POWER AND SYSTEMS SCHEDULE FOR DETAILED SPECIFICATION.	

FIRE ALARM SYSTEMS	
SYMBOL	DESCRIPTION
C I	FIRE ALARM PHOTOELECTRIC SMOKE DETECTOR. 'I' DENOTES INTELLIGENT RELAY BASE WITH DRY CONTACTS. 'C' DENOTES FIRE ALARM ADVANCED COMBINATION FIRE DETECTOR WITH SMOKE, CO, LIGHT/FLAME AND HEAT AND LOCAL SOUNDER BASE
V I H R	FIRE ALARM FIXED HEAT DETECTOR, 57°C (135°F). 'R' DENOTES RATE OF RISE HEAT DETECTOR. 'H' DENOTES HIGH TEMPERATURE HEAT DETECTOR, 88°C (190°F). 'I' DENOTES INTELLIGENT RELAY BASE WITH DRY CONTACTS. 'V' DENOTES CONVENTIONAL HEAT DETECTOR WIRED VIA ADDRESSABLE MODULE
EOL	END OF LINE RESISTOR
ISO	ISOLATING RELAY
FACP	SURFACE MOUNTED FIRE ALARM CONTROL PANEL
FACP	RECESSED FIRE ALARM CONTROL PANEL
FAA	SURFACE MOUNTED FIRE ALARM ANNUNCIATOR
FAA	RECESSED FIRE ALARM ANNUNCIATOR
GENERAL NOTE: 1. REFER TO "NEW FIRE ALARM SYSTEM" OR "FIRE ALARM SYSTEM RENOVATIONS" IN ELECTRICAL SPECIFICATION FOR MORE DETAILS.	

EMERGENCY LIGHTING	
SYMBOL	DESCRIPTION
BUX	EMERGENCY BATTERY UNIT WITH TWO DC HEADS. 'X' DENOTES TYPE
GENERAL NOTE: 1. REFER TO EMERGENCY LIGHTING SCHEDULE FOR DETAILED SPECIFICATION.	

ABBREVIATIONS	
AFCI	DENOTES ARC FAULT CIRCUIT INTERRUPTER
AFF	DENOTES ABOVE FINISHED FLOOR
AFG	DENOTES ABOVE FINISHED GRADE
CH	DENOTES COUNTER HEIGHT
c/w	DENOTES COMPLETE WITH
DS	DENOTES DISCONNECT SWITCH
DCLX	DENOTES FIRE ALARM DATA COMMUNICATION LINK STYLE. 'X' DENOTES STYLE TYPE
ED	DENOTES EXISTING DEVICE TO BE DEMOLISHED INCLUDING WIRING/CONDUIT(S) STRIPPED BACK TO SOURCE
ER	DENOTES EXISTING DEVICE TO BE RELOCATED
EX	DENOTES EXISTING DEVICE TO REMAIN
GFCI	DENOTES GROUND FAULT CIRCUIT INTERRUPTER
HL	DENOTES DEVICE MOUNTED AT HIGH LEVEL NEAR CEILING
HV	DENOTES HIGH VOLTAGE
LG	DENOTES LEXAN GUARD
MF	DENOTES DEVICE MOUNTED AT THE FACE OF MILLWORK
NL	DENOTES NIGHT LIGHT
NTS	DENOTES NOT TO SCALE
REL	DENOTES EXISTING DEVICE AT RELOCATED LOCATION
TR	DENOTES TAMPER RESISTANT
TX	DENOTES TRANSFORMER
TYP	DENOTES TYPICAL
WG	DENOTES WIRE GUARD SUITABLE FOR DEVICE SHOWN
WP	DENOTES WEATHERPROOF

LINE TYPES	
LINE TYPE	DESCRIPTION
----------	DENOTES LINE VOLTAGE WIRE
—·—·—	DENOTES 0–10V DIMMING WIRE
—— – – —— – – ——	DENOTES LOW VOLTAGE WIRE
—— · —— · —— · ——	DENOTES LINE VOLTAGE AND 0–10V DIMMING WIRE
----------	DENOTES DEVICE TO BE DEMOLISHED OR RELOCATED
————	DENOTES NEW OR RELOCATED DEVICE
————	DENOTES EXISTING DEVICE TO REMAIN

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON, L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

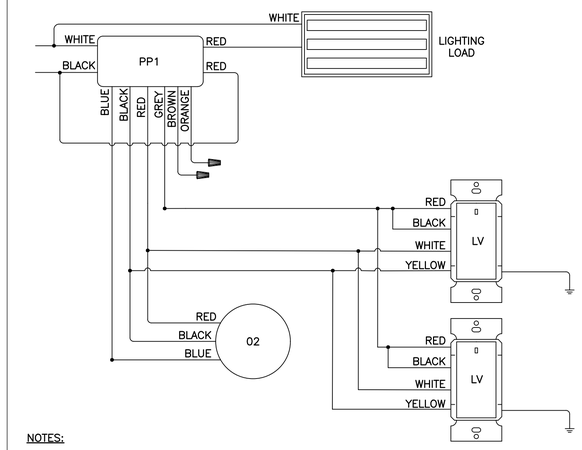
WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

LEGENDS AND
ABBREVIATIONS

GRGURIC
ARCHITECTS
INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E0.3
CHECKED PI	
PRINT DATE	



NOTES:

1. QUANTITY AND TYPE OF OCCUPANCY SENSOR, LIGHTING FIXTURE, POWER PACK AS SHOWN ON PLAN DRAWINGS.
2. REFER TO MANUFACTURER'S WIRING DIAGRAM FOR DETAILS.

WIRING DIAGRAM FOR LOW VOLTAGE MULTI-WAY ON/OFF SWITCHING WITH SENSOR

EQUIPMENT SCHEDULE

EQUIPMENT			MOTOR							STARTER (SUPPLIED BY/INSTALLED BY)				ACCESSORIES (SUPPLIED BY/INSTALLED BY)			FIRE ALARM	
TAG	DESCRIPTION	LOCATION	VOLTAGE (V)	PHASE	HORSEPOWER (HP)	WATTS (W)	MCA (A)	LOAD FLA (A)	MOCP (A)	PACKAGED STARTER	MANUAL STARTER	COMB. FVNR	VFD	LINE VOLTAGE THERMOSTAT	LOW VOLTAGE THERMOSTAT	LOCAL DISCONNECT SWITCH	FIRE ALARM SHUTDOWN	COMMENTS
EF-1	EXISTING EVACUATION FAN	ELEVATOR MACHINE ROOM	120	1	–	–	–	–	–	–	–	–	–	–	–	–	–	
RTU-1	EXISTING CONDENSOR	ROOF	208	3	–	–	–	77.5 000	90	–	–	–	–	–	–	E/E	–	
AC-1	NEW INDOOR AIR CONDITIONER	ELEVATOR MACHINE ROOM	208	1	–	–	1	–	30	–	–	–	–	M/M	–	–	–	BACKFED FROM CU-1
CU-1	NEW COOLING UNIT	ROOF	208	1	–	–	11	–	30	–	–	–	–	–	–	E/E	–	
P-1	NEW DUPLEX PUMP PACK	ELEVATOR MACHINE ROOM	120	1	3/4	–	–	–	–	M/E	–	–	–	–	–	–	–	

LEGEND: 'M' DENOTES MECHANICAL CONTRACTOR

'E' DENOTES ELECTRICAL CONTRACTOR

'G' DENOTES GENERAL CONTRACTOR

GENERAL LIGHTING SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	VOLTAGE (V)	WATTS (W)	LUMENS	EFFICACY (LUMENS/W)	0-10V DIMMING	COLOUR TEMP(K)	CRI	MOUNTING	EQUIVALENT ACCEPTED	COMMENTS
L1			EXISTING SURFACE MOUNT 1'X4' FLUORESCENT TUBE LIGHTING	120					4100				
L2			EXISTING 24" UNDER CABINET LIGHT	120					4100				
L3			EXISTING PIT LIGHTING WITH WIRE GAURD	120					4100				
L4	SIGNIFY	OWL-4-40L-840-UNV	NEW 4' WORK ROOM LIGHTING	120	37	3933	106.3	NO	4000	80	SURFACE CEILING		
L5	SIGNIFY	FSI-4-55L-840-120	NEW 4' FLUXSTREAM ELEVATOR MACHINE ROOM LIGHTING	120	45	5826	129.5	NO	4000	80	WALL		
L6	SIGNIFY	FSX-4-60L-840-120	NEW 4' FLUXSTREAM PIT LIGHTING	120	45	6025	133.9	NO	4000	80	SURFACE CEILING		MUST C/W WIRE GUARD: FSIWG4

CONTROL DEVICE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	VOTLAGE AC (V)	VOLTAGE DC (VDC)	NO. OF RELAYS	DIMMING	MOUNTING	EQUIVALENT ACCEPTED	COMMENTS
PP1	LEGRAND	BZ-250	SINGLE RELAY POWER PACK	120		1				
LV	LEGRAND	LVSW-101-W	LOW VOLTAGE MOMENTARY ON/OFF SWITCH		24	1		WALL		
O1			EXISTING OCCUPANCY SENSOR		24			WALL		
O2	LEGRAND	DT-300-W	24V SINGLE RELAY	120		1	NO	CEILING		
O3	LEGRAND	DW-100-W	120V SINGLE RELAY, NO DIM	120		1	NO	WALL		

FIRE ALARM SYSTEMS SCHEDULE

COUNT	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	COMMENTS
1	MIRCOM	RM-1008A	8-RELAY CIRCUIT MODULE c/w EIGHT (8) FORM-C CONTACTS	TO TALK TO THE ELEVATOR CONTROLLER FOR RECALL
1	MIRCOM	DM-1008A	8-ZONE CONVENTIONAL MODULE	NEEDED FOR ADDITIONAL 6 ZONES
5	MIRCOM	C2W-BA	SMOKE DETECTORS	1 ZONE EACH, USED IN EACH LOBBY, TOP OF SHAFT, AND ELEVATOR MACHINE ROOM.
1	MIRCOM	5603A	2-WIRE FIXED HEAT DETECTOR	1 ZONE FOR USE IN PIT.
6	MIRCOM	MP-300	END OF LINE RESISTOR	

EMERGENCY LIGHTING SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	VOLTAGE AC (VAC)	VOLTAGE DC (VDC)	LAMP BASE	LAMP TYPE	LAMP WATTS	EQUIVALENT ACCEPTED	COMMENTS
BU1	BELUCE	G-12-36-BTMR16-LED -MR16		120	12	MR16	LED	7		

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET ,
BURLINGTON, ON, L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

DEVICE SCHEDULES AND DETAILS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E0.4
CHECKED PI	
PRINT DATE	

GROUND FLOOR – CORRIDOR
NTS

GROUND FLOOR – CORRIDOR CEILING – CABLES
NTS

GROUND FLOOR – WORK ROOM A103 CEILING – 1
NTS

GROUND FLOOR – WORK ROOM A103 CEILING – 2
NTS

SECOND FLOOR – SERVER ROOM
NTS

SECOND FLOOR – CABLES TO BE RELOCATED
NTS

THIRD FLOOR – ENGLISH ROOM CEILING
NTS

THIRD FLOOR – LEFT SIDE PULL BOX
NTS

THIRD FLOOR – RIGHT SIDE PULL BOX
NTS

THIRD FLOOR – TOWARD PULL BOX
NTS

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET ,
BURLINGTON, ON, L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

REFERENCE PHOTOS - DEMO

GRGURIC
ARCHITECTS
INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E0.5
CHECKED PI	
PRINT DATE	

GENERAL DEMOLITION NOTES:

1. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING ALL ELECTRICAL ITEMS ON SITE PRIOR TO COMMENCING WORK. IF THERE ARE ERRORS OR OMISSIONS ON THE DRAWINGS, THE CONTRACTOR WILL MODIFY THE DRAWINGS AND NOTIFY THE CONSULTANT OF ANY MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS.
2. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR REMOVING/RELOCATING ALL ELECTRICAL DEVICES/CABLES/CONDUITS ETC. IN AREAS BEING DEMOLISHED AS SHOWN ON ARCHITECTURAL AND ELECTRICAL DRAWINGS. NO ATTEMPT HAS BEEN MADE TO IDENTIFY EVERY SINGLE EXISTING ELECTRICAL DEVICE ON EXISTING DRAWINGS. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING TENDER PRICE TO REVIEW WHAT IS REQUIRED WITH RESPECT TO DEMOLITION. NO EXTRAS WILL BE ALLOWED FOR NOT THOROUGHLY REVIEWING THE EXISTING SITE.
3. ELECTRICAL CONTRACTOR TO RE-ARRANGE AND RE-SUPPORT ALL EXISTING BOXES, CONDUITS AND WIRING ABOVE EXISTING CEILING TILES. USE NEW BOX, CONDUITS AND WIRING AS REQUIRED TO MAKE SAFE AND CLEAN INSTALLATION TO MEET CURRENT CODE AND ESA REQUIREMENTS.
4. UNUSED CONDUITS AND WIRING IN EXISTING CEILING SPACE TO BE REMOVED. PROVIDE THE REQUIRED TESTS TO ENSURE SAFE REMOVAL AS REQUIRED.
5. FOR EXISTING PULL BOXES AND JUNCTION BOXES WITH NO COVER PLATES ABOVE EXISTING CEILINGS, THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL NEW COVERS TO MAKE SAFE AS REQUIRED.
6. FOR INDICATED DEVICES SHOWN TO BE DEMOLISHED, THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL WIRING AND CONDUITS BACK TO SOURCE AND REWORK OR PROVIDE NEW WIRING/CONDUIT TO DEVICES THAT MAY BE FED ON THE SAME CIRCUIT AS THE DEVICE TO BE DEMOLISHED.
7. FOR INDICATED DEVICES SHOWN TO BE RELOCATED, ELECTRICAL CONTRACTOR TO REWORK OR PROVIDE NEW WIRING/CONDUIT TO REINSTALL EXISTING DEVICES AS SHOWN IN NEW PLAN.
8. ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY WITH THE OWNER ALL DEVICES TO BE SALVAGED, MOVED & STORED PRIOR TO DEMOLITION.

EXISTING

PANEL ID: PP-15A — MOUNTING: SURFACE — PANEL MAINS: 100 A
VOLTAGE: 120/208V — LOCATION: MECH ROOM A101 — MAIN BREAKER: 100 A
PHASE/WIRE: 3PH/4W — FED FROM: PP-15 — KAIC RATING:

DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
EMERGENCY LIGHTS	15A-1P				1A	A	2A					
MACHINE ROOM EXAUST FAN	15A-1P				1B		2B					
ELEVATOR PIT OUTLET	15A-1P				3A	B	4A				30A-3P	ELEVATOR CONTROL PANEL
	15A-1P				3B		4B					
SOCIAL SCIENCES, W/R REC	15A-1P				5A	C	6A					
ELEVATOR PIT LIGHTS	15A-1P				5B		6B					
SOCIAL SCIENCES, W/R REC	15A-1P				7A	A	8A				15A-1P	ELEVATOR MACHINE ROOM OUTLETS
BOYS W/R	15A-1P				7B		8B					
PHOTOCOPIER STAFF ROOM	15A-1P				9A	B	10A				15A-1P	ELEVATOR MACHINE ROOM OUTLETS
					9B		10B					
COMPUTERS STAFF ROOM	15A-1P				11A	C	12A				15A-1P	WORKROOM OUTLETS
					11B		12B					
AIR HANDLING UNIT	20A-3P				13A	A	14A				15A-1P	PATIENT BED
					13B		14B				15A-1P	A101/HALL
					15A	B	16A				15A-1P	DOOR OP.
					15B		16B				15A-1P	EMERG. LIGHT OFFICE
					17A	C	18A				15A-1P	KITCHEN
					17B		18B				15A-1P	PATIENT LIFT

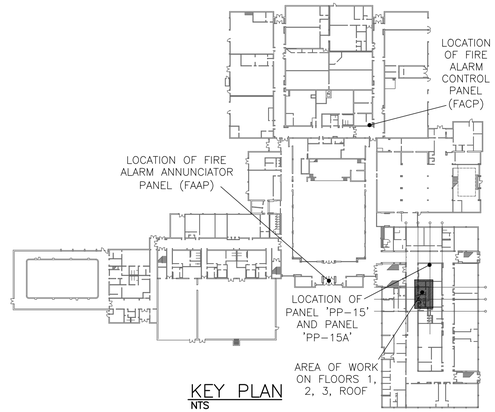
BRK TYPE: * GFCI BREAKER — LOAD PHASE A (W): # — TOTAL LOAD (W): #
** COMBINATION AFCI — LOAD PHASE B (W): ### — TOTAL AMPS (A): ######
*** LOCK ON BREAKER — LOAD PHASE C (W): #

EXISTING

PANEL ID: PP-15 — MOUNTING: SURFACE — PANEL MAINS: 400 A
VOLTAGE: 120/208V — LOCATION: MECH ROOM A101 — MAIN BREAKER: 400 A
PHASE/WIRE: 3PH/4W — FED FROM: — KAIC RATING:

DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
2ND FLR. AIR UNIT					1	A/B/C	2					INTERIOR AIR UNIT
INTERIOR RETURN AIR FAN					3	A/B/C	4					SPARE
PANEL PP-15A	100A-3P				5	A/B/C	6					CONDENSATE PUMP
HEATING PUMP #2					7	A/B/C	8					HEATING PUMP #1
GENERAL OFFICE AIR CONDITIONER					9	A/B/C	10					REFRIDGE. COMPRESSOR
SPARE					11	A/B/C	12					SPARE
POWER PANEL-14					13	A/B/C	14					PORTABLE #1
					15	A/B/C	16					FIRST FLOOR AIR UNIT
					17	A/B/C	18					
					19	A/B/C	20					

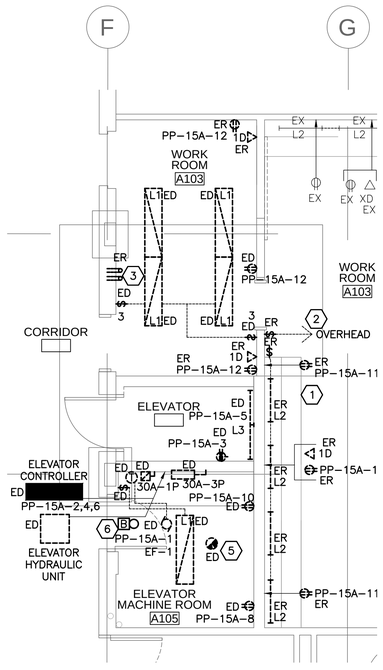
BRK TYPE: * GFCI BREAKER — LOAD PHASE A (W): #### — TOTAL LOAD (W): ####
** COMBINATION AFCI — LOAD PHASE B (W): ### — TOTAL AMPS (A): #
*** LOCK ON BREAKER — LOAD PHASE C (W): ###



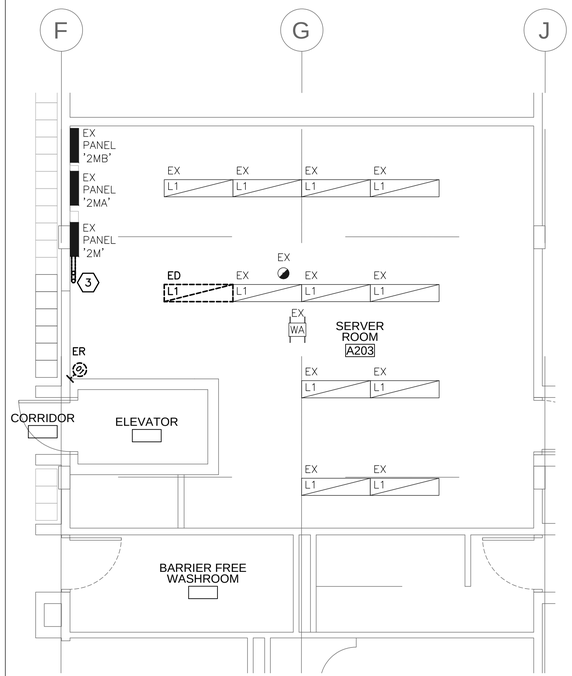
KEY PLAN
NTS

DEMOLITION KEYNOTES:

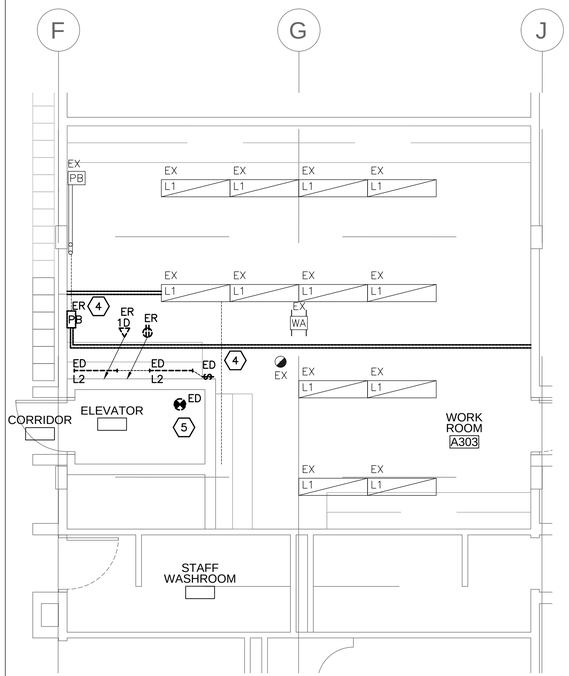
1. UNDER-CABINET LIGHTS AND SWITCH TO BE REMOVED WITH CABINET AND STORED FOR LATER REMOUNTING OF CABINET. REUSE EXISTING BRANCH FEED.
2. LIGHT SWITCH TO BE REMOVED. OVERHEAD LIGHTS TO REMAIN.
3. EXISTING CABLES TO BE DISCONNECTED FROM PANEL '2M', PULLED BACK TO LOWER CORRIDOR AND REINSTALLED IN NEW WALL. REFER TO DEMO REFERENCE PHOTOS FOR GROUND AND SECOND FLOOR ON DWG. E0.5.
4. EXISTING PULLBOX, CONNECTED CONDUIT, AND TECK CABLE TO BE RELOCATED ALONG WALL AWAY FROM EXISTING SHAFT. REROUTE NECESSARY BRANCH WIRING AWAY FROM DEMO AREA (RE-WIRE IF NECESSARY). REFER TO REFERENCE PHOTOS E0.5. CONTRACTOR TO CARRY CASH ALLOWANCE AS SPECIFIED ON DWG. E0.2.
5. EXISTING SMOKE DETECTOR AND HEAT DETECTOR TO BE REMOVED AND HAVE WIRES RECONNECTED.



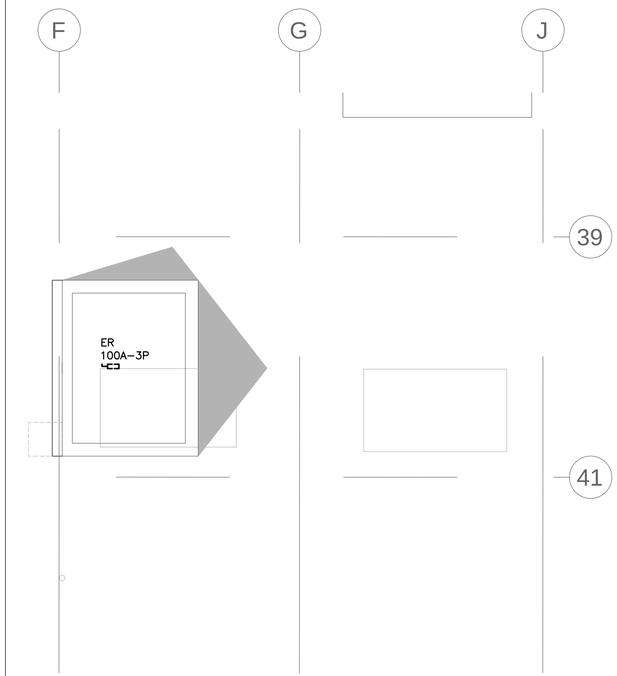
GROUND FLOOR – DEMO PLAN
SCALE: 1:50



SECOND FLOOR – DEMO PLAN
SCALE: 1:50



THIRD FLOOR – DEMO PLAN
SCALE: 1:50



ROOF – DEMO PLAN
SCALE: 1:50

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

ELECTRICAL DEMO PLANS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E1.1
CHECKED PI	
PRINT DATE	

EXISTING

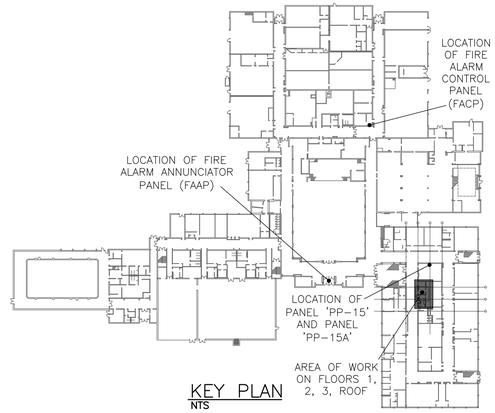
PANEL ID: PP-15A	MOUNTING: SURFACE											PANEL MAINS: 100 A
VOLTAGE: 120/208V	LOCATION: MECH ROOM A101											MAIN BREAKER: 100 A
PHASE/WIRE: 3PH/4W	FED FROM: PP-15											KAIC RATING:
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
EMERGENCY LIGHTS	15A-1P				1A	A	2A	660	2#12		20A-1P	DUPLEX SUMP PUMP FOR ELEVATOR PIT
MACHINE ROOM EXAUST FAN	15A-1P				1B		2B					
ELEVATOR PIT OUTLET	20A-1P		2#12	200	3A	B	4A	200	2#12		15A-1P	WORKROOM OUTLET
					3B		4B					
SOCIAL SCIENCES, W/R REC	15A-1P				5A	C	6A	200	2#12		20A-1P	ELEVATOR SHAFT OUTLET
ELEVATOR PIT LIGHTS	15A-1P				5B		6B					
SOCIAL SCIENCES, W/R REC	15A-1P				7A	A	8A				15A-1P	ELEVATOR MACHINE ROOM OUTLETS
BOYS W/R	15A-1P				7B		8B					
PHOTOCOPIER STAFF ROOM	15A-1P				9A	B	10A	200	2#12		20A-1P	ROOF-TOP MAINTENANCE OUTLET
					9B		10B					
COMPUTERS STAFF ROOM	15A-1P				11A	C	12A	900	2#12		15A-1P	WORKROOM OUTLET
					11B		12B					
AIR HANDLING UNIT	20A-3P				13A	A	14A				15A-1P	PATIENT BED
					13B		14B				15A-1P	A101/HALL
					15A	B	16A				15A-1P	DOOR OP.
					15B		16B				15A-1P	EMERG. LIGHT OFFICE
					17A	C	18A				15A-1P	KITCHEN
					17B		18B				15A-1P	PATIENT LIFT

BRK TYPE: * GFCI BREAKER — LOAD PHASE A (W): 660
** COMBINATION AFCI — LOAD PHASE B (W): 600 — TOTAL LOAD (W): 2360
*** LOCK ON BREAKER — LOAD PHASE C (W): 1100 — TOTAL AMPS (A): 6.5509

EXISTING

PANEL ID: PP-15	MOUNTING: SURFACE											PANEL MAINS: 400 A
VOLTAGE: 120/208V	LOCATION: MECH ROOM A101											MAIN BREAKER: 400 A
PHASE/WIRE: 3PH/4W	FED FROM:											KAIC RATING:
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
2ND FLR. AIR UNIT					1	A/B/C	2					INTERIOR AIR UNIT
INTERIOR RETURN AIR FAN					3	A/B/C	4					SPARE
PANEL PP-15A	100A-3P				5	A/B/C	6					CONDENSATE PUMP
HEATING PUMP #2					7	A/B/C	8					HEATING PUMP #1
GENERAL OFFICE AIR CONDITIONER					9	A/B/C	10					REFRIDGE. COMPRESSOR
3 NEW ELEVATOR CONTROLLER	60A-3P		3#6		11	A/B/C	12		2#12		15A-2P	ELEVATOR MACHINE ROOM AC-UNIT
POWER PANEL-14					13	A/B/C	14					PORTABLE #1
					15	A/B/C	16					FIRST FLOOR AIR UNIT
					17	A/B/C	18					
					19	A/B/C	20					

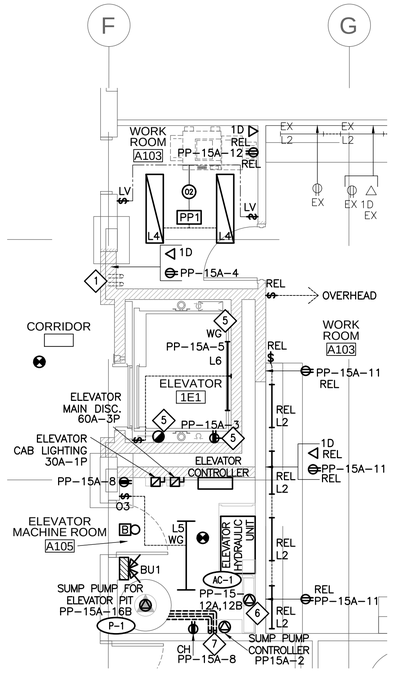
BRK TYPE: * GFCI BREAKER — LOAD PHASE A (W): ####
** COMBINATION AFCI — LOAD PHASE B (W): #### — TOTAL LOAD (W): ####
*** LOCK ON BREAKER — LOAD PHASE C (W): ### — TOTAL AMPS (A): ######



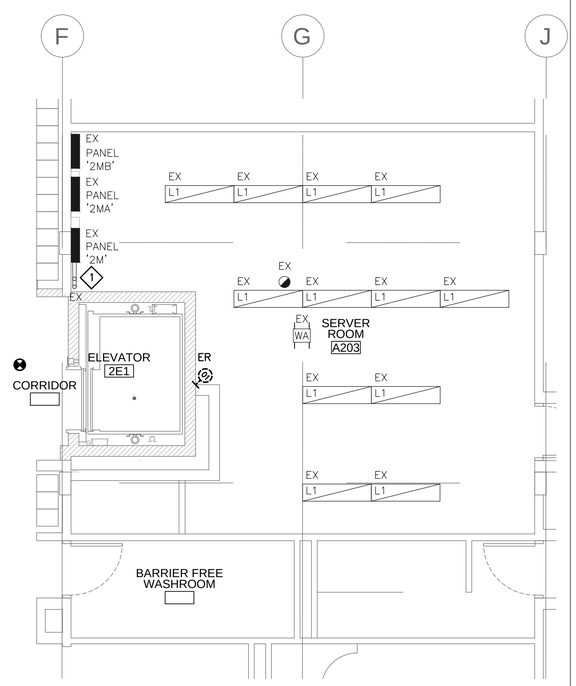
KEY PLAN
NTS

DRAWING KEYNOTES:

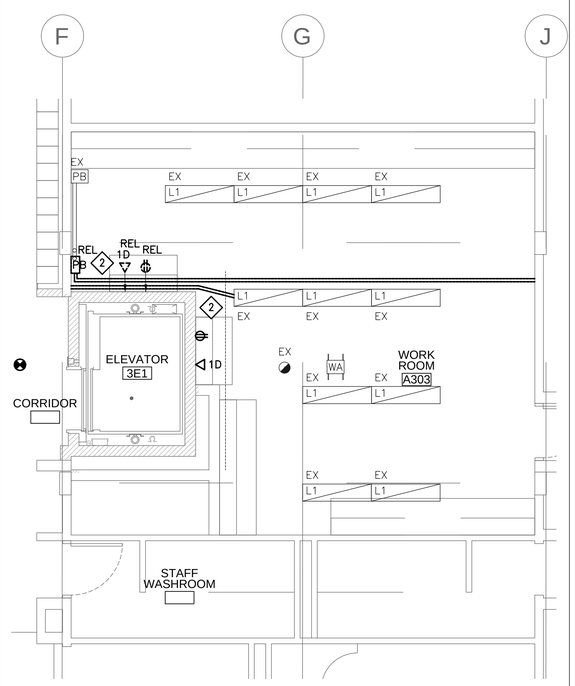
1. EXISTING CABLES TO BE PULLED BACK THROUGH NEW WALL TO UPPER LEVEL AND RECONNECTED TO PANEL '2M'. REFER TO DEMO REFERENCE PHOTOS FOR GROUND AND SECOND FLOOR ON DWG. E0.5.
2. EXISTING PULLBOX, CONNECTED CONDUITS, AND TECK TO BE RELOCATED ALONG WALL.
3. EXISTING PANEL TO HAVE NEW DEVICES CONNECTED. CONDUCT LOAD TEST BEFORE INSTALLATION OF NEW EQUIPMENT.
4. LOCATED AT TOP OF SHAFT. COORDINATE WITH ELEVATOR MANUFACTURER FOR EXACT LOCATION.
5. LOCATED IN THE ELEVATOR PIT. COORDINATE WITH ELEVATOR MANUFACTURER FOR EXACT LOCATION.
6. AC-1 SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE UNIT AS PER MANUFACTURER'S RECOMMENDATIONS (INDOOR UNIT FED FROM OUTDOOR CONDENSER UNIT).
7. 2x2" RIGID PVC CONDUITS TO SUMP PUMP FROM SUMP CONTROLLER (ONE FOR POWER FEED, ONE FOR LOW VOLTAGE FEED). FOLLOW MANUFACTURERS GUIDELINES FOR INSTALLATION.
8. PROVIDE RECEPTACLE FOR MAINTENANCE OF EQUIPMENT LOCATED ON THE ROOF, AS DEFINED IN OESC RULE 26-710.



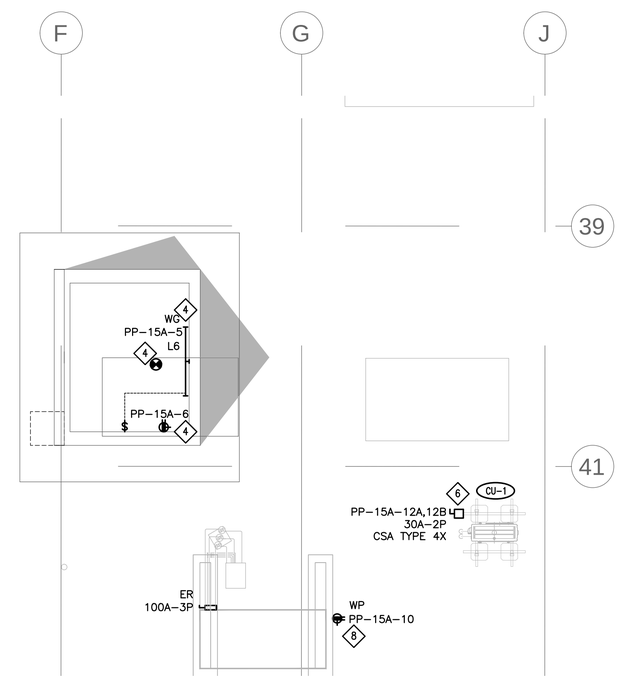
GROUND FLOOR – NEW PLAN
SCALE: 1:50



SECOND FLOOR – NEW PLAN
SCALE: 1:50



THIRD FLOOR – NEW PLAN
SCALE: 1:50



ROOF – NEW PLAN
SCALE: 1:50

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

Halton District School Board

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

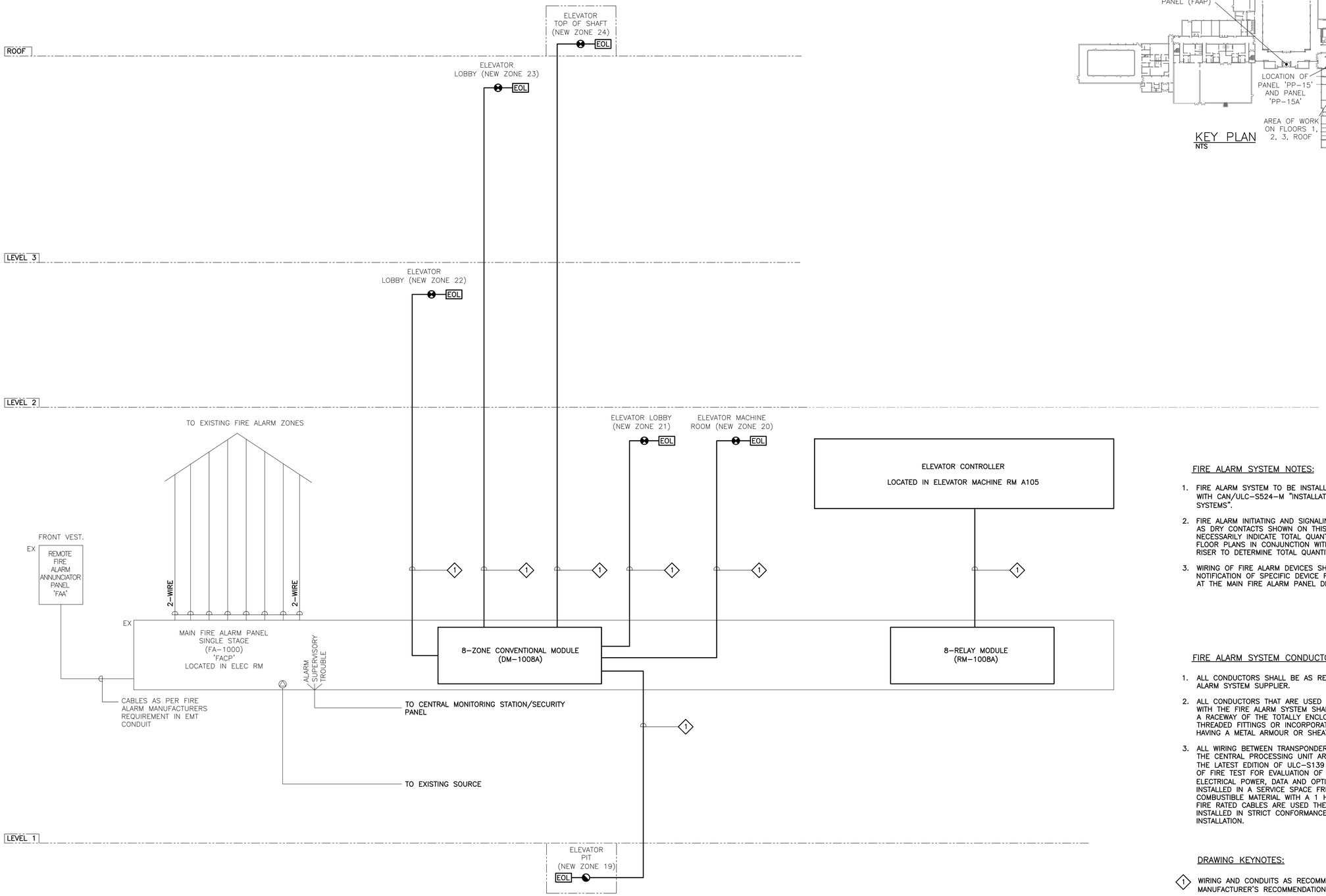
WHITE OAKS SOUTH ELEVATOR UPGRADES

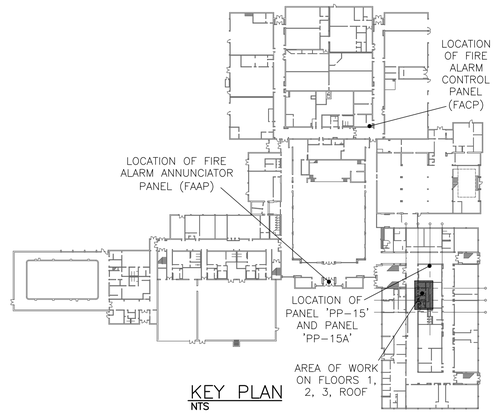
1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

ELECTRICAL NEW PLAN

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E2.1
CHECKED PI	
PRINT DATE	





KEY PLAN
NTS

FIRE ALARM SYSTEM NOTES:

1. FIRE ALARM SYSTEM TO BE INSTALLED IN CONFORMANCE WITH CAN/ULC-S524-M "INSTALLATION OF FIRE ALARM SYSTEMS".
2. FIRE ALARM INITIATING AND SIGNALING DEVICES AS WELL AS DRY CONTACTS SHOWN ON THIS DRAWING DO NOT NECESSARILY INDICATE TOTAL QUANTITY. REVIEW THE FLOOR PLANS IN CONJUNCTION WITH THE FIRE ALARM RISER TO DETERMINE TOTAL QUANTITY OF DEVICES.
3. WIRING OF FIRE ALARM DEVICES SHALL ALLOW FOR NOTIFICATION OF SPECIFIC DEVICE FAILURE OR TROUBLE AT THE MAIN FIRE ALARM PANEL DISPLAY.

FIRE ALARM SYSTEM CONDUCTORS & CABLES

1. ALL CONDUCTORS SHALL BE AS RECOMMENDED BY FIRE ALARM SYSTEM SUPPLIER.
2. ALL CONDUCTORS THAT ARE USED IN CONJUNCTION WITH THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN A RACEWAY OF THE TOTALLY ENCLOSED TYPE WITH THREADED FITTINGS OR INCORPORATED IN A CABLE HAVING A METAL ARMOUR OR SHEATH.
3. ALL WIRING BETWEEN TRANSPONDERS, ANNUNCIATIONS & THE CENTRAL PROCESSING UNIT ARE TO CONFORM TO THE LATEST EDITION OF ULC-S139 "STANDARD METHOD OF FIRE TEST FOR EVALUATION OF INTEGRITY OF ELECTRICAL POWER, DATA AND OPTICAL CABLES" OR BE INSTALLED IN A SERVICE SPACE FREE OF ANY COMBUSTIBLE MATERIAL WITH A 1 HOUR FIRE RATING. IF FIRE RATED CABLES ARE USED THEY MUST BE INSTALLED IN STRICT CONFORMANCE WITH THE TESTED INSTALLATION.

DRAWING KEYNOTES:

1 WIRING AND CONDUITS AS RECOMMENDED BY MANUFACTURER'S RECOMMENDATIONS.

Halton District School Board

NO	REVISIONS	DATE
D	ISSUED FOR TENDER	2023-01-26
C	ISSUED FOR PERMIT	2022-12-09
B	ISSUED FOR COODINATION	2022-12-02
A	ISSUED FOR COODINATION	2022-11-21

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
2400 INDUSTRIAL STREET ,
BURLINGTON, ON. L7P 1A5
www.ckengs.com | info@ckengs.net | 905.631.1115

WHITE OAKS SOUTH
ELEVATOR UPGRADES

1330 MONTCLAIR DRIVE
OAKVILLE, ONTARIO, L6H 1Z5

FIRE ALARM RISER
DIAGRAM - NEW

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

SCALE: AS NOTED	PROJECT: 22075
START DATE: OCT 2022	
DRAWN AS	DRAWING E3.1
CHECKED PI	
PRINT DATE	

ARCADIS Design & Consultancy for natural and built assets

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

WHITE OAKS SECONDARY SCHOOL SOUTH CAMPUS

1330 MONTCLAIR DRIVE, OAKVILLE, ONTARIO

March 7, 2023

30155770

Rebecca Hao, M.Eng.

Environmental Scientist

Dwayne Kellyman, Dipl. Tech.

Technical Specialist – Field Supervisor

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

White Oaks Secondary School
South Campus

1330 Montclair Drive, Oakville, Ontario

Prepared for:

Halton District School Board

J.W. Singleton Education Center

2050 Guelph Line

Burlington, Ontario L7P 5A8

Attention: Mr. Dan Evans

Specialist - Energy & Environmental

Prepared by:

Arcadis Canada Inc.

121 Granton Drive, Suite 12

Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

Our Ref.:

30155770

Date:

March 7, 2023

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

CONTENTS

1 INTRODUCTION 1-1
1.1 Scope of Work 1-1
2 REGULATORY DISCUSSION AND METHODOLOGY 2-1
2.1 Asbestos 2-2
2.2 Lead 2-3
2.3 Mercury 2-3
2.4 Silica 2-4
2.5 Vinyl Chloride 2-4
2.6 Acrylonitrile 2-5
2.7 Other Designated Substances 2-5
2.8 Polychlorinated Biphenyls (PCBs) 2-5
2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 2-7
2.10 Mould 2-8
3 RESULTS AND DISCUSSION 3-1
3.1 Asbestos 3-1
3.2 Lead 3-15
3.3 Mercury 3-16
3.4 Silica 3-17
3.5 Vinyl Chloride 3-17
3.6 Acrylonitrile 3-17
3.7 Other Designated Substances 3-17
3.8 Polychlorinated Biphenyls (PCBs) 3-18
3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons 3-18
3.10 Mould 3-18
4 USE AND LIMITATIONS OF THIS PRE- RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT 4-1

TABLES

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content 3-1

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead Content 3-15

APPENDICES

A Floor Plans

B Summary of Asbestos, Lead and Silica Work Classifications

1 INTRODUCTION

Arcadis Canada Inc. (Arcadis) was retained by the Halton District School Board (HDSB) to conduct a pre-renovation designated substances and hazardous materials survey in designated areas of White Oaks Secondary School South Campus located at 1330 Montclair Drive, Oakville, Ontario.

The information in this report is to be provided to all bidders on a project in accordance with the requirements of the *Occupational Health and Safety Act*.

The site is a three-storey masonry structure originally constructed in 1964 with additions constructed in 1970, 1972, 1980 and 1989.

It is our understanding that mechanical and electrical upgrades are scheduled to take place in designated areas of the building referred to in this report as the *designated study areas*. The survey was limited to inspecting and testing materials in the designated study areas that may be affected by the renovation project based on information provided by HDSB.

The designated study areas and eras of construction are shown on the floor plans provided in Appendix A.

The survey was undertaken to report on the presence or suspected presence of readily observable designated substances and hazardous materials.

1.1 Scope of Work

The scope of work for our investigation included:

- review of existing information;
- investigation of readily accessible areas in the designated study areas for the presence of designated substances and hazardous materials used in building construction materials;
- obtaining representative bulk samples of materials suspected of containing asbestos and paint chip samples;
- laboratory analyses of bulk samples for asbestos content;
- laboratory analyses of paint chip samples for lead content; and
- preparation of a report outlining the findings of the investigation.

Ms. Rebecca Hao of Arcadis visited the site on February 6, 2023 to conduct the designated substances and hazardous materials survey at White Oaks Secondary School South Campus.

2 REGULATORY DISCUSSION AND METHODOLOGY

Ontario Occupational Health and Safety Act (OHSA)

The Ontario *Occupational Health and Safety Act* (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)];
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)];
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]; and
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, Section 30 of the OHSA deals with the presence of designated substances on construction projects. Compliance with the OHSA and its regulations requires action to be taken where there is a designated substance hazard on a construction project.

Section 30 of the OHSA requires the owner of a project to determine if designated substances are present on a project and, if so, to inform all potential contractors as part of the bidding process. Contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project.

Regulation for Construction Projects, O.Reg. 213/91

The *Regulation for Construction Projects*, O.Reg. 213/91, applies to all construction projects. The following sections of the regulation would apply to situations where there is the potential for workers to be exposed to designated substances:

Section 14	(5)	A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.
Section 21	(1)	A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed.
	(2)	A worker's employer shall require the worker to comply with subsection (1).

(3) A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

Section 30 Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.

Section 46 (1) A project shall be adequately ventilated by natural or mechanical means,

(a) if a worker may be injured by inhaling a noxious...dust or fume;

(2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.

Section 59 If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

Regulation for Designated Substances (O.Reg. 490/09)

The *Designated Substance Regulation* (O.Reg. 490/09) specifies occupational exposure limits (OELs) for designated substances and requires an assessment and a control program to ensure compliance with these OELs.

Although, O.Reg. 490/09 and the OELs do not apply to an employer on a construction project, or to their workers at the project, employers still have a responsibility to protect the health of their workers and to comply with the OHSA and other applicable regulations. Section 25(2)(h) of the OHSA requires that employers take "every precaution reasonable in the circumstances for the protection of a worker".

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Ontario by Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste

(friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, *Waste Management – General*. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table B-1 in Appendix B, and specifies procedures to be followed in conducting asbestos abatement work.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* (SOR/2016-193) made pursuant to the Canada Consumer Product Safety Act states that a surface coating material must not contain more than 90 mg/kg total lead. Health Canada defines a lead-containing surface coating as a paint or similar material that dries to a solid film that contains over 90 mg/kg dry weight of lead.

Information from the United States Occupational Health and Safety Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the permissible exposure limit. Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children[(1)].

The *National Plumbing Code* allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

The Ministry of Labour *Guideline, Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix B, Table B-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been

(1) *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry.* WorkSafe BC, 2011.

used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour *Guideline, Silica on Construction Projects*, dated April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix B, Table B-3.

2.5 Vinyl Chloride

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building

construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 Acrylonitrile

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 Other Designated Substances

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. it has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 Polychlorinated Biphenyls (PCBs)

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by Ontario Regulation 362*, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must

be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in speciality industrial/institutional applications prior to the 1970s including government buildings and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations* (discussed below).

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act*, 1999 (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the Canada Gazette, Part II, and came into force on 1 January 2015. The most notable part of the amendments is the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment and Climate Change (MOECC) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOECC District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOECC, in accordance with O.Reg. 347, *General - Waste Management*. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs.

2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Ontario Regulation 463/10 – *Ozone Depleting Substances and Other Halocarbons*, applies to the use, handling and disposal of Class 1 ozone-depleting substances, including various chlorofluorocarbons (CFCs), halons and other halocarbons, Class 2 ozone-depleting substances, including various hydrochlorofluorocarbons (HCFCs) and halocarbons, and other halocarbons, including fluorocarbons (FCs) and hydrofluorocarbons (CFCs). The most significant requirements for handling of ozone-depleting substances (ODS) and other Halocarbons, which include, for example, refrigerants used in refrigeration equipment and chillers, include the following:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ODS and other halocarbons;
- the discharge of a Class 1 ODS or anything that contains a Class 1 ODS to the natural environment or within a building is prohibited;
- the making, use of, selling of or transferring of a Class 1 ODS is restricted to certain conditions;
- the discharge of a solvent or sterilant that contains a Class 2 ODS is prohibited;
- the making, use of, selling of or transferring of a solvent or sterilant that contains a Class 2 ODS is restricted to certain conditions;
- fire extinguishing equipment that contains a halon may be discharged to fight fires, except fires for firefighting training purposes;
- portable fire extinguishing equipment that contains a halon may be used or stored if the extinguisher was sold for use for the first time before 1 January 1996;
- records of the servicing and repair of equipment containing ODS and other halocarbons must be prepared and maintained by the owner of the equipment; and
- equipment no longer containing ODS and other halocarbons must be posted with a notice completed by a certified person.

Ontario Regulation 347, *General – Waste Management*, has also been amended to provide for more strict control of CFCs. The requirements under the amended regulation apply primarily to the keeping of records for the receipt or recycling of CFC waste.

2.10 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the Ontario *Occupational Health and Safety Act*, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

- *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association.
- *Mould Abatement Guidelines*. Environmental Abatement Council of Ontario. Edition 3. 2015.

3 RESULTS AND DISCUSSION

3.1 Asbestos

Arcadis reviewed a report prepared by Arcadis for the Halton District School Board entitled "*Pre-Renovation Designated Substances and Hazardous Materials Survey, White Oaks Secondary School South Campus, 1330 Montclair Drive, Oakville, Ontario" dated* May 19, 2021. Information and/or bulk sample analysis results obtained from this existing report was utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigation, representative bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL Canada Inc. (EMSL) for asbestos analyses. Results of bulk sample analysis for asbestos content are provided in Table 3.1. Table 3.1 also include sample results obtained from existing reports and include results that are outside of the designated study areas, which are provided for references purposes only. Laboratory reports are provided in Appendix B. Locations of accessible asbestos-containing materials in the designated study areas and throughout the school are shown on the floor plan provided in Appendix A.

Table 3.1. Summary of Results of Analyses of Bulk Samples for Asbestos Content

Sample Nº	Location	Description	Asbestos Content
1-A	A-100	Black tar on fiberglass duct work insulation	**20% Chrysotile**
1-B	A-201	Black tar on fiberglass duct work insulation	Positive Stop (Not Analyzed)
1-C	A-301	Black tar on fiberglass duct work insulation	Positive Stop (Not Analyzed)
2-A	A-103A	Brown vinyl baseboard	None Detected (PLM) None Detected (TEM)
2-B	A-103	Brown vinyl baseboard	None Detected
2-C	A-105	Brown vinyl baseboard	None Detected
3-A	A-103A	Mastic adhesive to brown vinyl baseboard	None Detected
3-B	A-103	Mastic adhesive to brown vinyl baseboard	None Detected
3-C	A-105	Mastic adhesive to brown vinyl baseboard	None Detected
4-A	A-303	White vinyl baseboard	None Detected (PLM) None Detected (TEM)
4-B	A-303	White vinyl baseboard	None Detected
4-C	A-303	White vinyl baseboard	None Detected
5-A	A-303	Mastic adhesive to white vinyl baseboard	None Detected
5-B	A-303	Mastic adhesive to white vinyl baseboard	None Detected

Sample Nº	Location	Description	Asbestos Content
5-C	A-303	Mastic adhesive to white vinyl baseboard	None Detected
1A	A119	9”x9” vinyl floor tile, grey with white streaks	**3.4% chrysotile(1)**
2A	A119	Black mastic under 9”x9” vinyl floor tile grey with white streaks	**5% chrysotile(1)**
3A	A220	12”x12” vinyl floor tile, grey with light and dark grey and brown fleck	<0.1% chrysotile (TEM)(1,2)
3B	A220	12”x12” vinyl floor tile, grey with light and dark grey and brown fleck	None detected(1)
3C	A220	12”x12” vinyl floor tile, grey with light and dark grey and brown fleck	None detected(1)
4A	A220	Black mastic under 12”x12” vinyl floor tile grey with light and dark grey and brown fleck	**1% chrysotile(1)**
5A	A224	12”x12” vinyl floor tile, beige with light and dark fleck	<0.1% chrysotile (TEM)(1,2)
5B	A202	12”x12” vinyl floor tile, beige with light and dark fleck	None detected(1)
5C	A117	12”x12” vinyl floor tile, beige with light and dark fleck	None detected(1)
6A	A224	Mastic under 12”x12” vinyl floor tile beige with light and dark fleck	**5% chrysotile(1)**
7A	A203	Black mastic under 12”x12” vinyl floor tile beige with reddish brown fleck	**6% chrysotile(1)**
8A	A320	Black mastic under 12”x12” vinyl floor tile white with grey fleck	**6% chrysotile(1)**
9A	A120	Cement pipe	**12% chrysotile(1)** **8% crocidolite(1)**
10A	A314	Black baseboard	None detected (PLM)(1) None detected (TEM)(1)
10B	A312	Black baseboard	None Detected(1)
10C	A312	Black baseboard	None detected(1)
11A	A314	Mastic under black baseboard	None detected(1)
11B	A312	Mastic under black baseboard	None detected(1)
11C	A312	Mastic under black baseboard	None detected(1)
12A	A320	Grey baseboard	None detected (TEM)(1)
12B	A320	Grey baseboard	None detected(1)
12C	A320	Grey baseboard	None detected(1)

Sample Nº	Location	Description	Asbestos Content
13A	A320	Mastic under Grey Baseboard	None detected(1)
13B	A320	Mastic under Grey Baseboard	None detected(1)
13C	A320	Mastic under Grey Baseboard	None detected(1)
14A	A116	Drywall joint compound, pipe chase	None detected(1)
14B	A132B	Drywall joint compound, wall	None detected(1)
14C	A216	Drywall joint compound, bulkhead	**3% chrysotile(1)**
14E	A312	Drywall joint compound, bulkhead	None detected(1)
15A	A228	Interior window grey caulking	None detected(1)
15B	A304	Interior window grey caulking	None detected(1)
15C	A202	Interior window grey caulking	None detected(1)
16A	A108	Exterior Brick Mortar	None detected(1)
16B	A116	Exterior Brick Mortar	None detected(1)
16C	A128	Exterior Brick Mortar	None detected(1)
17A	A108	Exterior window beige caulking	None detected(1)
17B	A106	Exterior window beige caulking	None detected(1)
17C	A106A	Exterior window beige caulking	None detected(1)
18A	A108	Exterior window white caulking	**2% chrysotile(1)**
1A-AS-C114C	Room C-114C	Anti-sweat w/ black paper (medium)	None detected(1)
1B-AS-G99A	Room G-99A	Anti-sweat w/ black paper (medium)	None detected(1)
1C-AS-A100Cor	Corridor A-100	Anti-sweat w/ black paper (medium)	None detected(1)
2A-AS-C114C	Room C-114C	Anti-sweat w/ black paper (small)	None detected(1)
2B-AS-C114C	Room C-114C	Anti-sweat w/ black paper (small)	None detected(1)
2C-AS-A106H	Room A-106H	Anti-sweat w/ black paper (small)	None detected(1)
3A-IN-C114C	Room C-114C	Pipe fitting insulation	**51% chrysotile(1)**
4A-ACT-C114B	Room C-114B	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4B-ACT-C116	Room C-116	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4C-ACT-G120	Room G-120	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4D-ACT-G103C	RoomG-103C	12” x 12” acoustic tile – large/small hole white back	None detected(1)

Sample Nº	Location	Description	Asbestos Content
4E-ACT-C109E	Room C-109E	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4F-ACT-A108A	Room A-108A	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4G-ACT-A320B	Room A-320B	12” x 12” acoustic tile – large/small hole white back	None detected(1)
4H-ACT-C106A	Room C-106A	12” x 12” acoustic tile – large/small hole white back	None detected(1)
5A-PL-C116	Room C-116	Plaster – smooth (ceiling)	None detected(1)
5B-PL-C105	Room C-105	Plaster – smooth (ceiling)	None detected(1)
5C-PL-C105	Room C-105	Plaster – smooth (ceiling)	None detected(1)
5D-PL-C105	Room C-105	Plaster – smooth (ceiling)	None detected(1)
5E-PL-C105	Room C-105	Plaster – smooth (ceiling)	None detected(1)
6A-JC-C116B	Room C-116B	Drywall joint compound	None detected(1)
6B-JC-G102A	Room G-102A	Drywall joint compound	None detected(1)
6C-JC-G106	Room G-106	Drywall joint compound	None detected(1)
6D-JC-G201A	Room G-201A	Drywall joint compound	None detected(1)
6E-JC-G203	Room G-203	Drywall joint compound	None detected(1)
6F-JC-CorC101A	Corridor C-101A	Drywall joint compound	None detected(1)
6G-JC-A320B	Room A-320B	Drywall joint compound	None detected(1)
6H-JC-T121D	Room T-121D	Drywall joint compound	None detected(1)
7A-ACT-C116B	Room C-116B	12” x 12” cellulose acoustic tile – uniformed embossed	None detected(1)
8A-Suspended ceiling tile-G102A	Room G-102A	2’x 4’ suspended ceiling tile – deep fissure and dot on 2’, white back with white lines on 4’	None detected(1)
8B-Suspened ceiling tile-G106	Room G-106	2’x 4’ suspended ceiling tile – deep fissure and dot on 2’, white back with white lines on 4’	None detected(1)
8C-suspened ceiling tile-A119	Room A-1198	2’x 4’ suspended ceiling tile – deep fissure and dot on 2’, white back with white lines on 4’	None detected(1)
9A-FB-FoyerC100	Foyer C-100	Fiber board ceiling -embossed	None detected(1)
9B-FB-FoyerC100	Foyer C-100	Fiber board ceiling –embossed	None detected(1)

Sample Nº	Location	Description	Asbestos Content
9C-FB-FoyerC100	Foyer C-100	Fiber board ceiling -embossed	None detected(1)
10A-Suspened ceiling tile-CorC100	Corridor C-100	2' x 4' ceiling tile – chicken feet, wavy brown back embossed letter	None detected(1)
10B-Suspened ceiling tile-CorC100	Corridor C-100	2' x 4' ceiling tile – chicken feet, wavy brown back embossed letter	None detected(1)
10C-Suspened ceiling tile-CorA100	Corridor A-100	2' x 4' ceiling tile – chicken feet, wavy brown back embossed letter	None detected(1)
11A-Suspended ceiling tile-CorC100	Corridor C-100	2' x 4' ceiling tile – fissure on 2' embossed arrows and letters on back- very bright white	None detected(1)
11B-Suspended ceiling tile-T119	Room T-119	2' x 4' ceiling tile – fissure on 2' embossed arrows and letters on back- very bright white	None detected(1)
11C-Suspended ceiling tile-T119	Room T-119	2' x 4' ceiling tile – fissure on 2' embossed arrows and letters on back- very bright white	None detected(1)
12A-Suspended ceiling tile-CorC100	Corridor C-100	2' x 4' ceiling tile – small random fissure, smooth face, brown back white stripes	None detected(1)
12B-Suspended ceiling tile-G107A	Room G-107A	2' x 4' ceiling tile – small random fissure, smooth face, brown back white stripes	None detected(1)
12C-Suspended ceiling tile-CorG100	Corridor G-100	2' x 4' ceiling tile – small random fissure, smooth face, brown back white stripes	None detected(1)
13A-TC-CorC100	Corridor C-100	Texture coat – very thin like paint (wall)	<0.25% chrysotile(1,2)
13B-TC-C105	Room C-105	Texture coat – very thin like paint (wall)	**0.75% chrysotile(1)**
14A-Vinyl floor tile-G106	Room G-106	12" x 12" vinyl floor tile – beige with light and dark beige speckles – new look	None detected(1)
14B-Vinyl floor tile-G107D	Room G-107D	12" x 12" vinyl floor tile – beige with light and dark beige speckles – new look	None detected(1)
14C-Vinyl floor tile-A103A	Room A-103A	12" x 12" vinyl floor tile – beige with light and dark beige speckles – new look	None detected(1)
15A-IN-G108	Room G-108	Duct insulation	**35% chrysotile(1)**
16A-IN-G108	Room G-108	Condensate tank insulation	**49% chrysotile(1)**
17A-OT-G203	Room G-203	Sipporex	None detected(1)
17B-OT-G203	Room G-203	Sipporex	None detected(1)

Sample Nº	Location	Description	Asbestos Content
17C-OT-G203	Room G-203	Sipporex	None detected(1)
18A-ACT-C107	Room C-107	12” x 12” acoustic ceiling tile – directional fissure 2’	None detected(1)
18B-ACT-C107	Room C-107	12” x 12” acoustic ceiling tile – directional fissure 2’	None detected(1)
18C-ACT-C107	Room C-107	12” x 12” acoustic ceiling tile – directional fissure 2’	None detected(1)
19A-ASBP-C107	Room C-107	Asbestos paper	**38% chrysotile(1)**
20A-AS-CorC101A	Corridor C-101A	Anti-sweat pipe insulation (medium) with white paper	**18% chrysotile(1)**
21A-Suspended ceiling tile-CorC101A	Corridor C-101A	2’ x 4’ suspended ceiling tile – random fissure with deep pinholes smooth white face/ embossed arrows in 4’	None detected(1)
21C-Suspended ceiling tile-CorC101A	Corridor C-101A	2’ x 4’ suspended ceiling tile – random fissure with deep pinholes smooth white face/ embossed arrows in 4’	None detected(1)
21C-Suspended ceiling tile-CorC101A	Corridor C-101A	2’ x 4’ suspended ceiling tile – random fissure with deep pinholes smooth white face/ embossed arrows in 4’	None detected(1)
21D-Suspended ceiling tile-A106F	Room A-106F	2’ x 4’ suspended ceiling tile – random fissure with deep pinholes smooth white face/ embossed arrows in 4’	None detected(1)
21E-Suspended ceiling tile-C106	Room C-106	2’ x 4’ suspended ceiling tile – random fissure with deep pinholes smooth white face/ embossed arrows in 4’	None detected(1)
22A-Vinyl floor tile-A106A	Room A-106A	12” x 12” vinyl floor tile – white with green-grey-orange speckles	None detected(1)
22B-Vinyl floor tile-A106A	Room A-106A	12” x 12” vinyl floor tile – white with green-grey-orange speckles	None detected(1)
22C-Vinyl floor tile-A106A	Room A-106A	12” x 12” vinyl floor tile – white with green-grey-orange speckles	None detected(1)
23A-Suspended ceiling tile-A106A	Room A-106A	2’ x 4’ suspended ceiling tile – fissure on 2’ – natural back – embossed letters- cross/hatch on back	None detected(1)
23B-Suspended ceiling tile-T100Corr	Corridor T-100	2’ x 4’ suspended ceiling tile – fissure on 2’ – natural back – embossed letters- cross/hatch on back	None detected(1)
23C-Suspended ceiling tile-A106A	Room A-106A	2’ x 4’ suspended ceiling tile – fissure on 2’ – natural back – embossed letters- cross/hatch on back	None detected(1)

Sample Nº	Location	Description	Asbestos Content
24A-Vinyl floor tile-A106B	Room A-106B	12” x 12” vinyl floor tile – chocolate brown with light/dark brown speckles – new look	None detected(1)
24B-Vinyl floor tile-A106B	Room A-106B	12” x 12” vinyl floor tile – chocolate brown with light/dark brown speckles – new look	None detected(1)
24C-Vinyl floor tile-A106B	Room A-106B	12” x 12” vinyl floor tile – chocolate brown with light/dark brown speckles – new look	None detected(1)
25A-Vinyl floor tile-A106L	Room A-106L	12” x 12” vinyl floor tile – grey with light/dark gray speckles	None detected(1)
25B-Vinyl floor tile-A106L	Room A-106L	12” x 12” vinyl floor tile – grey w/ light/dark gray speckles	None detected(1)
25C-Vinyl floor tile-A106L	Room A-106L	12” x 12” vinyl floor tile – grey with light/dark gray speckles	None detected(1)
26A-Suspended ceiling tile-A108	Room A-108	2’ x 4’ ceiling tile – random fissure – embossed letter – dark brown back	None detected(1)
26B-Suspended ceiling tile-A108	Room A-108	2’ x 4’ ceiling tile – random fissure – embossed letter – dark brown back	None detected(1)
26C-Suspended ceiling tile-A108	Room A-108	2’ x 4’ ceiling tile – random fissure – embossed letter – dark brown back	None detected(1)
27A-Vinyl floor tile-A122	Room A-122	12” x 12” vinyl floor tile – beige with random redish brown speckles	None detected(1)
27B-Vinyl floor tile-A122	Room A-122	12” x 12” vinyl floor tile – beige with random redish brown speckles	None detected(1)
27C-Vinyl floor tile-A122	Room A-122	12” x 12” vinyl floor tile – beige with random redish brown speckles	None detected(1)
28A-Suspended ceiling tile-A214	Room A-214	2’ x 4’ ceiling tile – random fissure – white back – embossed arrows 4’	None detected(1)
28A-Suspended ceiling tile-A214	Room A-214	2’ x 4’ ceiling tile – random fissure – white back – embossed arrows 4’	None detected(1)
28A-Suspended ceiling tile-A216	Room A-216	2’ x 4’ ceiling tile – random fissure – white back – embossed arrows 4’	None detected(1)
29A-VSF-A207	Room A-207	Vinyl sheet flooring	None detected(1)
29B-VSF-A207	Room A-207	Vinyl sheet flooring	None detected(1)
29C-VSF-A207	Room A-207	Vinyl sheet flooring	None detected(1)
30A-Vinyl floor tile-A226	Room A-226	12” x 12” vinyl floor tile – light grey with grey and white speckles – new look	None detected(1)
30B-Vinyl floor tile-A226	Room A-226	12” x 12” vinyl floor tile – light grey with grey and white speckles – new look	None detected(1)

Sample Nº	Location	Description	Asbestos Content
30C-Vinyl floor tile-A226	Room A-226	12” x 12” vinyl floor tile – light grey with grey and white speckles – new look	None detected(1)
31A-Vinyl floor tile-A320	Room A-320	12” x 12” vinyl floor tile – white with light grey speckles	None detected(1)
31B-Vinyl floor tile-A320	Room A-320	12” x 12” vinyl floor tile – white with light grey speckles	None detected(1)
31C-Vinyl floor tile-A320	Room A-320	12” x 12” vinyl floor tile – white with light grey speckles	None detected(1)
32A-Suspened ceiling tile-A320	Room A-320	2’ x 4’ suspended ceiling tile – fissure on 2’ – dark brown back – fire-rated embossed in back, white stripes 2’	None detected(1)
32B-Suspened ceiling tile-A320	Room A-320	2’ x 4’ suspended ceiling tile – fissure on 2’ – dark brown back – fire-rated embossed in back, white stripes 2’	None detected(1)
32C-Suspened ceiling tile-A320	Room A-320	2’ x 4’ suspended ceiling tile – fissure on 2’ – dark brown back – fire-rated embossed in back, white stripes 2’	None detected(1)
33A-IN-T107	Room T-107	Condensate tank insulation	**45% chrysotile(1)**
34A-IN-T107	Room T-107	Steam tank insulation	**1.25% amosite(1)** **63% chrysotile(1)**
35A-IN-T109	Room T-109	Breeching insulation	<0.25% amosite(1,2) **54% chrysotile(1)**
26A-Vinyl floor tile-T119	Room T-119	12” x 12” vinyl floor tile – light brown with white speckles	None detected(1)
36B-Vinyl floor tile-T119	Room T-119	12” x 12” vinyl floor tile – light brown with white speckles	None detected(1)
36C-Vinyl floor tile-T119	Room T-119	12” x 12” vinyl floor tile – light brown with white speckles	None detected(1)
37A-vinyl floor tile-T121D	Room T-121D	12” x 12” vinyl floor tiles – black with random white speckles	None detected(1)
37B-vinyl floor tile-T121D	Room T-121D	12” x 12” vinyl floor tiles – black with random white speckles	None detected(1)
37C-vinyl floor tile-T121D	Room T-121D	12” x 12” vinyl floor tiles – black with random white speckles	None detected(1)
38A-JC-C106B	Room C-106B	Drywall joint compound	None detected(1)
38B-JC-C106C	Room C-106C	Drywall joint compound	None detected(1)
38C-JC-C106D	Room C-106D	Drywall joint compound	**3.5% chrysotile(1)**
39A-JC-C106	Room C-106	Sipporex	None detected(1)

Sample Nº	Location	Description	Asbestos Content
39B-JC-C106	Room C-106	Sipporex	None detected(1)
39C-JC-C106	Room C-106	Sipporex	None detected(1)
40A-TC-C106D	Room C-106D	Texture coat	**1.0% chrysotile(1)**
41A-ACT-C106E	Room C-106E	12” x 12” acoustic ceiling tile – large/small holes white back	None detected(1)
41B-ACT-C106E	Room C-106E	12” x 12” acoustic ceiling tile – large/small holes white back	None detected(1)
41C-ACT-C106E	Room C-106E	12” x 12” acoustic ceiling tile – large/small holes white back	None detected(1)
42A-Vinyl floor tile-C106F	Room C-106F	12” x 12” vinyl floor tile – blue with light and dark blue speckles	None detected(1)
42B-Vinyl floor tile-C106F	Room C-106F	12” x 12” vinyl floor tile – blue with light and dark blue speckles	None detected(1)
42C-Vinyl floor tile-C106F	Room C-106F	12” x 12” vinyl floor tile – blue with light and dark blue speckles	None detected(1)
43A-ACT-C106F	Room C-106F	12” x 12” acoustic ceiling tile – directional fissures	None detected(1)
43B-ACT-C106F	Room C-106F	12” x 12” acoustic ceiling tile – directional fissures	None detected(1)
43C-ACT-C106F	Room C-106F	12” x 12” acoustic ceiling tile – directional fissures	None detected(1)
44A-Suspended ceiling tile-C106H	Room C-106H	2’ x 4’ suspended ceiling tile – random fissure – brown back	None detected(1)
44B-Suspended ceiling tile-C106H	Room C-106H	2’ x 4’ suspended ceiling tile – random fissure – brown back	None detected(1)
44C-Suspended ceiling tile-C106H	Room C-106H	2’ x 4’ suspended ceiling tile – random fissure – brown back	None detected(1)
45A-FP-C106I	Room C-106I	Fire proofing – above ceiling on beams	None detected(1)
45B-FP-C106I	Room C-106I	Fire proofing – above ceiling on beams	None detected(1)
45C-FP-C106I	Room C-106I	Fire proofing – above ceiling on beams	None detected(1)
46A-Vinyl floor tile-C106J	Room C-106J	12” x 12” vinyl floor tile – white with random greenish blue speckles	None detected(1)
46B-Vinyl floor tile-C106J	Room C-106J	12” x 12” vinyl floor tile – white with random greenish blue speckles	None detected(1)

Sample Nº	Location	Description	Asbestos Content
46C-Vinyl floor tile-C106J	Room C-106J	12” x 12” vinyl floor tile – white with random greenish blue speckles	None detected(1)
47A-Suspended ceiling tile-C106N	Room C-106N	2’ x 4’ ceiling tile – circular pattern with white back	None detected(1)
47B-Suspended ceiling tile-C106N	Room C-106N	2’ x 4’ ceiling tile – circular pattern with white back	None detected(1)
47C-Suspended ceiling tile-C106N	Room C-106N	2’ x 4’ ceiling tile – circular pattern with white back	None detected(1)
48A-JC-C106P	Room C-106P	Drywall joint compound	None detected(1)
48B-JC-C106O	Room C-106O	Drywall joint compound	None detected(1)
48C-JC-C106O	Room C-106O	Drywall joint compound	None detected(1)
49A-Vinyl floor tile-C106P	Room C-106P	12” x 12” vinyl floor tile – grey with light and dark speckles – new look	None detected(1)
49B-Vinyl floor tile-C106P	Room C-106P	12” x 12” vinyl floor tile – grey with light and dark speckles – new look	None detected(1)
49C-Vinyl floor tile-C106P	Room C-106P	12” x 12” vinyl floor tile – grey with light and dark speckles – new look	None detected(1)
1-A	Room C-105	12” x 12” suspended ceiling tile	None detected(1)
1-B	Room C-105	12” x 12” suspended ceiling tile	None detected(1)
1-C	Room C-105	12” x 12” suspended ceiling tile	None detected(1)
CLK-1A	Corridor C-101	Exterior door caulking (grey)	<0.32% chrysotile (TEM)(1,2)
CLK-1B	DOOR 40	Exterior door caulking (grey)	**0.95% chrysotile(1,3)**
CLK-2A	DOOR 7	Exterior door caulking (brown)	None detected (TEM)(1)
CLK-2B	DOOR 8	Exterior door caulking (brown)	None detected(1)
CLK-2C	DOOR 8	Exterior door caulking (brown)	None detected(1)
CLK-3A	DOOR 37	Interior door caulking (white)	**1.8% chrysotile (TEM)(1,3)**
CLK-4A	Corridor C-101	Interior door caulking (grey)	**0.71% chrysotile (TEM)(1,3)**
CLK-5A	DOOR 20	Exterior door caulking (black)	**1.4% chrysotile(1,3)**
CLK-7A	Corridor C-101	Exterior window caulking (grey)	**0.66% chrysotile (TEM)(1,3)**
CLK-8A	Room T-108	Interior upper window caulking (grey)	**0.73% chrysotile (TEM)(1,3)**

Sample Nº	Location	Description	Asbestos Content
CLK-9A	DOOR 7	Exterior door caulking (brown)	None detected(1)
CLK-9B	DOOR 8	Exterior door caulking (brown)	None detected(1)
CLK-9C	DOOR 37	Exterior door caulking (brown)	None detected(1)
CP-1A	Exterior G-100A	Cement board	**5.2% chrysotile(1)**
M-1A	Corridor C-101	Concrete block mortar	None detected(1)
M-1B	Room T-118	Concrete block mortar	None detected(1)
M-1C	Room T-114	Concrete block mortar	None detected(1)
M-2A	Corridor C-101	Brick mortar	None detected(1)
M-2B	Corridor G-98	Brick mortar	None detected(1)
M-2C	Stair A-97	Brick mortar	None detected(1)
M-3A	Corridor C-101	Curb block mortar	None detected(1)
M-3B	Corridor C-101	Curb block mortar	None detected(1)
M-3C	Corridor C-101	Curb block mortar	None detected(1)
1-A	Room T-111	drywall joint compound	None detected(1)
1-B	Room T-111	drywall joint compound	None detected(1)
1-C	Room T-111	drywall joint compound	None detected(1)
2-A	Room T-111	ceramic tile grout	None detected(1)
2-B	Room A-105B	ceramic tile grout	None detected (TEM)(1)
2-C	Room A-211	ceramic tile grout	None detected(1)
3-A	Room A-317	ceramic tile grout on wall	None detected (TEM)(1)
3-B	Room A-317	ceramic tile grout on wall	None detected(1)
3-C	Room A-317	ceramic tile grout on wall	None detected(1)
4-A	Room A-105B	paint on concrete block, 1964	**1.2% chrysotile(1)**
5-A	Room T-111	Textured finish on pressed wood panel	None detected(1)
5-B	Room A-105B	Textured finish on pressed wood panel	None detected(1)
5-C	Room T-111	Textured finish on pressed wood panel	None detected(1)
6-A	Room A-105A	Mortar, 1964	None detected (TEM)(1)

Sample Nº	Location	Description	Asbestos Content
6-B	Room A-105B	Mortar, 1964	None detected(1)
6-C	Room A-211	Mortar, 1964	None detected(1)
1A	Room A-120	Mastic – black in colour under 12” x 12” vinyl floor tile blue with light and dark fleck	None detected(1)
1B	Room A-120	Mastic – black in colour under 12” x 12” vinyl floor tile blue with light and dark fleck	None detected(1)
1C	Room A-120	Mastic – black in colour under 12” x 12” vinyl floor tile blue with light and dark fleck	None detected (PLM)(1) None detected (TEM)(1)
2A	Room T-98	Mastic – brown in colour from 12” x 12” ceiling tile with small and large hole.	None detected(1)
2B	Room T-99	Mastic – brown in colour from 12” x 12” ceiling tile with small and large hole.	None detected(1)
2C	Room T-99	Mastic – brown in colour from 12” x 12” ceiling tile with small and large hole.	None detected (PLM)(1) None detected (TEM)(1)
3A	Room G-100	Grout – white in colour from 1” x 6” ceramic blue wall tile	None detected(1)
3B	Room G-100	Grout – white in colour from 1” x 6” ceramic blue wall tile	None detected(1)
3C	Room T-100B	Grout – white in colour from 1” x 6” ceramic blue wall tile	None detected(1)
4A	Room G-100	Grout – grey in colour from 4” x 6” ceramic wall base	None detected(1)
4B	Room G-100	Grout – grey in colour from 4” x 6” ceramic wall base	None detected(1)
4C	Room T-100A	Grout – grey in colour from 4” x 6” ceramic wall base	None detected(1)
5A	Room G-100	Mortar bed – grey in colour from 4” x 6” ceramic wall base	None detected(1)
5B	Room G-100	Mortar bed – grey in colour from 4” x 6” ceramic wall base	None detected(1)
5C	Room T-100A	Mortar bed – grey in colour from 4” x 6” ceramic wall base	None detected(1)
6A	Room G-100	Paint – white in colour from concrete block wall, 1964	**1.1% chrysotile(1)**
7A	Room T-100A	Paint – white in colour from concrete block wall, 1964	**1.6% chrysotile(1)**
8A	Room T-118	Paint – white in colour from concrete block wall, 1964	**1.4% chrysotile(1)**

Sample Nº	Location	Description	Asbestos Content
9A	Room A-201	Paint – white in colour from concrete block wall, 1964	**2.1% chrysotile(1)**
10A	Room G-100	Mortar – grey in colour from concrete block wall, 1964	**1.6% chrysotile(1)**
11A	Room T-100A	Mortar – grey in colour from concrete block wall, 1964	**1.4% chrysotile(1)**
12A	Exterior T-114	Mortar – grey in colour from brick wall	None detected(1)
12B	Exterior T-118	Mortar – grey in colour from brick wall	None detected(1)
12C	Exterior T-102	Mortar – grey in colour from brick wall	None detected(1)
13A	Exterior Pool	Mortar – grey in colour from brick wall	None detected(1)
13B	Exterior Pool	Mortar – grey in colour from brick wall	None detected(1)
13C	Exterior Pool	Mortar – grey in colour from brick wall	None detected(1)

NOTES:

(1) Sample results derived from a report prepared by Arcadis for the Halton District School Board entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, White Oaks Secondary School – South Campus, 1330 Montclair Drive, Oakville, Ontario* dated May 19, 2021.

(2) "Asbestos-containing material" is defined as material that contains 0.5% or more asbestos by dry weight."

(3) Material collected in the area have since been removed and is provided here for references purposes only.

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

< = less than.

Chrysotile = Chrysotile asbestos.

Amosite = Amosite asbestos.

Determination of the locations of asbestos-containing material was made based on the review of existing information, results of bulk sample analysis, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Based on visual observations and results of laboratory analyses of samples collected by Arcadis Canada Inc., the following asbestos-containing materials were found to be present in the designated study areas:

- Thermal insulation applied to pipe fittings above ceiling assemblies in Rooms A-100, A-201 and A-301;
- Thermal insulation applied to pipe fittings below ceiling assemblies in Rooms A-101, A-231 and A-331;

- Black mastic applied to fiberglass insulation on duct work above ceiling assemblies in Rooms A-100, A-201 and A-301;
- Thermal insulation applied to duct work below ceiling assemblies in Rooms A-101, A-231 and A-331;
- Paint on concrete block walls throughout the designated study areas;
- Mortar in concrete block walls throughout the designated study areas;
- White door caulking throughout the designated study areas;
- Isolation sleeves (assumed asbestos) on mechanical equipment in Rooms A-101, A-231 and A-331; and
- Black mastic adhesive to 12” x 12” vinyl floor tiles in Rooms A-103, A-103A, Ev.A-104, A-105, A-203, Ev.A-203, A-303 and Ev.A-303.

During the course of the site investigations, Arcadis staff accessed cavities in exterior concrete block walls in several different locations throughout the designated study areas where renovation activities may disturb the concrete block walls. Materials suspected of containing asbestos (e.g. vermiculite block-fill insulation) was not observed in all block wall cavities accessed.

Asbestos-containing thermal insulation applied to pipe fittings is a white-coloured cementitious material.

Glass fibre insulation is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Thermal insulation and drywall paper are friable materials. The removal, alteration and/or disturbance of less than 1 m^2 of friable asbestos-containing materials is classified as a Type 2 enclosure operation as specified in O.Reg. 278/05. The removal, alteration and/or disturbance of more than 1 m^2 of friable asbestos-containing materials is classified as a Type 3 operation.

Vinyl floor tiles, floor tile mastics, mastic on ductwork, mortar and paint are non-friable materials. The removal, alteration and/or disturbance of these non-friable asbestos-containing materials can be performed as a Type 1 operation as specified in O. Reg. 278/05 if the material is wetted and the work is done only using non-powered, hand-held tools (see Table B-1 in Appendix B). If the removal, alteration and/or disturbance work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters, then the work is classified as Type 2. If the power tools do not have HEPA filtered dust collecting devices, then the work is Type 3.

The removal, alteration and/or disturbance of less than 7.5 m^2 of asbestos-containing tiles is a Type 1 operation (if the tiles are removed without being broken, cut, etc.). The removal, alteration and/or disturbance of 7.5 m^2 or more asbestos-containing ceiling tiles is a Type 2 operation (if the tiles are removed without being broken, cut, etc.).

The removal, alteration and/or disturbance of less than one square metre of drywall in which asbestos-containing joint filling compounds have been used is classified as a Type 1 operation. The removal, alteration and/or disturbance of one square metre or more of drywall with asbestos-containing joint compounds is a Type 2 operation.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by Arcadis, including, but not limited to, areas outside the designated study areas, roofing materials, fire doors, mastics or cementitious levelling compound under vinyl flooring, acoustic ceiling tile adhesive, grout, caulking, gaskets in piping, cementitious mortar on the back side of ceramic tile applications, internal components of boilers, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), concrete, asphaltic pavement, etc., and/or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, above suspended gypsum board or plaster ceilings, and below carpets). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

If any materials which may contain asbestos and which were not tested during the course of the designated substances and hazardous materials survey are discovered during any construction activities, the work shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined.

3.2 Lead

Arcadis reviewed a report prepared by Arcadis for the Halton District School Board entitled *Pre-Renovation Designated Substances and Hazardous Material Survey, White Oaks Secondary School – South Campus, 1330 Montclair Drive, Oakville, Ontario* dated May 19, 2021. Information and/or bulk sample analysis results obtained from this existing report was utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigations, representative samples of paint were collected at the time of the survey based on, in part, the visual appearance of the paints (i.e., colours). Paints of similar colours may have been applied at different times and have varying amounts of the analytes described above. The samples were forwarded to EMSL Canada Inc. for lead analyses. Results of bulk sample analysis for lead content are provided in Table 3.2. The laboratory report is provided in Appendix B.

Table 3.2. Summary of Results of Analyses of Bulk Samples for Lead Content

Sample No.	Sample Location	Sample Description	Lead Content
P-01	Room A101	Grey paint on concrete flooring	**2,200 ppm**
P-02	Room A100	White paint on brick wall	< 81 ppm
P2	Room A216	Beige paint on concrete block wall	**680 mg/kg** [(1)]

P3	Room A312	Beige paint on drywall wall	2.5 mg/kg (1)

NOTE:

(1) Bulk samples results were obtained from a report prepared by Arcadis for the HDSB entitled *Pre-Renovation Designated Substances and Hazardous Materials Survey, White Oaks Secondary School – South Campus, 1330 Montclair Drive, Oakville, Ontario* dated May 19, 2021.

< = less than.

mg/kg = milligrams lead per kilogram paint.

1 mg/kg = 1 part per million (ppm).

Lead was detected at a level above 90 mg/kg criterion value (Surface Coating Materials Regulations) in the grey paint sample on concrete flooring and beige paint sample on concrete block wall collected in the study areas.

Lead may also be present in lead pipe, mortar, glazing on ceramic tiles, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings.

The Ministry of Labour *Guideline – Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix B, Table B-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

In addition, the *EACO Lead Abatement Guidelines*, *2014 — Edition 1,* Environmental Abatement Council of Ontario, also provides guidance and recommended work practices.

3.3 Mercury

During the course of our site investigations, fluorescent lights were observed in the designated study areas. Mercury should be assumed to be present as a gas in all fluorescent light tubes and in all paint applications, albeit at low levels. The fluorescent light tubes should be recycled for mercury, if the lights are removed. Mercury-containing thermostats were not observed in the study area.

Proper procedures for removing and handling mercury-containing fluorescent light tubes typically involve:

- ensuring that electrical power to light fixtures has been disconnected and locked out;
- taking all necessary precautions to ensure that fluorescent lamp tubes are removed in a manner that prevents breakage; and
- transporting fluorescent lamp tubes to a licensed processing location for separation and recovery of mercury.

The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any mercury in paint.

3.4 Silica

Materials observed in the designated study areas which should be considered to contain silica included gypsum board, joint compound, concrete, concrete block, brick, mortar and vinyl floor tiles.

Silica can also be assumed to be present in any gravel ballast on roofs and will also be found in asphalt roofing materials if rock or stone are present in the asphalt.

The Ministry of Labour *Guideline, Silica on Construction Projects*, April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of silica, as shown in Appendix B, Table B-3.

Additional precautionary measures should also be implemented for certain types of materials (e.g., plaster and texture coat materials, including non-asbestos applications, concrete block, etc.). For minor disturbances such as drilling, a HEPA-filtered attachment should be used. For removal of more than a minor amount of material, enclosures should be constructed for dust control and separation of the work area from adjacent areas.

3.5 Vinyl Chloride

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products.

3.6 Acrylonitrile

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of combustion of ABS products.

3.7 Other Designated Substances

No other designated substances (benzene, isocyanates, arsenic, ethylene oxide and coke oven emissions) were observed to be present in the designated study areas, and none would be expected to be encountered in any building materials in a form that would represent an exposure concern. Arsenic may be present at low levels in paint applications. The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any arsenic (or mercury) in paint.

3.8 Polychlorinated Biphenyls (PCBs)

Fluorescent lights were observed in the designated study areas during the course of our site investigation. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed in the designated study areas, are usually an electronic type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling of the lights.

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Equipment potentially containing ozone-depleting substances was not observed during the course of the site investigations.

3.10 Mould

Readily evident mould was not observed during the course of the site investigation. The inspection of mould was limited to visual observations of readily-accessible surfaces and did not include intrusive inspections of wall cavities. During renovations or interior demolition work, any mould-impacted materials uncovered/discovered should be remediated following the measures and procedures outlined in the *Canadian Construction Association Standard Construction Document CCA-82 2004 - Mould Guidelines for the Canadian Construction Industry*.

4 USE AND LIMITATIONS OF THIS PRE- RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT

This report, prepared for the Halton District School Board, does not provide certification or warranty, expressed or implied, that the investigation conducted by Arcadis Canada Inc. identified all designated substances (as defined in the Ontario *Occupational Health and Safety Act*) in the designated study areas at the subject facility. The work undertaken by Arcadis Canada Inc. was directed to provide information on the presence of designated substances in building construction materials based on review of existing information, visual investigation of readily accessible areas in the designated study areas of the building and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content. The survey did not include for identification of asbestos in process materials, equipment (including electrical equipment and wiring), furniture (e.g., chairs, tabletops, chalkboards, etc.), nor material outside of the building (e.g., asphaltic pavement).

The material in this report reflects Arcadis Canada Inc.'s best judgment in light of the information available at the time of the investigation, which was performed on February 6, 2023.

This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

This report was prepared by Arcadis Canada Inc. for the Halton District School Board. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

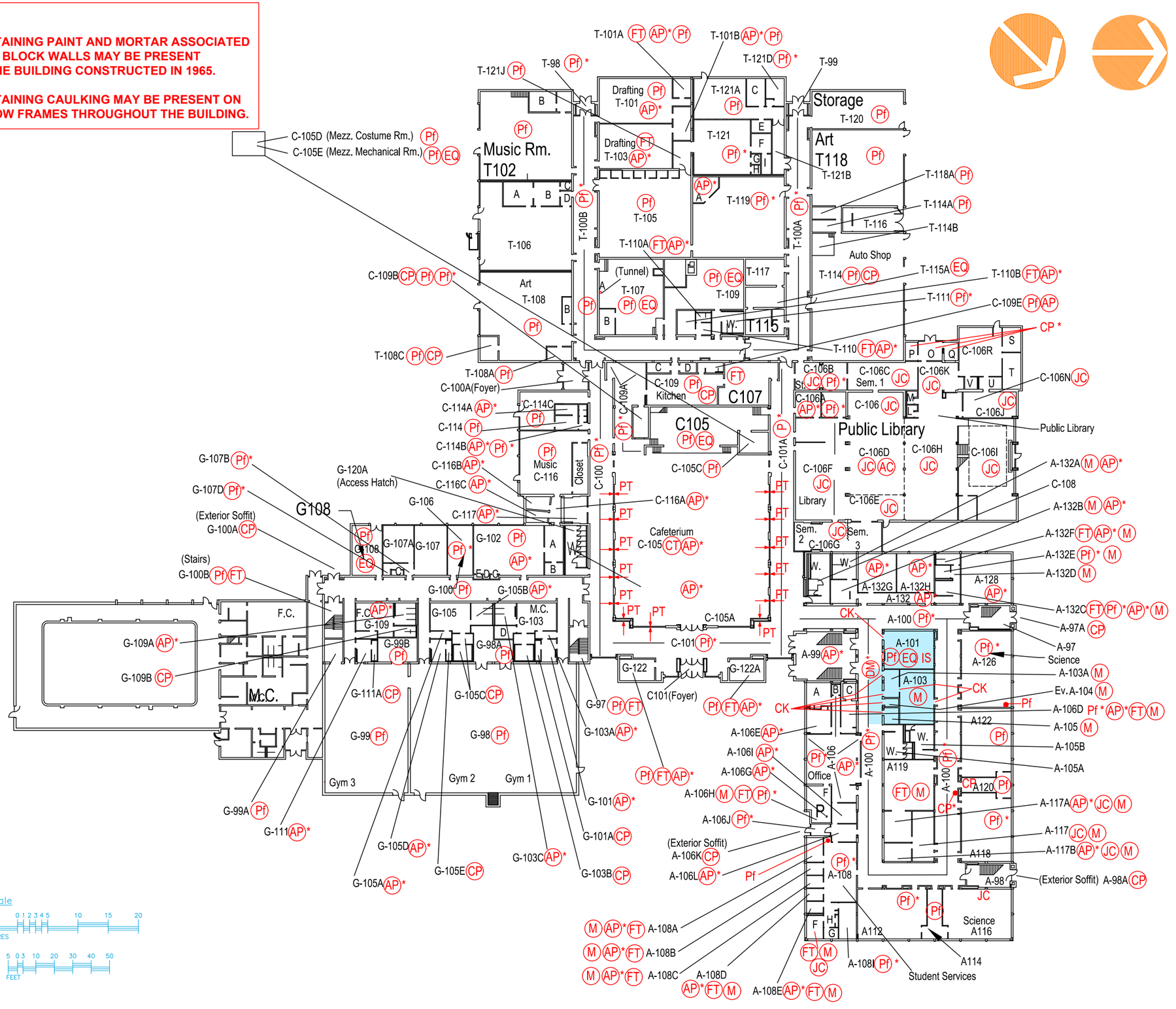
APPENDIX A

Floor Plans

NOTE:

ASBESTOS-CONTAINING PAINT AND MORTAR ASSOCIATED WITH CONCRETE BLOCK WALLS MAY BE PRESENT THROUGHOUT THE BUILDING CONSTRUCTED IN 1965.

ASBESTOS-CONTAINING CAULKING MAY BE PRESENT ON EXTERIOR WINDOW FRAMES THROUGHOUT THE BUILDING.



LEGEND:

T-125	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
P	ASBESTOS ON PIPES (FRIABLE)
Pf	ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
EQ	ASBESTOS ON MECHANICAL EQUIPMENT (FRIABLE)
CT	ASBESTOS CEILING TILES (NON-FRIABLE)
FT	ASBESTOS FLOORING (NON-FRIABLE)
CP	ASBESTOS CEMENT PRODUCT (NON-FRIABLE)
JC	ASBESTOS DRYWALL JOINT COMPOUND (FRIABLE)
OA	OTHER ABESTOS MATERIALS (NON-FRIABLE)
AP	ASBESTOS PAPER ON DRYWALL (FRIABLE)
PT	ASBESTOS PAINT (NON-FRIABLE)
AC	ASBESTOS ACOUSTIC SPRAY (FRIABLE)
CK	ASBESTOS DOOR CAULKING (NON-FRIABLE)
DM	ASBESTOS DUCT WORK MASTIC (NON-FRIABLE)
M	ASBESTOS FLOOR TILE MASTIC (NON-FRIABLE)
IS	ISOLATION SLEEVES (NON-FRIABLE)
	STUDY AREA

NOTE:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF STUDY AREAS AND ASBESTOS-CONTAINING MATERIALS

WHITE OAKS SOUTH HIGH SCHOOL
1330 MONTCLAIR DRIVE, OAKVILLE, ON

MAIN FLOOR PLAN

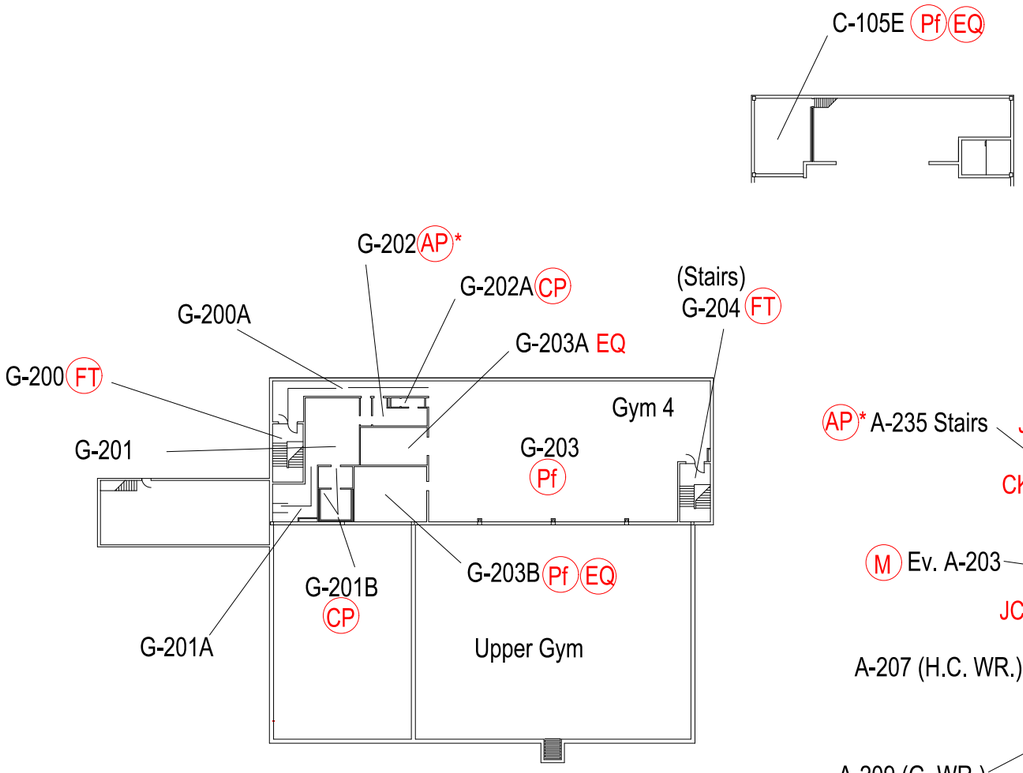
Drawn By: A.M.S	Approved By: RH	Project No: 30155714	
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-1	

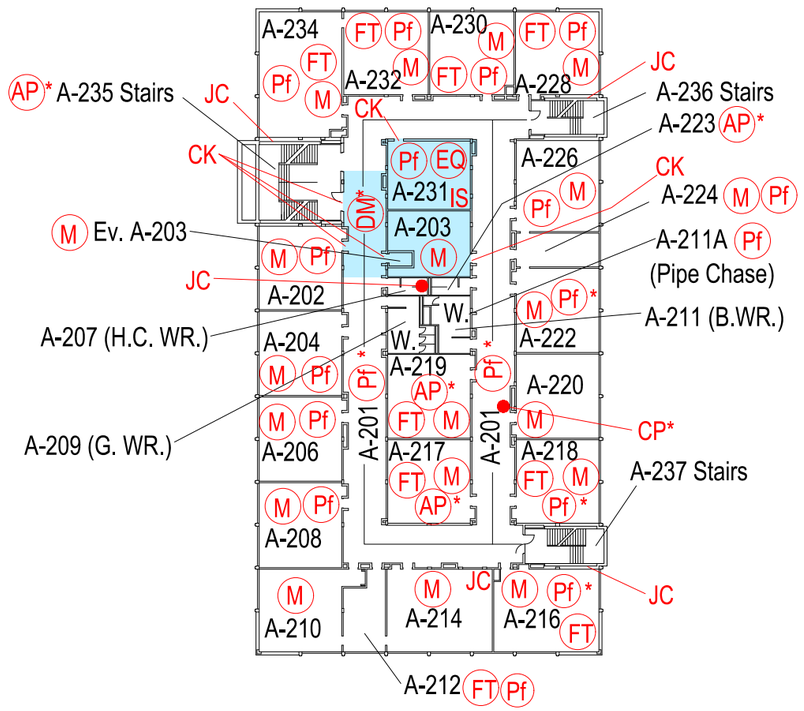
C:\Users\msa3653\ACCDocs\Arcadis\AUS-HALTON DIST SCHOOL BOARD-HALTON Ontario\Project Files\2023\01-In Progress\01-DWG\30155714-Richmond Hill\30155714 White Oak South ACM.dwg LAYOUT: 702170-117 WHITE OAKS SOUTH 1ST FL
SAVED: 3/7/2023 9:24 AM PLOTTED: 3/7/2023 9:25 AM BY: MS, ADITHYA

NOTE:

ASBESTOS-CONTAINING PAINT AND MORTAR ASSOCIATED WITH CONCRETE BLOCK WALLS MAY BE PRESENT THROUGHOUT THE BUILDING CONSTRUCTED IN 1965.

ASBESTOS-CONTAINING CAULKING MAY BE PRESENT ON EXTERIOR WINDOW FRAMES THROUGHOUT THE BUILDING.





Scale

5 0 1 2 3 4 5 10 15 20
METRES

5 0 3 10 20 30 40 50
FEET

LEGEND:

A-225	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
P	ASBESTOS ON PIPES (FRIABLE)
Pf	ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
EQ	ASBESTOS ON MECHANICAL EQUIPMENT (FRIABLE)
FT	ASBESTOS FLOORING (NON-FRIABLE)
CP	ASBESTOS CEMENT PRODUCT (NON-FRIABLE)
JC	ASBESTOS DRYWALL JOINT COMPOUND (FRIABLE)
AP	ASBESTOS PAPER ON DRYWALL (FRIABLE)
CK	ASBESTOS DOOR CAULKING (NON-FRIABLE)
DM	ASBESTOS DUCT WORK MASTIC (NON-FRIABLE)
M	ASBESTOS FLOOR TILE MASTIC (NON-FRIABLE)
IS	ISOLATION SLEEVES (NON-FRIABLE)
	STUDY AREA

NOTE:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF STUDY AREAS AND ASBESTOS-CONTAINING MATERIALS

WHITE OAKS SOUTH HIGH SCHOOL
1330 MONTCLAIR DRIVE, OAKVILLE, ON

SECOND FLOOR PLAN

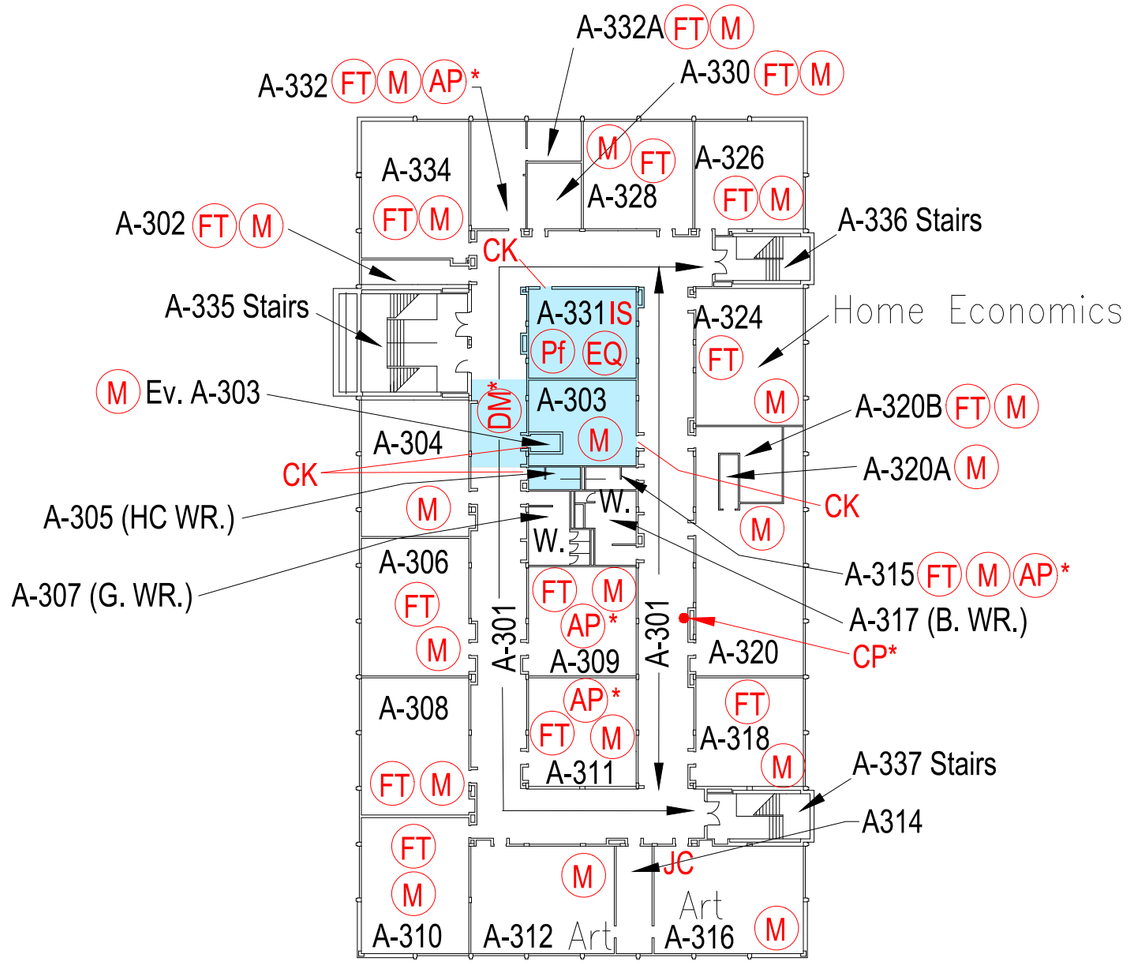
Drawn By: A.M.S	Approved By: RH	Project No: 30155714	
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-2	

C:\Users\msa3653\ACCDocs\Arcadis\AUS--HALTON DIST SCHOOL BOARD--HALTON Ontario\Project Files\2023\01-In Progress\01-DWG\30155714--Richmond Hill\30155714 White Oak South ACM.dwg LAYOUT: 702170--117 WHITE OAKS SOUTH 2ND FL
SAVED: 3/7/2023 9:24 AM PLOTTED: 3/7/2023 9:26 AM BY: MS, ADITHYA

NOTE:

ASBESTOS-CONTAINING PAINT AND MORTAR ASSOCIATED WITH CONCRETE BLOCK WALLS MAY BE PRESENT THROUGHOUT THE BUILDING CONSTRUCTED IN 1965.

ASBESTOS-CONTAINING CAULKING MAY BE PRESENT ON EXTERIOR WINDOW FRAMES THROUGHOUT THE BUILDING.



Scale

5 0 1 2 3 4 5 10 15 20
METRES

5 0 3 10 20 30 40 50
FEET

LEGEND:

A-309	FUNCTIONAL SPACE
◯	THROUGHOUT FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
P	ASBESTOS ON PIPES (FRIABLE)
Pf	ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
EQ	ASBESTOS ON MECHANICAL EQUIPMENT (FRIABLE)
FT	ASBESTOS FLOORING (NON-FRIABLE)
CP	ASBESTOS CEMENT PRODUCT (NON-FRIABLE)
AP	ASBESTOS PAPER ON DRYWALL (FRIABLE)
JC	ASBESTOS DRYWALL JOINT COMPOUND (NON-FRIABLE)
CK	ASBESTOS DOOR CAULKING (NON-FRIABLE)
DM	ASBESTOS DUCT WORK MASTIC (NON-FRIABLE)
M	ASBESTOS FLOOR TILE MASTIC (NON-FRIABLE)
IS	ISOLATION SLEEVES (NON-FRIABLE)
	STUDY AREA

NOTE:

1. INTERIORS OF ALL FIRE DOORS ARE ASSUMED TO CONTAIN ASBESTOS.

ARCADIS

HALTON DISTRICT SCHOOL BOARD

PRE-RENOVATION DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF STUDY AREAS AND ASBESTOS-CONTAINING MATERIALS

WHITE OAKS SOUTH HIGH SCHOOL
1330 MONTCLAIR DRIVE, OAKVILLE, ON

THIRD FLOOR PLAN

Drawn By: A.M.S	Approved By: RH	Project No: 30155714	
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-3	

C:\Users\msa3653\ACCDocs\Arcadis\AUS-HALTON DIST SCHOOL BOARD-HALTON Ontario\Project Files\2023\01-in Progress\01-DWG\30155714-Richmond Hill\30155714 White Oak South ACM.dwg LAYOUT: 702170-117 WHITE OAKS SOUTH 3RD FL (2)
SAVED: 3/7/2023 9:24 AM PLOTTED: 3/7/2023 9:26 AM BY: MS, ADITHYA

APPENDIX B

Laboratory Reports

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552301792
Customer ID: 55DCSL97
Customer PO: 30155714
Project ID:

Attn: Rebecca Hao
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 2/07/2023
Analyzed: 2/14/2023

Proj: White Oaks South Secondary School South Campus

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 1-A **Lab Sample ID:** **552301792-0001**

Sample Description: Black tar on fibreglass duct work insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Black	2.0%	78.0%	**20% Chrysotile**	

Client Sample ID: 1-B **Lab Sample ID:** **552301792-0002**

Sample Description: Black tar on fibreglass duct work insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023			Positive Stop (Not Analyzed)		

Client Sample ID: 1-C **Lab Sample ID:** **552301792-0003**

Sample Description: Black tar on fibreglass duct work insulation

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023			Positive Stop (Not Analyzed)		

Client Sample ID: 2-A **Lab Sample ID:** **552301792-0004**

Sample Description: Brown vinyl baseboard - Vinyl Baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/14/2023	Beige	0.0%	100%	None Detected	
TEM Grav. Reduction	2/14/2023	Beige	0.0%	100.0%	None Detected	

Client Sample ID: 2-B **Lab Sample ID:** **552301792-0005**

Sample Description: Brown vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 2-C **Lab Sample ID:** **552301792-0006**

Sample Description: Brown vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 3-A **Lab Sample ID:** **552301792-0007**

Sample Description: Mastic adhesive to brown vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Tan	0.0%	100.0%	None Detected	

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552301792
Customer ID: 55DCSL97
Customer PO: 30155714
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 3-B **Lab Sample ID:** **552301792-0008**
Sample Description: Mastic adhesive to brown vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Tan	0.0%	100.0%	None Detected	

Client Sample ID: 3-C **Lab Sample ID:** **552301792-0009**
Sample Description: Mastic adhesive to brown vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 4-A **Lab Sample ID:** **552301792-0010**
Sample Description: White vinyl baseboard - Vinyl Basebaord

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM Grav. Reduction	2/14/2023	White	0.0%	100%	None Detected	
TEM Grav. Reduction	2/14/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 4-B **Lab Sample ID:** **552301792-0011**
Sample Description: White vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 4-C **Lab Sample ID:** **552301792-0012**
Sample Description: White vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	White	0.0%	100.0%	None Detected	

Client Sample ID: 5-A **Lab Sample ID:** **552301792-0013**
Sample Description: Mastic adhesive to white vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5-B **Lab Sample ID:** **552301792-0014**
Sample Description: Mastic adhesive to white vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5-C **Lab Sample ID:** **552301792-0015**
Sample Description: Mastic adhesive to white vinyl baseboard

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Fibrous	Asbestos	Comment
PLM	2/14/2023	Yellow	0.0%	100.0%	None Detected	

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

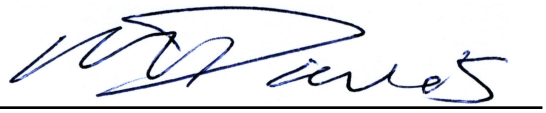
EMSL Canada Order 552301792
Customer ID: 55DCSL97
Customer PO: 30155714
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Analyst(s):

Ashley Brito	PLM (7)
Kira Ramphal	PLM (4)
Sandy Burany, Ph.D	TEM Grav. Reduction (2)
Vanessa Gallego	PLM Grav. Reduction (2)

Reviewed and approved by:



Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 02/14/202315:50:38

EMSL Canada Inc.
2756 Slough Street, Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com torontolab@emsl.com

EMSL Canada Or	552301737
CustomerID:	55DCSL97
CustomerPO:	30155714
ProjectID:	

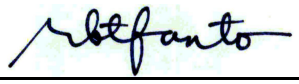
Attn: **Rebecca Hao**
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4

Phone:	(905) 882-5984
Fax:	(905) 882-8962
Received:	2/7/2023 09:00 AM
Collected:	

Project: **30155714 - White Oaks South Secondary School South Campus**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
P-01 Grey Paint		2/7/2023	0.2506 g	80 ppm	2200 ppm
552301737-0001	Site: Room A-101 - Concrete Flooring				
P-02 White Paint		2/7/2023	0.2464 g	81 ppm	<81 ppm
552301737-0002	Site: Room A-100 - Brick Wall				



Rowena Fanto, Lead Supervisor
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
* Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA LAP, LLC-ELLAP Accredited #196142

Initial report from 02/14/2023 08:18:03

APPENDIX C

Summary of Asbestos, Lead and Silica Work Classifications

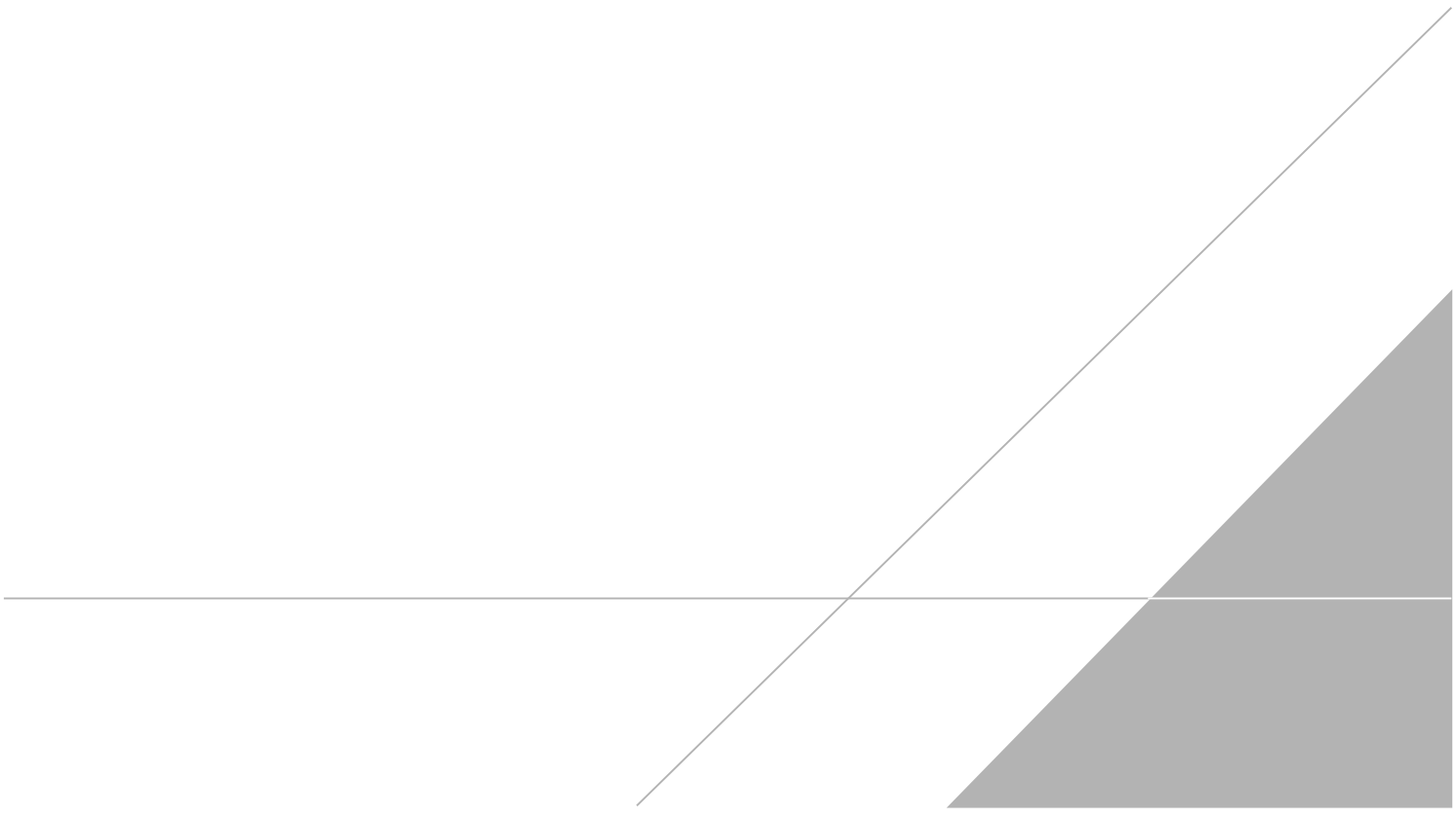


TABLE C-1
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m^2 asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m^2 of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m^2 or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m^3	>0.05 to 0.50 mg/m^3	>0.50 to 1.25 mg/m^3	>1.25 to 2.50 mg/m^3	>2.50 mg/m^3

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbit or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3

SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS

MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m^3	>0.50 to 2.50 mg/m^3	>2.5 mg/m^3
Quartz and Tripoli	>0.10 to 1.0 mg/m^3	>1.0 to 5.0 mg/m^3	>5.0 mg/m^3

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
- Abrasive blasting of a material that contains ≥ 1 per cent silica.

Arcadis Canada Inc.

121 Granton Drive, Suite 12, Richmond Hill, Ontario L4B 3N4

Tel 905 764 9380

www.arcadis.com

ASBESTOS ABATEMENT SPECIFICATIONS
White Oaks Secondary School South Campus

TABLE OF CONTENTS

1.0 PART 1 – GENERAL 2
1.1 GENERAL 2
1.2 ASBESTOS ABATEMENT OUTLINE OF WORK 2
1.3 GENERAL REQUIREMENTS 6
1.4 DEFINITIONS 8
1.5 REGULATORY AGENCIES 10
1.6 FIRE SAFETY PLAN 10
1.7 SUBMITTALS 11
1.7.1 Submittals Before Commencing Work 11
1.7.2 Submittals Before Commencing Asbestos Removal 13
1.7.3 Submittals Upon Completion of Work 14
1.8 EXISTING CONDITIONS 14
1.9 RESTRICTIONS 14
1.10 WORKER PROTECTION 14
1.11 NOTIFICATIONS 16
1.12 PROTECTION, REPAIR AND REPLACEMENT OF EQUIPMENT AND MATERIALS 16
1.13 CONFINED SPACES 17
2.0 PART 2 – PRODUCTS 18
2.1 MATERIALS 18
2.2 EQUIPMENT 18
3.0 PART 3 – EXECUTION 21
3.1 MAJOR ASBESTOS WORK (TYPE 3 OPERATIONS) 21
Not Applicable. 21
3.2 TYPE 2 ENCLOSURE METHOD 21
3.3 TYPE 2 NON-ENCLOSURE METHOD 24
3.4 TYPE 1 OPERATION 25
3.5 WASTE DISPOSAL 25
3.6 AIR MONITORING 26

At Rear:

Drawing No 30155714-1 - Locations of Work Areas – First Floor Plan

Drawing No 30155714-2 - Locations of Work Areas – Second Floor Plan

Drawing No 30155714-3 - Locations of Work Areas – Third Floor Plan

Asbestos Abatement Electrician's Submittal Form

1.0 PART 1 – GENERAL

1.1 GENERAL

.1 The requirements as set out in these specifications may, at times, exceed the procedures detailed in the various applicable regulations. All work shall be done in compliance with the specifications AND the regulations. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

1.2 ASBESTOS ABATEMENT OUTLINE OF WORK

.1 The intent of the work is to remove, and dispose select accessible asbestos-containing materials, to the extent practicable, prior to and during renovation work and to assist in making attachments to asbestos-containing materials.

.2 Replacement of the removed materials is not part of this contract unless otherwise noted.

.3 Coordinate all work with the General Contractor and sub trades as required.

.4 Refer to Architectural, Mechanical, Electrical and Structural drawings and project specifications for additional details and locations.

.5 All mechanical, electrical and life systems isolations and disconnects and removal of mechanical and electrical systems and equipment will be performed by the General Contractor's sub trades prior to commencement of remedial work.

.6 Removal of doors and associated hardware where door frames are being removed by the Asbestos Abatement Contractor, will be performed by the General Contractor's sub trades prior to commencement of remedial work.

.7 Removal of select locker units, select millwork, select tack boards, and select sections of ceiling assemblies, as required to access asbestos-containing building materials slated for removal by the Asbestos Abatement Contractor, will be performed by the General Contractor's sub trades prior to commencement of remedial work.

.8 Electrical hookups of GFI panels will be performed by the General Contractor's licensed electrician in compliance to all regulatory requirements and codes.

.9 Each negative pressure unit and HEPA vacuums shall be integrity tested at the work site prior to commencement of asbestos removal operations.

.10 Work will be performed as two Phases: Phase 1 and Phase 2. Phase 1 referred to as the (Abatement Phase) will be performed as part of the first mobilization. Phase 2 referred to as the (Rebuild Phase) may be performed as several separate mobilizations.

.11 Provide all supervision, labour, equipment, tools, materials, waste management, haulage and disposal, and other services, as required, for undertaking and completing all of the work, as detailed below.

.12 **Work Area 1 – Phase 1 (Abatement Phase) – Rooms A-100 (Partial), A103 (Partial), A-103A, Ev. A104, A-105, A-201 (Partial), A-203 (Partial), Ev. A-203, A-301 (Partial), A-303 (Partial), and Ev. A-303.**

.1 Prepare the areas as indicated above and on the attached floor plans for Type 2 Enclosure asbestos removal operations.

.2 Supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.3 Establish a measurable negative pressure differential in the enclosure work areas by using fan/filter units equipped with High Efficiency Particulate Air (HEPA) filters. Units must be integrity-tested on site and are to be exhausted directly outdoors.

.4 Remove and dispose the following as clean demolition waste:

.1 All baseboards in Rooms A103A and A-105.

.2 Select sections of baseboards in Rooms A-103, A-203, and A-303 in areas adjacent to locations where flooring and concrete block walls are being removed by the Asbestos Abatement Contractor.

.5 Remove and dispose the following as asbestos waste:

.1 All non-asbestos-containing vinyl floor tiles and associated asbestos-containing mastics in Rooms A103A and A-105 and Existing Elevator Unit.

.1 Using power tools (power grinders) that are attached to dust collecting devices equipped with HEPA filters, completely remove all vinyl floor tile mastic from floor substrate materials. Chemical mastic removers are not to be used.

.1 Dust collecting devices with HEPA filters (HEPA vacuums) that are attached to power tools, must have adequate CFM capacity to properly collect mastic and residual dust generated by the power grinding operations.

.2 All power tools used to remove mastics, must have an integral shrouding system designed to properly contain dust and debris generated by the power grinding operations.

.2 Select sections of non-asbestos-containing vinyl floor tiles and associated asbestos-containing mastics in Rooms A-103, A-203 and A-303. The General Contractor will clearly identify all areas of floor tile removals. For costing purposes allow for the removal of a total of eighty (80) square metres of vinyl floor tiles. Refer to Architectural Drawing A1.00 for details.

.1 Using power tools (power grinders) that are attached to dust collecting devices equipped with HEPA filters, completely remove all vinyl floor tile mastic from floor substrate materials in areas where floor tiles were removed. Chemical mastic removers are not to be used.

.1 Dust collecting devices with HEPA filters (HEPA vacuums) that are attached to power tools, must have adequate CFM

capacity to properly collect mastic and residual dust generated by the power grinding operations.

.2 All power tools used to remove mastics, must have an integral shrouding system designed to properly contain dust and debris generated by the power grinding operations.

.6 Remove and dispose as asbestos waste, asbestos-containing caulking applied to five (5) metal door frames specified for removal in Rooms A-100, A-103, A-103A, Ev. A-104, A-105, Ev. A-203 and Ev. A-303. Refer to Architectural Drawing A1.00 for details.

.1 Following completion of above remedial work, remove and dispose as asbestos waste, all five (5) metal door frames and associated asbestos-containing mortar.

.7 Using Type 2 asbestos removal procedures, inside the enclosure work areas, remove and dispose as asbestos waste, select pockets of concrete block and associated asbestos-containing mortar and/or asbestos-containing paint in areas pre-determined by the General Contractor to allow for wall shoring operations which will be performed by the General Contractors sub trades in select concrete block walls in Rooms A-100, A-103, A-103A, Ev. A-104, A-105, A-201, A-203, Ev. A-203, A-301, A-303 and Ev. A-303. Where saw cuts are required in masonry, use power tools that are attached to dust collecting devices equipped with HEPA filters. Following completion of above remedial work, Asbestos Abatement Contractor will demobilize from the work areas to allow the General Contractors sub trades to perform shoring operations.

.1 Following completion of shoring operations, using Type 2 asbestos removal procedures, remove and dispose as asbestos waste, select sections of concrete block and associated asbestos-containing mortar and/or asbestos-containing paint in areas pre-determined by the General Contractor to facilitate installation of steel lintels which will be performed by the General Contractors sub trades. Where cuts are required in masonry, use power tools that are attached to dust collecting devices equipped with HEPA filters. Following completion of above remedial work, Asbestos Abatement Contractor will demobilize from the work areas to allow the General Contractors sub trades to install lintels.

.2 Following completion of lintel installations, using Type 2 enclosure asbestos removal procedures, remove and dispose as asbestos waste, select concrete block walls sections and associated asbestos-containing mortar and/or asbestos-containing paint in Rooms A-101, A-103, A-103A, Ev. A-104, A-105, A-201, A-203, Ev. A-203, A-301, A-303 and Ev. A-303. Where saw cuts are required in masonry, use power tools that are attached to dust collecting devices equipped with HEPA filters. The General Contractor will clearly identify all areas of concrete block removals. For costing purposes, allow for the removal of a total of sixty (60) square metres of concrete block. Refer to Architectural Drawing A1.00 for details.

.13 **Work Area 2 – Phase 2 (Rebuild Phase) Areas To be Determined**

.1 Prepare locations pre-determined by the General Contractor for Type 2 Enclosure asbestos removal operations.

.2 During the rebuild phase, perform localized removal of concrete block and associated asbestos-containing mortar and/or asbestos-containing paint to facilitate renovation work.

.3 If required, supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.4 Using hand tools or power tools attached to dust collecting devices equipped with HEPA filters, remove and dispose as asbestos waste, select sections of concrete block and associated asbestos-containing mortar and/or asbestos-containing paint. For costing purposes allow for two workers over a 10-hour shift (including travel time) per mobilization. Allow for four (4) separate mobilizations.

.14 **Work Area 3 – Phase 2 (Rebuild Phase) Areas To be Determined**

.1 Prepare locations pre-determined by the General Contractor for Type 2 Enclosure asbestos removal operations.

.2 During the rebuild phase, assist General Contractor's sub trades in attaching items to concrete block walls with asbestos mortar and/or asbestos-containing paint.

.3 If required, supply and install scaffolding, in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.4 Using power tools attached to dust collecting devices equipped with HEPA filters, mechanically fasten items supplied by the General Contractor to concrete block walls with asbestos-containing mortar and/or asbestos-containing paint. The General Contractor will supply mechanical fasteners and items to be fastened and will clearly identify locations where asbestos removals and attachments are required. For costing purposes allow for two workers over a 10-hour shift (including travel time) per mobilization. Allow for four (4) separate mobilizations.

.15 **Work Area 4 – Phase 2 (Rebuild Phase) Areas To be Determined**

.1 Prepare locations pre-determined by the General Contractor for Type 2/glovebag asbestos removal operations.

.2 Remove and dispose, as asbestos waste, accessible asbestos-containing thermal insulation from select pipe fittings and/or select sections of ducting to allow for modifications to mechanical systems and/or mechanical tie-ins. The General Contractor will clearly mark all locations for thermal insulation removals. For costing purposes, allow for twelve glovebag removal operations of less than one square metre of asbestos thermal insulation per glovebag location per mobilization. For costing purposes allow for two workers over a 10-hour shift (including travel time) per mobilization. Allow for two (2) separate mobilizations.

.16 Mortar in concrete block contains 1.4% to 1.6% chrysotile asbestos. Paint on concrete block walls contains 1.1% to 2.1% chrysotile asbestos. Thermal insulation on pipe fittings contains 51% chrysotile asbestos. Black mastic on surface of fiberglass duct insulation contains 20%

chrysotile asbestos. Vinyl floor tile mastic contains 1% to 6% chrysotile asbestos. Caulking on door frames contains 0.71% to 1.8% chrysotile asbestos.

.17 All waste is to be removed from the site and disposed. Asbestos waste disposal bins are not to be left on School property unless fully enclosed with an integral metal roof system and locked. Disposal bins must be removed immediately on completion of work.

.18 Schedule

.1	Mobilization	To be Coordinated with the General Contractor
.2	Complete Work and Demobilization	To be Coordinated with the General Contractor

1.3 GENERAL REQUIREMENTS

.1 The location and availability of utilities including water, sewer and electrical power is to be determined on site. The Asbestos Contractor shall co-operate with all others on site. Should there be any disagreement, or should Contractors be unable to reach a satisfactory working arrangement, the Arcadis Canada Inc. Consultant shall determine the manner for proceeding. The Asbestos Contractor shall not be entitled to any additional payment.

.2 The Asbestos Contractor is responsible for all electrical connects and disconnects. All work must be performed by a licensed electrician in compliance to all regulatory requirements and codes.

.3 The Asbestos Contractor is responsible for making all arrangements, and for paying for the disposal of all waste materials in accordance to all applicable government laws and regulations including local, provincial and federal.

.4 The Asbestos Contractor is advised that extended hours of work may be required to meet the schedules as detailed in the Scope of Work and shall allow for the cost thereof including shift premiums and overtime. The Arcadis Canada Inc. Consultant shall be advised in writing at least four days in advance of the proposed working hours.

.5 The Asbestos Contractor shall furnish and post on site the name and current phone number of an authorized representative(s) who can be contacted on a 24-hour basis in case of an emergency.

.6 All precautions will be taken to prevent the spread of contaminated material and to protect all parties including Asbestos Contractor's personnel, Owner's employees and the public from asbestos dust exposure during the course of the work. The documents outline the minimum levels of precaution to be taken.

.7 All work in work areas that are confined spaces shall comply with all requirements respecting confined spaces specified in O. Reg. 632/05, as amended 346/15, November 26, 2015.

.8 **All work shall be done in compliance with the specifications and the Ontario Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* – made under the *Occupational Health and Safety Act***. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

.9 Contract conditions include, but are not limited to, complying with all Regulations, taking all precautions necessary to control the release of asbestos fibres within the work areas, preventing the release of asbestos fibres outside the work areas, and providing appropriate protection from exposure to asbestos fibres for all parties. Failure to meet any of these conditions will be considered a fundamental breach of the Contract.

.10 The Arcadis Canada Inc. Consultant will visit the site at his/her discretion to familiarize himself/herself with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents.

.11 The Arcadis Canada Inc. Consultant shall have the authority to immediately stop the Work through a written instruction if, in his opinion, the Work does not conform to the requirements of the Contract Documents, or if continuance of the Work could subject the Owner, his employees or the public to a hazardous condition. The Work shall not recommence until such time as the deficiency or hazardous situation has been corrected and a written notice to proceed has been issued by the Arcadis Canada Inc. Consultant.

.12 If the Asbestos Contractor fails to comply with requirements dealing with the control of asbestos fibres and the health and safety of Asbestos Contractor employees, Arcadis Canada Inc. Consultant and Owner personnel or the Public, the Owner, or the Owner's representative, may verbally instruct the Asbestos Contractor to cease work immediately with written confirmation to follow within two working days. If the Arcadis Canada Inc. Consultant gives a written statement to the Owner and the Asbestos Contractor that sufficient cause exists, the Owner may notify the Asbestos Contractor in writing that he is in default of his contractual obligations.

.13 Any employee shall be replaced, at the written request of the Arcadis Canada Inc. Consultant, if working, or causing others to work, in violation of O.Reg. 278/05.

.14 The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following and shall name the Owner, the Architect, the General Contractor and Arcadis Canada Inc. as additional insureds:

.1 General Liability $5 million;

.2 Automotive Liability $2 million;

.3 Pollution Liability $5 million including asbestos operations.

.15 The supervisor must have proven experience and proficiency in the type of Work being undertaken under this Contract.

.16 The supervisor shall be replaced, at the written request of the Arcadis Canada Inc. Consultant, if found to be incompetent or inattentive to the needs of the project.

.17 Where standards of performance are specified or implied and the Work does not comply with the performance specified or implied, such deficiencies shall be corrected as directed by the Arcadis Canada Inc. Consultant. Any subsequent testing shall be done at the Asbestos Contractor's expense.

1.4 DEFINITIONS

.1 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol (HEPA) filtered vacuum equipment acceptable to Health and Welfare Canada and meeting U.S. Military Standard 282. This vacuum equipment shall have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 micrometer or larger.

.2 *Polyethylene sheeting sealed with tape:*

.1 Polyethylene sheeting of thickness specified sealed with tape along all edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through the sheeting into a clean area.

.3 *Inspector:*

.1 Representative of Arcadis Canada Inc. designated by the owner to provide inspection and air monitoring of the Contractor's work.

.4 *Authorized Visitor:*

.1 Representative of the building owner, Arcadis Canada Inc., and/or persons representing regulatory agencies.

.5 *Amended Water:*

.1 Water with a non-ionic surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.

.6 *Airlock:*

.1 A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area typically consisting of two curtained doorways at least 1.5 m apart.

.7 *Curtained Doorways:*

.1 An arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed by placing two overlapping sheets of polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway.

.2 All free edges of polyethylene shall be reinforced with duct tape and the bottom edge shall be weighted to ensure proper closing. Each polyethylene sheet shall overlap openings an additional 1/3 of the doorway width.

.8 *Operating Area:*

.1 Area where no removal or repair Work is underway.

.9 *Clean Area:*

.1 Either an operating area or an area in which removal Work has already been completed.

.10 *Work Area:*

.1 Where the actual removal of asbestos-containing materials take place.

.11 *Negative Pressure:*

.1 A system which extracts air from the work area and discharges this air directly outside the building, sufficient to maintain a minimum pressure differential of 0.5 mm (0.02 inch) of water column relative to adjacent areas outside of work areas. This air extraction system is to be equipped with a High Efficiency Particulate Aerosol filtering system before discharge.

.12 *Confined Space:*

.1 A fully or partially enclosed space,

.1 that is not both designed and constructed for continuous human occupancy, and

.2 in which atmospheric hazards may occur because of its construction, location or contents or because of work that is done in it.

1.5 REGULATORY AGENCIES

.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in any case of conflict among those requirements or with these Specifications the more stringent requirement shall apply. These include, but are not limited to, the following:

.1 Ontario Ministry of Labour, Occupational Health and Safety Division, *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*, O. Reg. 278/05, as amended 62/18, March 2, 2018 – made under the *Occupational Health and Safety Act, R.S.O. 1990, c. E. 19, as amended.*

.2 Ontario Ministry of the Environment *Regulation 347* under the Environmental Protection Act, 19 as amended by O. Reg. 509/21, June 30, 2021.

.2 Government of Canada *Regulations Respecting the Handling, Offering for Transport and Transporting of Dangerous Goods*. (Extract from the Canada Gazette Part II, dated February 6, 1985.)

.3 Government of Ontario *Occupational Health and Safety Act, -R.S.O. 1990, c. E. 19, as amended, and Regulations for Construction Projects* O. Reg. 213/91, as amended.

.4 Office of the Fire Commissioner of Canada.

.5 Ontario Electrical Safety Code.

.6 Government of Ontario, Building Code O. Reg. 332/12, as amended 137/19, May 2, 2019.

.2 *Patents:*

.1 It shall be the Contractor's responsibility to ensure that all applicable patent laws are complied with.

1.6 FIRE SAFETY PLAN

.1 Prior to initiating any work on the site, the Contractor shall prepare and submit in writing to the Engineer a Fire Safety Plan. The Plan shall be in accordance to the requirements set forth in Section 2.14, Construction and Demolition Sites, of the National Fire Code and shall include:

.1 the designation and organization of site personnel to carry out fire safety duties, including fire water services if applicable;

.2 the emergency procedures to be used in the case of fire, including:

.1 sounding the fire alarm;

.2 notifying the fire department;

.3 instructing site personnel on procedures to be followed when the alarm sounds; and

.4 firefighting procedures;

.3 the control of fire hazards in and around the building;

.4 maintenance of firefighting facilities; and

.5 special requirements as may be identified by the building owner.

.2 Implementation of the Fire Safety Plan shall be the sole responsibility of the Contractor, and the above shall, in no way, limit the Contractor's statutory and regulatory obligations. During the work, the Fire Safety Plan shall be prominently displayed at the site and its requirements included in site safety training and awareness programs.

1.7 SUBMITTALS

1.7.1 Submittals Before Commencing Work

.1 The following documentation shall be submitted to the Inspector with a dated covering letter listing attachments a minimum 48 hours prior to commencement of the Work:

.1 *Permits and Notifications:*

.1 All necessary permits for transporting and disposal of asbestos waste. Submit proof satisfactory to Inspector that suitable arrangements have been made to receive and properly dispose of asbestos waste. Copies of all Notifications required by Section 1.11.

.2 *Safety Data Sheets:*

.1 Safety Data Sheets, or equivalent, for any sealant, surfactant or other material proposed for use. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

.3 *Supervisory Personnel:*

.1 Names of supervisory personnel who will be responsible for work area(s). **One of these supervisors must remain on site at all times asbestos removal or cleanup is occurring**. Submit proof that supervisory personnel have over 2000 hours experience on asbestos abatement projects, have performed supervisory functions on at least two other asbestos projects and have achieved the level of training as set out by the Regulation.

.4 *Schedule:*

.1 Provide a bar chart indicating planned progress for critical activities as required under **Scope of Work** as well as additional information listed below a minimum of 48 hours prior to commencement of any preparatory work indicating:

.1 shifts to be worked;

.2 proposed workforce;

.3 starting date;

.4 estimated date of commencement of asbestos removal;

.5 estimated date of completion of asbestos removal;

.6 estimated completion date.

.5 *Insurance:*

.1 Provide a Certificate signed by the insurance agency naming the Owner, the Architect, the General Contractor and Arcadis Canada Inc. as co-insureds.

2. The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following:

.1 General Liability $5 million;

.2 Automotive Liability $2 million;

.3 Pollution Liability $5 million including asbestos operations.

.3 The Asbestos Contractor must provide thirty (30) days' notice of cancellation or amendment of coverage.

.6 *Fire Safety Plan*:

.1 In accordance to Article 1.6 above.

.7 *Confined Space:*

.1 If a work area, or part thereof, is a confined space, the contractor shall submit:

.1 a co-ordination document (see Section 1.13.1.1);

.2 a written program (see Section 1.13.1.2);

.3 a written plan (see Section 1.13.1.4).

.8 *Asbestos Training:*

.1 A letter certifying that:

(a) every worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry of Training, Colleges and Universities; and

(b) every supervisor of a worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities. O.Reg. 278/05, s. 20(1).

1.7.2 Submittals Before Commencing Asbestos Removal

.1 Results of negative pressure unit and HEPA vacuum integrity tests.

.2 Proposed Work Area emergency exit procedures.

.3 Proposed locations of decontamination facilities and negative pressure units and exhaust routing.

.4 Evidence (letter or other suitable documentation) of proper construction, inspection and installation of GFI panel by licensed electrician in compliance to all regulatory requirements and codes.

1.7.3 Submittals Upon Completion of Work

.1 Asbestos waste haulage and disposal documentations including Bills of Lading, waste transfer documents and dump receipts.

.2 All documentation as specified in the contract General Conditions including, but not limited to, Workplace Safety and Insurance Board Certificate, Statutory Declarations and Proof of Publication of Substantial Performance.

1.8 EXISTING CONDITIONS

.1 Mortar in concrete block contains 1.4% to 1.6% chrysotile asbestos. Paint on concrete block walls contains 1.1% to 2.1% chrysotile asbestos. Thermal insulation on pipe fittings contains 51% chrysotile asbestos. Black mastic on surface of fiberglass duct insulation contains 20% chrysotile asbestos. Vinyl floor tile mastic contains 1% to 6% chrysotile asbestos. Caulking on door frames contains 0.71% to 1.8% chrysotile asbestos.

.2 Existing conditions are documented in a report prepared by Arcadis Canada Inc. for the Halton District School Board, titled "*Pre-Renovation Designated Substances Survey, White Oaks South Secondary School South Campus, 1330 Montclair Drive, Oakville, Ontario"* dated March 7, 2023, which is included with the tender documents.

.3 Masonry applications may contain silica. Paint applications contain lead and may contain mercury. Appropriate dust control procedures and respiratory protective equipment are to be used if disturbing these materials.

1.9 RESTRICTIONS

.1 Do not allow smoking, eating or drinking in the work area.

.2 Do not allow entry to work area by unauthorized persons.

.3 Compressed air shall not be used in the work area.

.4 Open flames will not be permitted in the work area (including but not limited to torches and propane-fired heaters).

1.10 WORKER PROTECTION

.1 *Instructions:*

.1 Before commencing Work, instruct workers in all aspects of work procedures and protective measures.

.2 *Respiratory Protection:*

.1 Provide workers with personally issued and marked respiratory equipment acceptable to the Occupational Health and Safety Division of the Ontario Ministry of Labour, suitable for the asbestos exposure in the work area.

.2 Ensure that suitable respiratory protective equipment is worn by every worker who enters the work area. A respirator provided by an employer and used by a worker:

.1 shall be in accordance to O.Reg. 278/05, Section 13, respirators;

.2 shall be fitted so that there is an effective seal between the respirator and the worker's face;

.3 shall be assigned to a worker for the worker's exclusive use;

.4 shall be used and maintained in accordance with the procedures specified by the equipment manufacturer;

.5 shall be cleaned, disinfected and inspected after use on each shift, or more often if necessary;

.6 shall have damaged or deteriorated parts replaced prior to being used by a worker; and

.7 when not in use, shall be stored in a convenient, clean and sanitary location.

.3 *Protective Clothing:*

.1 Provide workers with protective clothing which shall:

.1 be worn by every worker who enters the work area;

.2 be made of a material which does not readily retain nor permit penetration of asbestos fibres;

.3 consist of full body covering including head covering with snug fitting cuffs at the wrists, ankles and neck;

.4 include suitable footwear; and

.5 be repaired or replaced if torn.

1.11 NOTIFICATIONS

.1 Notify, in writing, the local Fire Department of the extent of the work, including a copy of the Fire Safety Plan detailed in Article 1.6 above.

.2 Notify, orally and in writing, an inspector at the office of the Ministry of Labour nearest the work place of the operation. O.Reg. 278/05, Section 11.

.1 The written notice required by subsection (1) shall set out:

.1 the name and address of the person giving the notice;

.2 the name and address of the owner of the place where the work will be carried out;

.3 the municipal address or other description of the place where the work will be carried out sufficient to permit the inspector to locate the place, including the location with respect to the nearest public highway;

.4 a description of the work that will be carried out;

.5 the starting date and expected duration of the work; and

.6 the name and address of the supervisor in charge of the work.

.3 Notify the Inspector a minimum of eight hours prior to initiation of the following phases of the project:

.1 commencement of asbestos removal;

.2 commencement of sealant application;

.3 dismantling of the enclosure; and

.4 removing asbestos waste from the work area.

1.12 PROTECTION, REPAIR AND REPLACEMENT OF EQUIPMENT AND MATERIALS

.1 All equipment within and surrounding the work area shall be suitably protected by the Contractor during the work periods.

.2 All equipment damaged by the Contractor shall be replaced by the Contractor at no additional cost to the Owner.

1.13 CONFINED SPACES

.1 If any work area, or part thereof, is a confined space, the contractor shall comply with all requirements respecting confined spaces specified in O. Reg. 632/05, as amended 346/15, November 26, 2015, including but not limited to:

.1 preparation of a co-ordination document;

.2 development of a written program;

.3 assessment of hazards;

.4 development and implementation of an adequate written plan;

.5 provision of adequate worker training; and

.6 issuance of entry permits.

.2 The contractor shall perform adequate air tests while a worker is in a confined space to ensure that acceptable atmospheric levels are maintained in the confined space, including during any inspections and during final clearance air monitoring performed by Arcadis Canada Inc.

.3 The contractor shall provide an attendant for communications and rescue response whenever a worker is to enter a confined space, including during inspections and final clearance air monitoring by Arcadis Canada Inc.

.4 The contractor shall provide Arcadis Canada Inc. with calibration records for air testing equipment and copies of all records of atmospheric monitoring of confined space.

.5 The co-ordination document (see Section 1.13.1.1) shall refer to the contractor's responsibilities for air testing, communications and rescue response specified in Sections 1.13.2 and 1.13.3, above.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

.1 *Polyethylene:*

.1 In 0.15 mm (6 mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

.2 *Tape:*

.1 Reinforced duct tape suitable for sealing polyethylene under both wet conditions using amended water, and dry conditions.

.3 *Wetting Agent:*

.1 50% polyoxethylene ester and 50% polyglycol or polyxyethylene ether, or equivalent approved product, and shall be mixed with water to a concentration to provide adequate penetration and wetting of asbestos-containing material.

.4 *Asbestos Waste Receptors:*

.1 0.15 mm (6 mil) minimum thickness appropriately labelled, sealable polyethylene bags and 0.15 mm (6 mil) minimum thickness sealable clear polyethylene bags.

.5 *Rip-Proof Polyethylene:*

.1 0.20 mm (8 mil) fabric made up from 0.13 mm (5 mil) weave and 2 layers 0.04 mm (1.5 mil) poly laminate, in sheet size to minimize joints.

.6 *Sealant:*

.1 Slow-drying sealant which remains tacky on surface for a minimum of 8 hours for purpose of trapping residual airborne fibre during settling period. Product must have flame spread and smoke development ratings both less than 50. **Product shall leave a clear finish when dry. Acceptable products "Childers Chil-Lock CP-240" or equivalent.**

2.2 EQUIPMENT

.1 All equipment brought on site must be thoroughly clean and free of all fibre, asbestos or otherwise, to the satisfaction of the Field Inspector. The Contractor will be fully responsible for the replacement of equipment rejected by the Inspector and for all costs resulting from site contamination due to dirty or faulty equipment.

.2 *Airless Sprayer:*

.1 Spray equipment for the application of amended water and sealant such as Graco Hydrospray or equivalent:

.1 Fine atomizing spray nozzle: Nozzle for airless sprayer capable of delivering not less than 4.5 L per minute of fine particle spray of amended water.

.3 *Garden Sprayer:*

.1 Hand pump-type pressure-can garden sprayer fabricated out of either metal or plastic equipped with a wand at the end of a hose that can deliver a stream or spray of liquid under pressure. **Only to be used on small removal and repair projects with the approval of the site inspector.**

.4 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol filtered vacuum equipment. Must have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 um or larger. HEPA filters must have been individually tested and certified by the manufacturer.

.2 All HEPA vacuums brought onto the job site shall be visibly clean, shall be in a good state of repair and shall be maintained in such state through completion of the project.

.5 *Glovebag:*

.1 Prefabricated, purposely made, 0.20 mm minimum thickness, polyvinyl chloride bag with integral 0.25 mm thick polyvinyl chloride gloves.

.2 Bag equipped with reversible double-pull, double-throw zipper on top to facilitate installation on pipe and progressive movement along pipe, with straps for sealing ends of bag around pipe, and with plastic flap under zipper for strength on pipe and to provide effective seal and with “ziploc” feature. Bags shall be secured using manufacturer’s prescribed securing devices. Approval must be obtained from the Inspector for use of Glovebags. Bag must be acceptable to the Inspector for use.

.3 Bag must have valves to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.

.6 *Negative Pressure Units:*

.1 Exhaust units fitted with High Efficiency Particulate Aerosol (HEPA) filters used to effect a negative pressure differential in the work area as compared to the immediate surrounding or clean area. The filtering system must be capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of

0.3 um or larger. The HEPA filters must have been individually tested and certified by the manufacturer and bear a label certifying performance. The unit is to be fitted with instrumentation to indicate pressure differential across the HEPA filter with an audible alarm to sound at a preset low differential pressure.

.2 Construction of HEPA filter/fan cabinet units shall be airtight and all joints shall be caulked. The gasket seal between the filter housing and the retaining frame inside the cabinet shall provide a zero-leakage seal to avoid filter bypassing.

.3 **Each negative pressure unit shall be integrity tested at the work site prior to commencement of asbestos removal.** The procedure must include the testing of the integrity of the entire cabinet. Written confirmation of the test results are to be provided to the Inspector. Retesting may be requested by the Inspector and performed by the Contractor should the unit be damaged or modified during the work.

.7 *Differential Pressure Recorder:*

.1 Instrument to monitor and record the differential pressure between the Work Area and Clean Area.

.1	sensitivity:	0.025 mm (0.001 inches) WC increments between +0.25 mm to -2.5 mm (+0.010 to -0.100 inches) WC
.2	accuracy:	+/- 1 %
.3	pressure alarms:	audible high and low level alarm programmable within operating range
.4	printout:	minimum 24 hr period at 15 minute intervals

.8 *Ground Fault Panel:*

.1 Electrical Panel equipped with ground fault circuit breakers of sufficient capacity to power all electrical equipment and lights in work area. All breakers shall have 5 mA ground fault protection. Panel should be complete with all necessary accessories including ground fault interrupter lights, test switch to ensure unit is working, and reset switch. Ground fault receptacles on extension cords shall not be used without written authorization by the Arcadis Canada Inc. Consultant.

.2 The GFI Panel must be constructed under the direction of a licensed Electrician and inspected by a licensed Electrician on a regular basis. Evidence of such construction and inspection shall be submitted to the Arcadis Canada Inc. Consultant prior to installation of the Panel on site.

3.0 PART 3 – EXECUTION

3.1 MAJOR ASBESTOS WORK (TYPE 3 OPERATIONS)

Not Applicable.

3.2 TYPE 2 ENCLOSURE METHOD

.1 Preparation

.1 Separate the work area from the rest of the building using rope barriers, signage and other appropriate means. The extent of the work area will depend on the amount of work to be done, potential for fibre release and the height of the work above floor level.

.2 Identify the work area with clearly visible warning signs.

.3 Construct a frame for the enclosure from 50 mm x 100 mm (2” x 4”) studs or other suitable material (scaffolding, for example); if the potential exists for the disturbance of asbestos-containing material during the construction of the enclosure, wear a respirator and suitable protective clothing; ensure that the enclosure is of adequate size to permit the storage of equipment and waste.

.4 If the room where the work is to take place is small, the room itself may serve as an enclosure, provided that all openings are sealed, the mechanical ventilation system servicing the room is disabled and the ventilation ducts to and from the work area are sealed.

.5 Shut off the source of heat for piping systems (i.e., boiler or steam line header), where possible.

.6 Cover the walls, floor and ceiling of the enclosure with clear 0.15 mm polyethylene sheeting sealed with duct tape. Curtains of polyethylene sheeting must be fitted on each side of the entrance to the enclosure (curtain flaps may require weights at the bottoms to ensure proper closing).

.7 Disable the ventilation system servicing the enclosure; seal ventilation ducts to and from the work area.

.8 Shut off and lock out electrical power within the enclosure.

.9 Wear an appropriate respirator approved for use with asbestos and suitable protective equipment. Only persons wearing protective clothing and equipment shall be allowed to enter the work area. If the type of asbestos is other than chrysotile, a powered air purifying respirator shall be used.

.10 Do not use compressed air.

.11 Do not eat, drink, smoke or chew in the work area.

.12 Vacuum surfaces of insulated material in the work area using a HEPA vacuum.

.2 Asbestos Removal and Cleanup

.1 Only non-powered hand-tools, or power tools **FITTED WITH A DUST COLLECTION DEVICE AND HEPA FILTER** are permitted to be used.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Thermal insulation:* (piping and equipment) Ensure that heat sources to all piping systems, tanks, etc., have been shut off before work commences. Carefully cut open the outer cover of thermal insulation while spraying a mist of amended water on the section being worked on; thoroughly soak the underlying asbestos-containing material with amended water, using airless spray equipment. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.4 *Sprayed-on Materials (Texture Coat and Fireproofing):* Apply amended water to the surface of the material using an airless sprayer. Allow the water to soak through to the surface. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. The thickness and the nature of the asbestos containing material will dictate the time required to soak and number of passes necessary.

.5 *Troweled-on Materials* (Plaster): Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove plaster material by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.6 *Vinyl Sheet Flooring (with asbestos-containing paper backing):* Apply amended water to the surface of the material using an airless sprayer. Allow the water to soak through to the surface. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. The thickness and the nature of the asbestos containing material will dictate the time required to soak and number of passes necessary.

.7 *Drywall with Asbestos-Containing Joint Compound*: Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the

ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners.

.8 Ceiling Tiles: Remove tiles by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the all T-bar and J-moulding.

.9 Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed, pack the material into a waste receptor (polyethylene bag).

.1 Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Mist the air periodically with water.

.3 Excess water is to be treated as asbestos waste and is to be placed into a waste receptor (polyethylene bag). Refer to Waste Handling for cleaning and removal of bagged asbestos waste.

.10 After completion of asbestos removal, all surfaces from which asbestos has been removed shall be brushed and wet-sponged to remove all visible material and residues. During this Work the surfaces shall be kept wet.

.11 Clean all surfaces and equipment within the work area, including polyethylene sheeting, using a HEPA vacuum or by damp wiping.

.12 Seal all surfaces of pipe or other equipment, enclosure, and ends of exposed insulation with a suitable encapsulant.

.13 After satisfactory completion of cleaning and before leaving the work area, decontaminate protective clothing (including boots) and equipment, etc., using a HEPA vacuum or by damp wiping.

.14 Dismantle the enclosure and wet and dispose of all polyethylene sheeting, brushes and sponges as asbestos waste.

.15 Dispose of protective clothing as asbestos waste.

.16 Wash hands and face at the completion of the work (before leaving the work area); damp wipe the respirator and store in a proper place.

.17 Make arrangements for disposal of all asbestos-containing waste material.

3.3 TYPE 2 NON-ENCLOSURE METHOD

.1 Preparation

.1 Control the spread of dust from the work being performed by use of drop sheets, keeping doors closed, providing signage, etc. Ensure that appropriate equipment and materials are at hand.

.2 Restrict access to the work area using rope barriers, barricades, and other appropriate measures.

.3 Disable ventilation systems servicing the work area.

.4 Provide and wear a non-powered air purifying respirator with high efficiency cartridges approved for use with asbestos and disposable coveralls including hood, elasticized cuffs and zipper over work clothes.

.2 Asbestos Removal and Cleanup

.1 Only non-powered hand-tools, or power tools **FITTED WITH A DUST COLLECTION DEVICE AND HEPA FILTER** are permitted to be used.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Vinyl Floor Tile/Vinyl Floor Sheeting (without asbestos-containing paper backing)*: Disconnect all floor-mounted electrical fixtures and outlets and seal with duct tape. Seal other floor penetrations as required. Spray amended water on tiles to be removed to reduce dust. Remove tiles and immediately place into waste receptor. Double bag when removing debris from work area.

.4 *Exterior Cement Board*: Place polyethylene sheet over ground to prevent soil contamination. Apply amended water as required to reduce dust. Remove material by hand with minimal breakage and place immediately into waste receptor. Do not throw or allow the asbestos waste to fall to the ground from the work area. Ensure that all asbestos debris is removed including that on fasteners, embedded in caulking, etc.

.5 *Drywall with Asbestos-Containing Joint Compound*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping. Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Double bag when removing debris from work area.

.6 *Ceiling Tiles*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove tiles by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the all T-bar and J-moulding. Double bag when removing debris from work area.

.7 *Caulking*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.8 *Mastic*: Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. Double bag when removing debris from work area.

.9 Do not allow waste to accumulate.

.10 Clean dust and debris at regular intervals and at the end of each shift with a damp cloth or HEPA vacuum.

.11 Ensure that there is no visible airborne dust in the work area during the removal and cleanup operation.

.12 All duct tape, polyethylene sheets, disposable clothing and other consumables used for, and during the removal of asbestos shall be contained and disposed as asbestos waste.

.13 After satisfactory completion of cleaning and before leaving the work area, decontaminate protective clothing (including boots) and equipment, etc., using a HEPA vacuum or by damp wiping.

.14 Dispose of protective clothing as asbestos waste.

.15 Wash hands and face prior to taking breaks and at completion of the work before leaving the work area. Damp-wipe the respirator after use and store in an appropriate place.

.16 Make arrangements for disposal of all asbestos-containing waste material.

3.4 TYPE 1 OPERATION

Not Applicable.

3.5 WASTE DISPOSAL

.1 Asbestos-containing wastes shall be disposed of in accordance with procedures established by the Ontario Ministry of the Environment *Regulation 347 (as amended) under the Environmental Protection Act* and the Government of Canada *Transportation of Dangerous Goods Regulations*.

.2 All waste is to be removed from the site and disposed. Disposal containers are not to be left on the property unattended unless fully enclosed and locked. Bins must be removed immediately on completion of work.

.3 Both sides of every vehicle used for the transportation of asbestos and every waste container must display in large easily legible letters that contrast in colour with the background the word "CAUTION" in letters not less than 10 cm in height and the words:

CONTAINS ASBESTOS FIBRES
Avoid Creating Dust and Spillage
Asbestos May Be Harmful To Your Health
Wear Approved Protective Equipment

.4 Both sides of every waste container must display in large easily legible letters the words **'ASBESTOS, WHITE, PRODUCT IDENTIFICATION NUMBER 2590'** or **'ASBESTOS, BLUE, PRODUCT IDENTIFICATION NUMBER 2212'** in accordance with the type of asbestos being transported.

.5 Every vehicle used for the transportation of asbestos waste shall display a Class 9 placard on the front, back and two sides of the vehicle.

.6 The waste must be transported in a fully-enclosed truck, or alternatively, in a waste disposal skip. The driver must be familiar with cleanup and handling procedures and be trained to deal with spills or container breakage.

.7 The truck must be equipped with a shovel and broom, wetting agent, protective clothing, respiratory protective equipment, polyethylene bags of at least 0.15 mm (6 mil) thickness, and bag closures and duct tape.

.8 All waste must be transported with a **Bill of Lading** directly from the work area to the waste disposal site. The Bill of Lading is to indicate the source and type of asbestos, the Carrier, the amount, the destination (disposal site) and date all in accordance to applicable regulations. A copy of the Bill of Lading and disposal site receipt is to be provided to the Inspector.

3.6 AIR MONITORING

.1 Air tests will be taken at the discretion of the Asbestos Consultant using the Phase Contrast Microscopy (PCM) method from the time asbestos-containing materials may be disturbed until the final visual inspection of the work area(s). PCM will be used for final clearance air monitoring analysis.

.1 *Outside Asbestos Removal Work Areas:*

.1 The maximum allowable fibre concentration outside the Work Areas during asbestos removal or cleanup shall be 0.05 f/cc. Should readings exceed this value, the work shall stop at the discretion of the inspector and proceed only after the cause of the high fibre counts has been remedied.

.2 All costs associated with the cleaning, monitoring, and disruption caused by excessive fibre levels outside the Work Area and related to the work, are to be borne by the Asbestos Contractor including but not limited to:

.1 thorough cleaning with wet wiping and HEPA vacuuming by the Asbestos Contractor to the extent and satisfaction of the Inspector,

.2 all activities deemed necessary by the Inspector including area isolation, personnel relocation, additional visual inspections and air monitoring to confirm that the area has been adequately cleaned,

.3 disruption of plant production, office routine, and delays.

.2 *Final Clearance Test:*

Not Applicable.

END OF SECTION

LEGEND:

A-101 FUNCTIONAL SPACE

WORK AREA 1

NOTE:

ARCADIS

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATIONS OF WORK AREAS

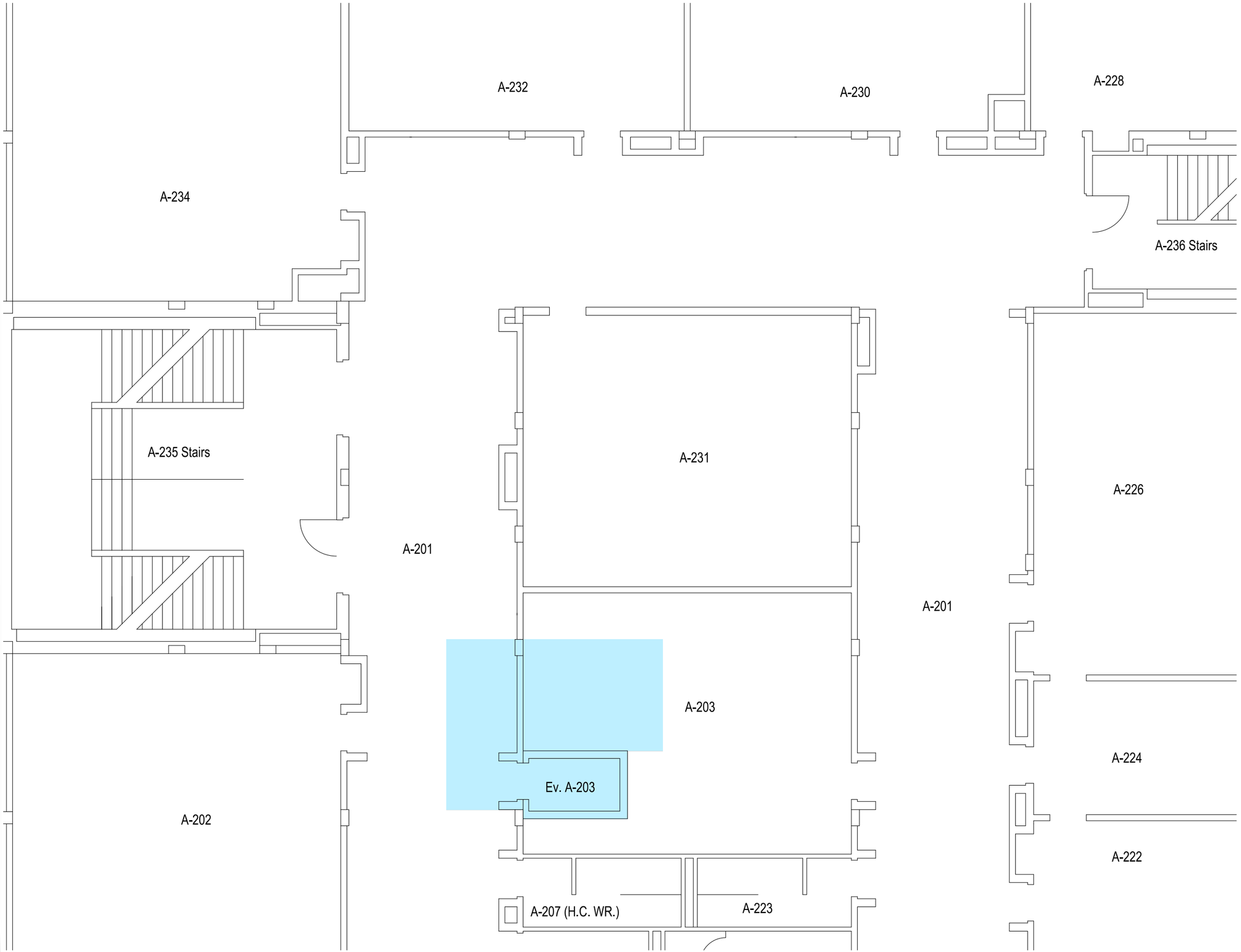
WHITE OAKS SECONDARY SCHOOL
SOUTH CAMPUS
1330 MONTCLAIR DRIVE, OAKVILLE, ONTARIO

FIRST FLOOR PLAN

Drawn By: B.R	Approved By: J.D	Project No: 30155714
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-1

C:\Users\byrappab8346\ACCDocs\Arcadis\AUS-HALTON DIST SCHOOL BOARD-HALTON Ontario\Project Files\2023\01-In Progress\01-DWG\30155714-Richmond Hill\30155714 White Oaks Secondary School South Campus.dwg LAYOUT: 1 SAVED: 3/21/2023 10:49 AM PLOTTED: 3/21/2023 11:12 AM BY: BYRAPPA, BYRAREDDY

C:\Users\byrappab8346\ACCDocs\Arcadis\AUS-HALTON DIST SCHOOL BOARD-HALTON Ontario\Project Files\2023\01-In Progress\01-DWG\30155714-Richmond Hill\30155714 White Oaks Secondary School South Campus.dwg LAYOUT: 2 SAVED: 3/21/2023 10:49 AM PLOTTED: 3/21/2023 11:19 AM BY: BYRAPPA, BYRAREDDY



LEGEND:

A-231 FUNCTIONAL SPACE

WORK AREA 1

NOTE:

ARCADIS

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

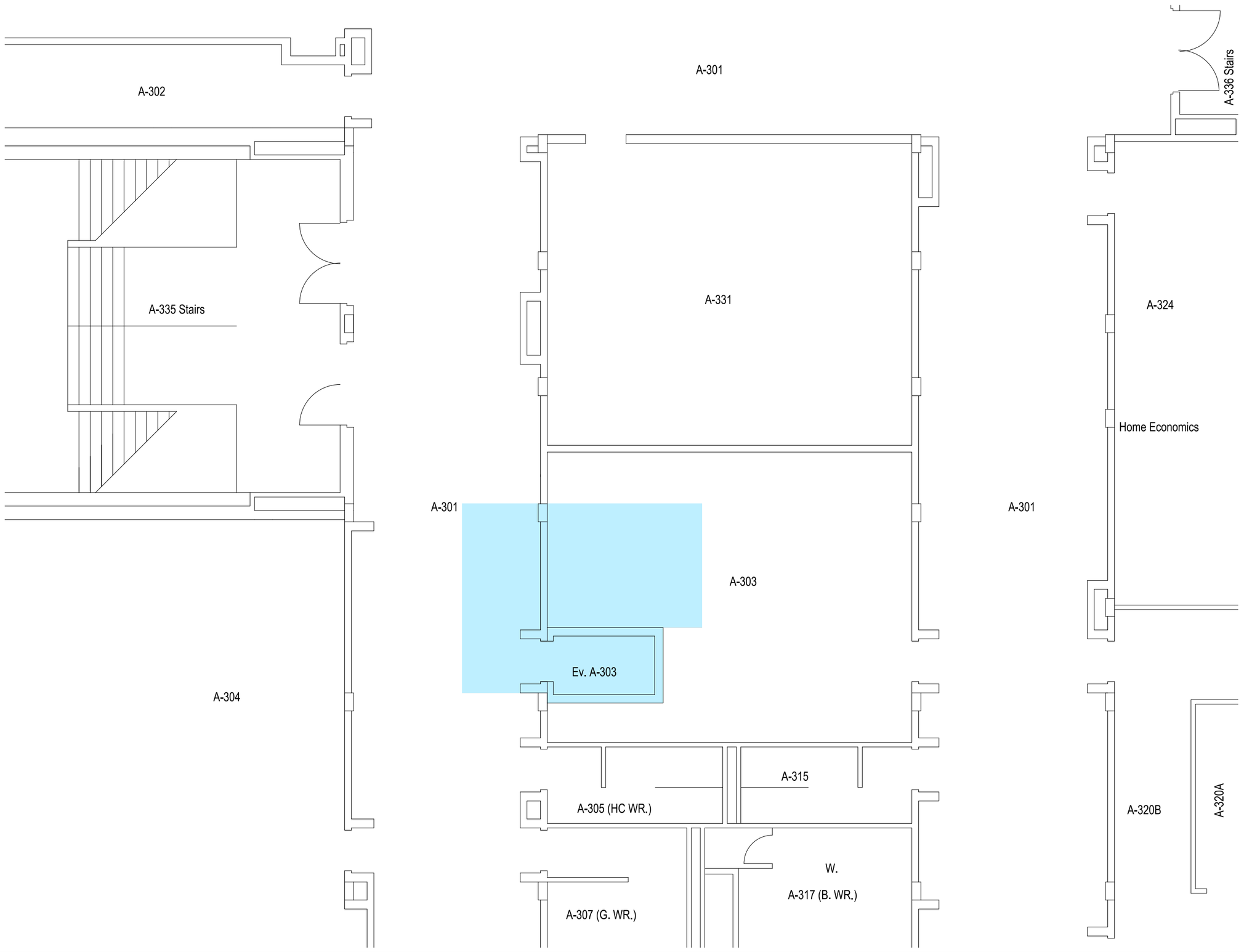
LOCATIONS OF WORK AREAS

WHITE OAKS SECONDARY SCHOOL
SOUTH CAMPUS
1330 MONTCLAIR DRIVE, OAKVILLE, ONTARIO

SECOND FLOOR PLAN

Drawn By: B.R	Approved By: J.D	Project No: 30155714
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-2

C:\Users\byrappab8346\ACCDocs\Arcadis\AUS-HALTON DIST SCHOOL BOARD-HALTON Ontario\Project Files\2023\01-In Progress\01-DWG\30155714-Richmond Hill\30155714 White Oaks Secondary School South Campus.dwg LAYOUT: 3 SAVED: 3/21/2023 10:49 AM PLOTTED: 3/21/2023 11:17 AM BY: BYRAPPA, BYRAREDDY



LEGEND:

A-331 FUNCTIONAL SPACE

WORK AREA 1

NOTE:

ARCADIS

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATIONS OF WORK AREAS

WHITE OAKS SECONDARY SCHOOL
SOUTH CAMPUS
1330 MONTCLAIR DRIVE, OAKVILLE, ONTARIO

THIRD FLOOR PLAN

Drawn By: B.R	Approved By: J.D	Project No: 30155714
Date: MAR. 2023	Scale: N.T.S	Drawing No: 30155714-3

ASBESTOS ABATEMENT
ELECTRICIAN'S SUBMITTAL FORM

Abatement Contractor _____

Project Site _____

I hereby certify the following:

1. All electrical work has been performed by a licensed electrician and complies with the latest edition of the Ontario Electrical Safety Code and any other local codes and requirements.

2. Arrangements have been made for all inspections and approvals which may be required by government regulations, Electrical Safety Authority and any other authorities having jurisdiction.

3. The GFI panel has been properly constructed, inspected and installed by a licensed electrician in compliance to all regulatory requirements and codes.

4. All electrical circuits in the work area have been de-energized and locked out wherever practicable.

5. All systems that cannot be de-energized have been clearly identified.

6. Any electrical conditions which need special protection or consideration have been clearly identified.

Electrical Contractor _____

Electrician's Name (print) _____

Electrician's Signature _____

Electrician's License No. _____

Date _____