DURHAM DISTRICT SCHOOL BOARD

TENDER T24-36

TENDER DOCUMENTS
FOR
PLP ALTERATIONS
AT
BROCK HIGH SCHOOL
C1590 Concession 12
Cannington, Ontario
L0E 1E0
Tel: 705-432-2311

CLOSING TIME & DATE:

BEFORE 11:00 A.M., LOCAL TIME – Tuesday, July 23, 2024

NOTE: BID DEPOSIT AND SURETY'S AGREEMENT TO BOND IS A REQUIREMENT WITH THIS TENDER

*** MANDATORY SITE MEETING:** **Thursday, July 4, 2024 at 10:00 a.m.**
At: Brock High School

*** (Failure to attend "Mandatory Site Meeting" will result in Bidder disqualification).**

NOTE: Contractors visiting the school MUST check in with the project manager at the site.
Site meeting is MANDATORY and will be subject to COVID-19 protocols

SITE MEETING IS MANDATORY FOR THE PRE-QUALIFIED GENERAL CONTRACTOR BIDDERS.

DURHAM DISTRICT SCHOOL BOARD
PURCHASING DEPARTMENT

TENDER T24-36

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1.0 BID SUBMISSION

1.1 Bid Administration Information

BID DOCUMENT ADMINISTRATION

Kelly Jennings, CSCMP
Senior Procurement Specialist
Durham District School Board
400 Taunton Road East
Whitby, ON L1R 2K6
Tel: (905) 666-6445
Fax: (905) 666-6476
Email: kelly.jennings@ddsb.ca

TECHNICAL SPECIFICATION INQUIRIES

Chris Thaler
Project Design Supervisor
Facilities Services
400 Taunton Road East
Whitby, ON L1R 2K6
Tel: 905-666-6924
Fax: 905-666-6439
E-mail : chris.thaler@ddsb.ca

Brad Timson, P.Eng.
CIMA+
415 Baseline Rd.W., 2nd Floor
Bowmanville, Ontario
L1C 5M2
Tel: 905-697-4464, ext.5106
Mobile: 905-550-3463
E-mail : brad.timson@cima.ca

1.2 Stipulated Bid Form

The following price(s) include all costs inclusive of all labour, material, **cash allowances**, overhead and profit, etc., required to complete the Work as specified in the tender documents attached hereto. The DDSB reserves the right to alter the Work on this Contract by deducting or adding to the Contract, based on unit pricing, where the Durham District School Board deems necessary. Any Bid Submission with provision(s) and/ or condition(s) may constitute rejection of the Bid Submission.

Stipulated Bid Price (including all applicable Duty, Excise Taxes, Freight, and Insurance)

I/We, the undersigned, having carefully examined the Bid Documents, having visited and investigated the Site, and examined all conditions, circumstances and limitations affecting the Work, offer to enter into a Contract with the Owner, to perform the Work required by the Bid Documents for the stipulated price (the "Bid Price" in a Bid Submission, and the "Contract Price" in a Contract) of:

_____
(Enter written value here)

_____ DOLLARS ($ _____)
(Enter numeric value here)

CASH ALLOWANCE - Asbestos Abatement:	**$ 5,000.00 (not including HST)**
CASH ALLOWANCE - Controls:	**$ 10,000.00 (not including HST)**
CASH ALLOWANCE – PA and Data:	**$ 5,000.00 (not including HST)**
TOTAL CASH ALLOWANCE:	**$ 20,000.00 (not including HST)**

In Canadian funds, **not including HST**. In case of a discrepancy between the written and numeric value stated above, the written tender amount will take precedence over the numeric tender amount.

Submitted to the Purchasing Department, Durham District School Board, 400 Taunton Road East, Whitby, Ontario L1R 2K6.

_____ _____
Name of Signing Officer (PRINT) Signature

_____ _____
Name of Company Telephone

_____ _____
Address of Company e-Mail

_____ _____
Postal Code Date

Corporate Seal

Having carefully examined the:

CONTRACT DOCUMENTS

GENERAL CONDITIONS

DRAWINGS AND SPECIFICATIONS AND

ADDENDUMS AS ACKNOWLEDGED THROUGH THE BIDDING SYSTEM

and having visited the Project site where applicable; we, the undersigned hereby offer and agree to furnish all labour and material (both temporary and permanent) required to complete all Work outlined in the Contract Documents provided under the noted project.

In submitting this Bid Submission, the Bidder recognizes the right of Durham District School Board to accept or reject any tender at the submitted Bid Price.

We, the bidding Contractor, agree that if this Bid Submission is accepted, we will execute whatever additional or extra work may be required and make any deductions for the said work at the unit price(s) hereinafter set out in this Bid Submission, unless the change request stipulates another method of determining the value of a change, in strict conformity in all respects with the requirements of the above Contract Documents.

Specified Start Date: August 1, 2024

Specified Substantial Completion: October 14, 2024

Total Completion By: October 21, 2024

We agree to complete the work of this contract within the timeframe specified above.

Yes_____/ No_____ (please indicate).

SUPPLEMENTARY BID FORM

Contractors must submit the Supplementary Bid Form, included as 'Specification Section 00400 - Supplementary Bid Form', to CIMA/Durham Energy Specialist Limited (juli.cluett@cima.ca) and the DDSB Purchasing Department (kelly.jennings@ddsb.ca) **within 4 (four) hours <u>AFTER</u>** the Tender closing.

Contractors acknowledge that the Form includes a price breakdown, unit rates, and a complete list of all subcontractors and major equipment suppliers we propose to employ on this project, and we recognize that the Form may be considered in the selection of the successful bidder.

Contractor to indicate
HARMONIZED SALES TAX REGISTRATION NO. _____

2.0 INFORMATION TO BIDDERS

2.1 bidsandtenders Electronic Bid Submission Information

ELECTRONIC BID SUBMISSIONS ONLY shall be received by the Bidding System on the closing date, no later than 11:00:00 a.m. local time. All Bidders shall have a Bidding System Vendor Account and be registered as a Plan Taker for this Bid Request, which will enable the Bidder to download the Bid Call Document, to receive Addenda/Addendum email notifications, download Addenda/Addendum and to submit their Bid Submission electronically through the Bidding System.

The Bidding System will send a confirmation email to the Bidder advising that their Bid Submission was submitted successfully. If you do not receive a confirmation email, contact technical support at Bids&Tenders via email: support@bidsandtenders.ca.

Late Bid Submissions shall not be accepted by Durham District School Board's Bidding System. To ensure receipt of the latest information and updates via email regarding this Bid Request or if a Bidder has obtained this Bid Document from a third party, the onus is on the Bidder to create a Bidding System Vendor Account and register as a Plan Taker for the Bid Request at https://ddsb.bidsandtenders.ca.

ADDENDUM/ADDENDA

ALL QUESTIONS & ANSWERS will be posted as an Addendum. All questions should be submitted through the bidding system portal by clicking on the submit question button at https://ddsb.bidsandtenders.ca. Bidders shall acknowledge receipt of any Addenda when submitting their Bid Submission through the Bidding System. Bidders shall check a box for each Addendum/Addenda and any applicable attachments that have been issued before a Bidder can submit their Bid Submission online.

Addendum/Addenda will typically be issued through the Bidding System up to five (5) days prior to Bid Closing Date and Time.

In the event an Addendum is issued within five (5) days prior to Bid Closing Date and Time, it may include an extension of the Bid Closing Date and Time. It is the responsibility of the Bidder to have received all Addendum/Addenda that have been issued. Bidders should check online at https://ddsb.bidsandtenders.ca prior to submitting their Bid Submission and up until Bid Closing Date and Time in the event additional Addendums are issued.

Durham District School Board encourages Bidders not to submit their Bid Submission prior to five (5) days before the Bid Closing Date and Time, in the event that an Addendum is issued. If a Bidder submits their Bid Submission at any time prior to the Bid Closing Date and an Addendum/Addenda is issued by Durham District School Board, the Bidding System shall WITHDRAW their Bid Submission and change the status to INCOMPLETE (NOT accepted by Durham District School Board). The Withdrawn Bid Submission can be viewed and re-submitted by the Bidder in the "MY BIDS" section of the Bidding System.

WITHDRAW/EDIT BIDS

Bidders may edit or withdraw their Bid Submission prior to the Bid Closing Date and Time. However, the Bidder is solely responsible to:

- make any required adjustments to their Bid Submission; and
- acknowledge the Addendum/Addenda; and
- ensure the re-submitted Bid Submission is RECEIVED by the Bidding System no later than 11:00:00 a.m. local time, on the Bid Closing Date.

COMPANY CONTACTS

Additional company contacts are recommended for the reasons outlined below:

You are strongly urged when creating or updating a Bidding System Vendor Account to add additional company contacts to create their own login to the Bidding System. This will permit your invited contacts that have created their own login to manage (register, submit, edit and withdraw) Bid Submissions which your Company is a Registered Plan Taker for. In the event you are on vacation, or due to illness, etc. these additional contacts may act on your Company's behalf and have the authority to receive Addendum notifications from the Bidding System, and where permitted by the terms and conditions of the Bid Call Document, to submit Bid Submissions electronically through the Bidding System and/or withdraw and/or edit and/or acknowledge Addendum/Addenda, on your behalf.

Notwithstanding the above, it is recommended that you do not invite any additional contacts that you do not want to have access to view, edit, submit and/or withdraw or who may be in direct competition (for example, a company may have two divisions that could compete for the same Bid Request).

If you are an invited company contact, it is imperative that you create your login from the link contained in the email invitation. Do NOT go directly to https://ddsb.bidsandtenders.ca website and create a separate vendor account. Contact support@bidsandtenders.ca for all technical issues.

BID CLOSING DATE AND TIME

All Bidders shall have a Bidding System Vendor Account and be registered as a Plan Taker for this Bid Request, which will enable the Bidder to download the Bid Call Document, to receive Addenda/Addendum email notifications, download Addendums and to submit their Bid Submission electronically through the Bidding System.

Bid Submissions shall be received by the Board's Bidding System not later than 11:00:00 a.m. Eastern local time, on the specified Bid Closing Date. The Bid Closing Time shall be determined by the Bidding System web clock.

Bidders are cautioned that the timing of Bid Submission is based on when the Bid Submission is RECEIVED by the Bidding System, not when a Bid Submission is submitted by a Bidder, as Bid Submission transmission can be delayed in an "Internet Traffic Jam" due to file transfer size, transmission speed, and other electronic considerations.

For the above reasons, Durham District School Board recommends that Bidders allow sufficient time to upload their Bid Submission and attachment(s) (if applicable) and to resolve any issues that may arise. The Bid Closing Date and Time shall be determined by the Board's Bidding System web clock.

Original Bid Request forms not completed in the prescribed manner may be considered INVALID.
It is the sole responsibility of the Bidder to ensure a Bid Submission is delivered on time. Late Bid Submissions will not be accepted by the Board's bidding system.

Copies of any pertinent Bid Deposit and Bid Surety will need to be included with your Bid Submission. Durham District School Board may request the originals to be sent in the mail, should the Bid Submission be Awarded the Contract.

Durham District School Board hereby consents to the use of an electronic signature for the signing of all documents requested hereunder. Acceptable forms of electronic signature include, but are not limited to, the typing of the Bidder's authorized signing Officer's name or the inclusion of an image of the Bidder's authorized signing Officer's signature, so long as the electronic signature is sufficient to identify the Bidder's authorized signing Officer. The Bidder's authorized signing Officer agrees that whatever form of electronic signature is provided constitutes a signature for the purposes of executing all documents requested hereunder.

2.2 Bid Deposit

A Bid Deposit shall be in the form of bank draft, bid bond, certified cheque or money order, payable to the DDSB, in the amount of 10% (ten percent) of the Bid Price.

All Bid Deposits will be returned to the unsuccessful Bidders within a reasonable time after the Bid Submissions have been opened except those which the DDSB elects to retain until the successful Bidder(s) has/have executed the Contract Documents.

The Bid Deposit of the successful Bidder(s) will be returned subsequent to the execution of the Contract and provisions for the Contract have been submitted.

The Bid Deposit shall be forfeited if the Vendor/Contractor Awarded the Contract fails to accept the Contract or withdraws their Bid Submission after notification of acceptance of the Bid Submission.

Bid Submissions not accompanied by the required Bid Deposits shall be rejected.

2.3 Bid Documents

The Contractor whom is awarded the Work agrees to adhere to the following documents as a basis for the construction as applicable:

- Standard Construction Document, CCDC 2 – 2020 Stipulated Price Contract as amended by the Ontario Association of Architects Recommended Supplementary Conditions for the Stipulated Price Contract – CCDC 2-2020– Rev September 15, 2021 (the "CCDC Documents")
- DDSB Front End – Information to Bidders, Terms and Conditions, Specifications and Drawings (the "DDSB Front End Documents")
- DDSB Purchase Order

In the case of a discrepancy between the DDSB Front End Documents and the CCDC 2 Documents, the DDSB Front End Documents will prevail. In the event that the CCDC Documents are not signed by the parties hereto, the terms and conditions of the CCDC Documents are specifically hereby incorporated by reference and part of the Contract Documents and the parties hereto are bound by them, subject to the foregoing sentence.

2.4 Bid Opening - Public Tenders

Bid results will be posted on the DDSB's bidding system and available to all Bidders.

2.5 Insurance (General Liability)

The Vendor/Contractor shall provide and maintain, at their own expense, a policy of general liability insurance issued by an insurance company incorporated or licensed to conduct insurance business in the Province of Ontario during the entire contract period.

General liability insurance shall be in the name of the Vendor/Contractor, naming the DDSB and CIMA+ as **additional insured**, with limits of not less than **five million (5,000,000.00) dollars** inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof.

In the case of any **Roof Replacement or New Roofing projects**, General Liability Insurance shall be in the name of the Vendor/Contractor, naming the DDSB as **additional insured**, with limits of not less than **ten million (10,000,000) dollars** inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof.

The Vendor/Contractor shall provide the DDSB (Purchasing Department) with proof of insurance within 10 days of issuance of the written notification of intent to Award the Contract.

2.6 Mandatory Site Meeting

Bidders are required to attend the scheduled "Mandatory Site Meeting" as herein specified. Bidders must sign the "Site Meeting Log" to provide evidence to the DDSB for attendance. Failure to comply shall result in Bidder disqualification.

2.7 Surety

Bid Surety shall consist of the following bonds:

Performance Bond

Performance surety shall be in the amount of fifty percent (50%) of the total amount and is a requirement of this tender.

An agreement to bond for a 50% performance bond issued by an approved surety company authorized to conduct business in the Province of Ontario shall accompany the Bid Submission. An irrevocable letter of credit for 50% of the value of the Contract shall be accepted as surety, in lieu of a performance bond, issued by an approved bank or financial institution having office in Canada and authorized to conduct business in Ontario shall accompany the Bid Submission.

Where the Vendor/Contractor has provided an irrevocable letter of credit as surety, the aforesaid will be returned after completion of the Work and final payment has been accepted by the Vendor/Contractor.

The Vendor/Contractor shall arrange, pay for, execute and furnish to the DDSB a performance bond in an amount equal to fifty percent (50%) of the Bid Price with an approved surety company.

An irrevocable letter of credit for fifty percent (50%) of the Bid Price shall be an acceptable alternative to a performance bond issued by an approved bank or financial institution in Canada and authorized to conduct business in Ontario.

Upon Award of the Contract, the Vendor/Contractor shall promptly provide to the DDSB (Purchasing Department) the surety bonds called for on the Bid Documents.

Labour and Material Payment Bond

Labour and material payment surety shall be in the amount of fifty percent (50%) of the total amount and is a requirement of this tender.

An agreement to bond for a 50% labour and material payment bond issued by an approved surety company authorized to conduct business in the Province of Ontario shall accompany the Bid Submission. An irrevocable letter of credit for 50% of the value of the Contract shall be accepted as surety, in lieu of a labour and material payment bond, issued by an approved bank or financial institution having office in Canada and authorized to conduct business in Ontario shall accompany the Bid Submission.

Where the Vendor/Contractor has provided an irrevocable letter of credit as surety, the aforesaid will be returned after completion of the Work and final payment has been accepted by the Vendor/Contractor.

The Vendor/Contractor shall arrange, pay for, execute and furnish to the DDSB a labour and material payment bond in an amount equal to fifty percent (50%) of the Bid Price with an approved surety company.

An irrevocable letter of credit for fifty percent (50%) of the Bid Price shall be an acceptable alternative to a labour and material payment bond issued by an approved bank or financial institution in Canada and authorized to carry on business in Ontario.

Upon Award of the Contract, the Vendor/Contractor shall promptly provide to the DDSB (Purchasing Department) the Bid Surety bonds called for in the Bid Documents.

Bid Submissions not accompanied by the required Agreement to Bond for Performance and Labour and Material shall be rejected.

2.8 WORKPLACE SAFETY & INSURANCE BOARD (W.S.I.B.)

A Certificate of Clearance from the WSIB, shall be provided prior to the commencement of work indicating that all payments by the Vendor/Contractor to the WSIB Board have been made.

Clearance certificates shall be renewed by the Vendor/Contractor every ninety (90) days (minimum) and submitted automatically and routinely to the DDSB throughout the period of the Contract.

3.0 DEFINITIONS

3.1 Definition of Contract Language:

Addendum, Addenda – A formal change(s) to the Bid Document issued by the DDSB requiring an acknowledgement of the Addenda or Addendum by the Bidder.

Authorities Having Jurisdiction – Designated organization, office, or individual having statutory responsibility for enforcing the requirements of a standard.

Award – The selection of a Bidder and respective Goods/Services as accepted by the DDSB.

Bid Deposit – The bank draft, bid bond, certified cheque or money order, payable to the DDSB, in the amount of 10% (ten percent) of the Bid Price, required to be submitted with a Bid Submission.

Bid Price – means the total stipulated price for the Work specified in the Bid Submission.

Bid Request – The document(s) issued by the DDSB requesting/inviting bids for the Goods/Services specified herein.

Bidder – All potential Vendors/Contractors who submits a Bid Submission in response to the Bid request.

Bid Document - The documents in the Bid Request issued by the DDSB that state all DDSB requirements, such as specifications, scope of work, drawings, terms and conditions etc.

Bid Submission - An offer by a Bidder in response to the Bid Request issued by the DDSB.

Bid Surety – The required performance and labour and material bonds required in this Bid Request.

Contract – The purchase order and/or executed agreement authorizing the Vendor/Contractor to perform the Work/supply of Goods/Services in accordance with all terms, conditions, specifications and prices as agreed upon in the Contract Documents.

Contract Documents shall mean collectively the:

1. BID DOCUMENT;
2. GENERAL CONDITIONS;
3. DRAWINGS AND SPECIFICATIONS;
4. ADDENDUMS AS ACKNOWLEDGED THROUGH THE BIDDING SYSTEM;
5. Any PURCHASE ORDERS;
6. Any CHANGE ORDERS;
7. DDSB FRONT END DOCUMENTS;
8. CCDC DOCUMENTS; and,
9. Any other documents included by DDSB.

Contract Price – means the accepted Bid Price of the successful Bidder.

DDSB - "DDSB" shall mean the Durham District School Board and all associated officials with the Manager of Purchasing or designate acting on its behalf for the administration and procurement purposes of this Bid Request.

Facilities Services – Official plant and construction agency of the DDSB. Where the word "Engineer" occurs, it shall be construed to mean "The Superintendent of Education/Facilities Services of the DDSB," or duly authorized officials.

Goods/Services - All labour, materials, products, articles, fixtures, services, supplies, and work required to be done, furnished or performed by the Vendor/Contractor, as specified in the Bid Request and/or Contract.

Overhead - when used in the Contract Documents shall mean all expenses to complete the Work, and shall include but shall not be limited to: use of Plant, tools, supervisory staff, bonds, and insurance, but does not include the actual cost of material and labour, including vacation pay, WSIB, and unemployment insurance, together with labour and machine hours and unit costs.

Purchasing Department – Official procurement agency of the DDSB.

RFP - means Request for Proposal.

RFT - means Request for Tender.

RFQ - means Request for Quote.

RFI - means Request for Information.

RFEI - means Request for Expression of Interest.

RFSQ – means Request for Supplier Qualification.

Substantial Completion – (Per the Construction Act) The improvement to be made under the Contract or a substantial part thereof is ready for use or is being used for the purpose intended; and when the improvement to be made under that Contract is capable of completion or, where there is a known defect, correction, at a cost not more than,

(i) 3 percent of the first $1,000,000 of the Contract Price
(ii) 2 percent of the next $1,000,000 of the Contract Price
(iii) 1 percent of the balance of the Contract Price

Total Completion – (Per the Construction Act) The project is deemed to be completed and services or materials shall be deemed to be last supplied to the improvement when the price of Completion, correction of a known defect or last supply is not more than the lesser of:

(i) 1 percent of the Contract Price; and
(ii) $3,000

Vendor/Contractor – The person, firm, company or corporation with whom the DDSB has entered into contract for the Work/Goods/Services specified herein.

Work – The **Work** means the total construction and related services required by the Contract Documents.

4.0 TENDER COMPLIANCE

4.1 Addendum

Any clarification of the Bid Documents required by the Bidder prior to Bid Submission shall be requested through the Procurement Lead of DDSB at the email address noted under sentence 1.1 Bid Administration. Bidders that fail to comply with the requirements to direct all communications to the Procurement Lead may be disqualified from this RFP 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 RFP;

- Any employee or agent of DDSB other than the Procurement Lead; or
- Any member of DDSB's governing body including without limitation the Director, Officers, Trustees, Superintendents and any advisors thereto.

Any such clarifications so given shall not in any way alter the Bid Documents and the Bidder and the DDSB hereby agree that in no case shall oral arrangements be considered.

During the period prior to submission of a Bid Submission, if the DDSB for any reason determines that it is necessary to provide additional information relating to this Bid Request such information will be communicated to all Bidders by way of **written** Addenda posted to the DDSB's Bidding System. Each Addendum shall form an integral part of this document.

The Bidder shall check a box for each Addendum/Addenda and any applicable attachments that have been issued via the DDSB's Bidding System to acknowledge receipt. Addenda shall be issued at least (5) five business days before the Bid Closing Date. Bidders are responsible for obtaining and confirming receipt of all Addenda issued by the DDSB. Exceptions to the five-day notification must be approved by the Manager of Purchasing of the DDSB.

No officer, agent, employee or representative of the DDSB is authorized to amend or waive the terms of the Bid Document in any way unless the amendment or waiver is provided as a **written** Addendum approved by the Buyer/designate.

Discrepancies/Omissions:

Any Bidder finding discrepancies or omissions in this document shall at once notify the Procurement Lead – see 1.1 Bid Administration. If necessary, a written Addendum will be posted to the DDSB's Bidding System to all Plan Takers. Bidder(s) may, during the bidding period, be advised by Addendum of any additions, alterations or deletions to the specifications and other parts of this Bid Document. All such changes shall be covered by this Bid Request and become a part of the Bid Document.

4.2 Substitutions

Goods and services are described or named in this specification to establish a standard of material and workmanship. The Bid Price shall be based on the specified Goods/Services. Under no circumstances shall the price for any alternate material or equipment be included in the Bid Price. Proposed substitution of Goods/Services specified may be submitted by the

Bidder to DDSB for review as a request for information during the allotted tender timeline. If the good/service proposed is accepted by DDSB, a formal Addendum will be issued to all Bidders to provide notification accordingly.
The following information shall be stated with any proposed alternate of Goods/Services specified:

- Manufacturer's name and Vendor/Contractor's name
- Change in price if any
- Reason for proposing alternate
- Detailed description of alternate including product literature shop drawing etc., if applicable.
- The DDSB reserves the right to accept or reject proposed alternate(s). Rejection by the DDSB is final.

4.3 Bid Acceptance

The DDSB reserves the right to Award in whole or in part, whichever, in the DDSB's sole discretion, is in its own best interest. Equally, the Durham District School Board reserves the right to accept or reject any Bid Submission in whole or in part whichever, in the DDSB's sole discretion, is in its own best interest. The lowest or any Bid Submission will not necessarily be accepted.

4.4 Bid Clarification

The DDSB reserves the right, in its sole discretion, to seek clarification(s) and supplementary information from Bidders after the Bid Submission deadline, without becoming obligated to allow any other Bidders to clarify their Bid Submissions. Such clarification, if any, is not an opportunity for the Bidder to change or amend their Bid Submission in any substantive manner. The response(s) received by the DDSB from a Bidder may, if accepted by the DDSB, form an integral part of that Bidder's Bid Submission.

Any clarification of the Bid Documents required by the Bidder prior to submission of its Bid Submission shall be requested through the Purchasing Department of the DDSB. Any such clarifications so given shall not in any way alter the Bid Documents and the Vendor/Contractor and the DDSB hereby agrees that in no case shall oral arrangements be considered.

4.5 Bid Completion

All blank spaces of the Bid Request form must be completed in full. Original Bid Forms not completed in the prescribed manner may be considered invalid.

4.6 Bid Deposit

Where applicable, a Bid Deposit shall be in the form of bank draft, bid bond, certified cheque or money order, payable to the DDSB, in the amount of 10% (ten percent) of the Bid Price.

All Bid Deposits will be returned to the unsuccessful Bidders within a reasonable time after the Bid Submissions have been opened except those which the DDSB elects to retain until the successful Bidder(s) has executed the Contract Documents including the purchase order.

The Bid Deposit of the successful Bidder(s) will be returned subsequent to the execution of the Contract and provisions for the Contract have been submitted.

The Bid Deposit shall be forfeited if the Vendor/Contractor Awarded the Contract fails to accept the Contract or withdraws their Bid Submission after notification of acceptance of the Bid Submission.

Bid Submissions not accompanied by the required Bid Deposits shall be rejected.

4.7 Bid Dispute

DDSB manages bid dispute resolution utilizing the following processes:

- Negotiation
- Mediation
- Arbitration

The DDSB reserves the right to select the most suitable method of resolution to follow.

Bid dispute resolution will be managed by the DDSB through these processes designed to resolve a procurement related conflict, dispute or claim.

4.8 Bid Errors and Omissions

In the event of any omission in the Bid Documents:

- unit prices shall govern over total prices;
- figures shall govern over words; and
- the DDSB reserves the right to contact any Bidder after closing to clarify the Bidder's pricing without becoming obligated to contact any other or all Bidders for clarification.

4.9 Bid Expenses

The DDSB shall not be liable for any expenses incurred in the preparation and submission of this Bid Request. With respect to anything relating to this Bid Request process, the Bidder, by submitting a Bid Submission, agrees to waive any and all claims for losses to the cost of preparing and submitting their Bid Submission.

4.10 Bid Irregularities (Major & Minor)

Major
Late Bid Submissions are not permitted by the DDSB's Bidding System.

Minor

Bid Submissions not completed as requested may be rejected by the DDSB acting in its absolute discretion.

Bid Submissions must be signed, in the spaces provided, in ink or electronically, by a person who is authorized to bind the Bidder. Any unsigned Bid Submissions may be rejected.

Erasures or noticeable changes must be initialed by the Bidder or the Bid Submission may be rejected.

4.11 Bid Opening – (Public Tenders Only)

Bid Request results will be posted on the DDSB's bidding system and available to all Bidders.

4.12 Bid Protest Procedure

A protest in writing must be received within ten (10) days of the Bid Closing Date and following a debriefing. Any protest in writing that is not received within the ten (10) day period indicated, will not be considered by the DDSB.

A protest in writing shall include the following:

- A specific identification of the provision and/or procurement procedure that is alleged to have been breached;
- A specific description of each act alleged to have breached the procedure process;
- A precise statement of the relevant facts;
- An identification of the issues to be resolved;
- The Bidder's arguments and supporting documentation; and
- The Bidder's requested remedy.

4.13 Bid Submission

Bid Deposits and Bid Surety when required (refer to Information to Bidders section), must accompany Bid Submission.

The Bidder declares that the Bid Submission is not collusive with any other Bidder(s) submitting a Bid Submission.

Electronic Bid Submissions shall be received by the DDSB's Bidding System on original Bid Request forms only. Alterations of the original document will not be permitted under any circumstances.

Any unsigned Bid Submissions may be declared invalid.

All Bidders shall have a Bidding System Vendor Account and be registered as a Plan Taker for this Bid Request opportunity, which will enable the Bidder to download the Bid Call Document, to receive Addenda/Addendum email notifications, download Addendums and to submit their Bid Submission electronically through the Bidding System.

Bid Submissions shall be received by the Board's Bidding System not later than 11:00:00 a.m. Eastern local time, on the specified Bid Closing Date. The Bid Closing Time shall be determined by the Bidding System web clock.

Bidders are cautioned that the timing of Bid Submission is based on when the Bid Submission is RECEIVED by the Bidding System, not when a Bid Submission is submitted by a Bidder, as Bid Submission transmission can be delayed in an "Internet Traffic Jam" due to file transfer size, transmission speed, and other electronic considerations.

For the above reasons, Durham District School Board recommends that Bidders allow sufficient time to upload their Bid Submission and attachment(s) (if applicable) and to resolve any issues that may arise. The Closing Date and Time shall be determined by the Board's Bidding System web clock.

Original Bid Request forms not completed in the prescribed manner may be considered INVALID.
It is the sole responsibility of the Bidder to ensure a Bid Submission is delivered on time. Late Bid Submissions will not be accepted by the Board's bidding system.

Copies of any pertinent Bid Deposit and Bid Surety will need to be included with your Bid Submission. Durham District School Board may request the originals to be sent in the mail, should your Bid Submission be awarded the Contract.

Durham District School Board hereby consents to the use of an electronic signature for the signing of all documents requested hereunder. Acceptable forms of electronic signature include, but are not limited to, the typing of the Bidder's authorized signing Officer's name or the inclusion of an image of the Bidder's authorized signing Officer's signature, so long as the electronic signature is sufficient to identify the Bidder's authorized signing Officer. The Bidder's authorized signing Officer agrees that whatever form of electronic signature is provided constitutes a signature for the purposes of executing all documents requested hereunder.

4.14 Bidder Qualification

The Bidder may be required to demonstrate, in terms of experience and facilities, evidence of its ability, as well as that of any proposed subcontractor, to perform the Work by the specified completion date for all Bid Request requirements. The DDSB reserves the right to reject the Bid Submission of any Bidder who does not furnish satisfactory evidence of the above in the opinion of the DDSB.

4.15 Blackout Period

During the evaluation period (Bid Closing Date to the Award date), the DDSB will not communicate with Bidders on matters related to the competitive procurement process. Only the procurement lead of the DDSB will communicate with Bidders for any Bid Request related issues during this period.

4.16 Clarification of Proposals

DDSB shall have the right at any time after the Bid Closing Date to seek clarification from any Vendor in respect of the Bid Submission, without contacting any other Vendor/Contractor.

Any clarification sought shall not be an opportunity for the Vendor/Contractor to either correct errors or to change its Bid Submission in any substantive manner. Subject to the qualification in this provision, any written information received by DDSB from a Vendor/Contractor in response to a request for clarification from DDSB may be considered, if accepted, to form an integral part of the Bid Submission, at DDSB's sole and absolute discretion.

DDSB shall not be obliged to see clarification of any aspect of any Proposal.

4.17 Conflict of Interest

By submitting a Bid Submission, a Bidder represents and declares that no member, officer or employee of DDSB has or will have an interest, directly or indirectly, in the performance of the Contract, or in the good/services in connection with the said Contract, or in any portion of the profits thereof, or in any monies derived therefrom. In addition, and for the purposes hereof, "Conflict of Interest" includes:

(a) in relation to the Bid Request 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 Bid Submission that is confidential to DDSB and not available to other Bidders;
(ii) communicating with any person with a view to influencing preferred treatment in the Bid Request 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 provision of the goods or services or performance of the 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 provision of the goods or services or performance of the contractual obligations.

The Bidder shall:
(a) avoid any Conflict of Interest in the Bid Request process and in the performance of its contractual obligations;

(b) disclose to DDSB without delay any actual or potential Conflict of Interest that arises during the Bid Request process or during the performance of its contractual obligations; and
(c) comply with any requirements prescribed by DDSB to resolve any Conflict of Interest.

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

(a) the Bidder fails to disclose an actual or potential Conflict of Interest;
(b) the Bidder fails to comply with any requirements prescribed by DDSB to resolve a Conflict of Interest; or
(c) the Bidder's Conflict of Interest cannot be resolved.

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

4.18 Debriefing (Request for Proposal Only)

Not later than sixty (60) days following the date of posting of a Contract Award notification in respect of the Bid Request, a Bidder may contact the DDSB's Bid Document administrator requesting a debriefing from the DDSB. The debriefing will be conducted in accordance with the procedures outlined in the Broader Public Sector Procurement Directive.

4.19 Disqualification Clause

The DDSB reserves the right to disqualify and immediately remove from eligibility to submit Bid Submissions for an indeterminate period, the name of any vendor, which will include the names of such vendor's principals, and the names of any other business which may be operated by such principals, for failure to carry out its obligations for the entire term under any previous Award or resulting Contract pursuant to a Bid Request process with the Board, in the sole and unfettered discretion of the Board.

4.20 Disqualification for Misrepresentation

DDSB may disqualify the Vendor/Contractor or rescind an Agreement subsequently entered if the Vendor/Contractor's Proposal contains misrepresentations or any other inaccurate, misleading or incomplete information.

4.21 Examination of Site

Bidders shall carefully examine work site/location and shall investigate nature of the Work to be undertaken, the means of access, the obstacles to be met with, the rights and interests which may be interfered with during the performance of the Work are referred to in the Contract Documents, or which are necessary for the full and proper completion of the Work and the conditions under which it will be performed, and shall acquaint themselves with all by-Laws, acts, ordinances, rules, regulations and codes which may affect the Work of the Contract. The DDSB will not consider any claim for extra work, expense and errors incurred by the Vendor/Contractor resulting from failure to comply with these conditions before Bid Submission.

The dimensions and information shown on the Bid Request drawings where applicable are furnished in good faith by the DDSB but shall in no way relieve Bidders of the responsibility for ascertaining to their own satisfaction, the nature of all conditions at the site.

4.22 Exclusivity

The DDSB does not relinquish total exclusivity of these requirements to this award, however, the majority and substantial portion will be given to the successful Bidder(s) subsequent to the Contract execution(s). The DDSB reserves the right to acquire other Goods/Services as required.

4.23 Expenses for Consultants And Other Contractors

Consultants and other Vendor/Contractors will not be reimbursed for any hospitality, incidental or food expenses, including:

- Meals, snacks and beverages
- Gratuities
- Personal telephone calls

4.24 Irrevocability Period

A Bid Submission is irrevocable by the Bidder and must remain in effect and open for acceptance for a minimum period of forty-five (45) days following the Bid Closing Date unless otherwise specified.

4.25 Municipal Freedom of Information Protection of Privacy Act (MFIPA)

The Bid Submission and supporting documentation shall become the property of the DDSB after the Award and shall not be returned. Information in a Bid Submission is subject to potential scrutiny by other parties after the Award, subject to the Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, F-31. Bidders must identify any information in the Bid Submission which is considered confidential. Requests for information must be made in writing to the DDSB FOI Coordinator and will be subject to conditions of the Act.

4.26 Privilege Clause

DDSB reserves the right to reject any or all Bid Submissions. The lowest or any Bid Submission will not necessarily be accepted. DDSB reserves the right to cancel the Bid Request at any point in the process without liability. DDSB reserves the right not to proceed with the Bid Request process or to cancel the Bid Request process after Bid Submissions are received if the budget for the process is not sufficient, Bid Submission responses are deemed not to meet the requirements of the process, funding is curtailed, or for any other reason determined to be detrimental to the DDSB's best interests. In addition, DDSB reserves the right to invalidate any submission from a Bidder:

(i) who has threatened or is currently involved in any legal disputes with the DDSB with respect to any previously awarded bids, whether or not such legal disputes arise prior to or subsequent to the issuance of this Bid Request; or

(ii) whose past performance has been unsatisfactory with respect to any previously awarded bid, in the sole and unfettered discretion of the DDSB, whether or not such unsatisfactory performance occurs prior to or subsequent to the issuance of this Bid Request.

4.27 Quantities

The quantities shown are estimates only based on previous volumes. The DDSB makes no guarantee of the quantities or volumes assigned to the successful Bidder(s) in any Contract awarded through this Bid Request process. Payment will be based on actual quantities of Goods/Services received and accepted by the DDSB at the unit prices bid.

4.28 References

Bidders must provide a list of current references, as requested, preferably Ontario school boards. Also, Bidders must include the name, address, contact person, email address, and telephone number of the reference provided.

4.29 Reserved Rights of DDSB

The DDSB reserves the right to:

(a) exercise any of the rights set out in this Bid Request;

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

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

(d) meet with some or all Bidders to discuss aspects of their Bid Submissions;

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

(f) verify with a Bidder that it satisfies the conditions for participation and is capable of fulfilling the terms of the Contract, where in the sole discretion of the DDSB, it receives a Bid Submission from a Bidder with a price that is abnormally lower than prices in other Proposals;

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

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

(i) waive any information or minor irregularity at the DDSB's discretion (without this RFX being considered to be amended);

(j) afford an opportunity to a Bidder to correct unintentional errors of form between the opening of Bid Submissions and the Awarding of a Contract and, if it does so, the DDSB shall afford the same opportunity to all participating Bidders;

(k) disqualify any Bidder or the Bid Submission of any Bidder who has engaged in conduct prohibited by this Bid Request;

(l) disqualify any Bidder whose capacity, integrity, or financial ability is, or whose previous experience with the DDSB has been unsatisfactory to the DDSB in its sole and unfettered discretion;

(m) make changes, including substantial changes, to this Bid Request in the manner set out herein;

(n) cancel this Bid Request process at any stage;

(o) cancel this Bid Request at any stage and issue a new Bid Request for the same or similar Work;

(p) reject any or all Bid Submissions at the DDSB's sole discretion;

(q) select three or more Bidders as "Preferred Bidders";

(r) to negotiate with Preferred Bidders;

(s) terminate negotiations of a contract with any Preferred Bidder at any time and for any reason without liability to such Bidder.

These reserved rights are in addition to any other rights which may be implied in the circumstances, and the DDSB shall not be liable for any expenses, costs, losses or any direct or indirect damages incurred or suffered by any Bidder or any party resulting from the DDSB exercising any of its express or implied rights under this Bid Request.

4.30 Surety

Bid Surety shall consist of the following bonds:

Performance Bond

Performance surety shall be in the amount of fifty percent (50%) of the total amount and is a requirement of this tender.

An agreement to bond for a 50% performance bond issued by an approved surety company authorized to conduct business in the Province of Ontario shall accompany the Bid Submission. An irrevocable letter of credit for 50% of the value of the Contract shall be accepted as surety, in lieu of a performance bond, issued by an approved bank or financial institution having office in Canada and authorized to conduct business in Ontario shall accompany the Bid Submission.

Where the Vendor/Contractor has provided an irrevocable letter of credit as surety, the aforesaid will be returned after completion of the Work and final payment has been accepted by the Vendor/Contractor.

The Vendor/Contractor shall arrange, pay for, execute and furnish to the DDSB a performance bond in an amount equal to fifty percent (50%) of the Bid Price with an approved surety company.

An irrevocable letter of credit for fifty percent (50%) of the Bid Price shall be an acceptable alternative to a performance bond issued by an approved bank or financial institution in Canada and authorized to conduct business in Ontario.

Upon Award of the Contract, the Vendor/Contractor shall promptly provide to the DDSB (Purchasing Department) the surety bonds called for on the Bid Documents.

Labour and Material Payment Bond

Labour and material payment surety shall be in the amount of fifty percent (50%) of the total amount and is a requirement of this tender.

An agreement to bond for a 50% labour and material payment bond issued by an approved surety company authorized to conduct business in the Province of Ontario shall accompany the Bid Submission. An irrevocable letter of credit for 50% of the value of the Contract shall be accepted as surety, in lieu of a labour and material payment bond, issued by an approved bank or financial institution having office in Canada and authorized to conduct business in Ontario shall accompany the Bid Submission.

Where the Vendor/Contractor has provided an irrevocable letter of credit as surety, the aforesaid will be returned after completion of the Work and final payment has been accepted by the Vendor/Contractor.

The Vendor/Contractor shall arrange, pay for, execute and furnish to the DDSB a labour and material payment bond in an amount equal to fifty percent (50%) of the Bid Price with an approved surety company.

An irrevocable letter of credit for fifty percent (50%) of the Bid Price shall be an acceptable alternative to a labour and material payment bond issued by an approved bank or financial institution in Canada and authorized to carry on business in Ontario.

Upon Award of the Contract, the Vendor/Contractor shall promptly provide to the DDSB (Purchasing Department) the surety bonds called for in the Bid Documents.

Bid Submissions not accompanied by the required Agreement to Bond for Performance and Labour and Material shall be rejected.

4.31 Taxation & Duty

Except as otherwise provided the Bid Price(s) shall be in Canadian funds and shall include all duty, customs clearances and all other charges now or hereafter imposed or in force. The harmonized sales tax (H.S.T.) shall be extra to the Bid Price(s). All prices must be quoted F.O.B. the delivery point(s) as set out in the purchase order(s). Bidders must indicate on the price schedule of the Bid Document their H.S.T. registration number.

4.32 Tie Bids

In the event of a tie Bid Submission, a lottery, as determined by the DDSB, will take place witnessed by the respective Bidders. If a Bidder(s) is not available to attend, at least one other DDSB staff and member of DDSB Purchasing department will be present as a witness and the results recorded accordingly.

5.0 GENERAL PROVISIONS

5.1 Contract

Each Bid Submission will be received with the understanding that the acceptance in writing by the DDSB of the offer to furnish all or any part of the Goods/Services described therein shall constitute a contract between the Bidder and the DDSB, which shall bind the Bidder on their part to furnish and deliver the Goods/Services at the Bid Prices, in accordance with conditions of said accepted Bid Submission, prices, specifications, Bid Request terms and conditions.

No alterations or variations of the terms of the Contract shall be valid or binding unless otherwise authorized in writing by the DDSB.

It is mutually agreed and understood that the Vendor/Contractor shall not assign, transfer, convey, sublet or otherwise dispose of the Contract or the right, title or interest therein, or the power to execute such Contract, to any other person, firm, company or corporation without the previous written consent of the DDSB.

For the purposes hereof, the transfer or issuance of shares by a Vendor/Contractor of more than fifty percent (50%) of the voting securities of a Vendor/Contractor 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 Vendor/Contractor as of the Bid Closing Date, whether or not such transfer or issuance of voting securities takes place in one or more transactions shall, for the purposes of the Contract, be deemed to be an assignment of the Contract requiring the consent of DDSB, unless such transfer or issuance of shares is made pursuant to an initial public offering of common shares under the Securities Act (Ontario).

5.2 Documents Conflicts

In the event of conflict(s) within Bid Documents the following shall apply:

- The terms and conditions shall govern over the specifications
- The specifications shall govern over drawings
- Figured dimensions shown on a drawing shall govern even though they may differ from dimensions scaled on the same drawing
- The executed Contract/Purchase Order agreement between the DDSB and Vendor/Contractor shall govern over all documents

Amendments to the Contract, in the form of change orders, shall take precedence over the documents or portions thereof. Change orders, appendices and Addenda to any Contract Document shall be considered part of such document.

None of the conditions contained in the Bidder's standard or general (printed) conditions of sale shall have any affect unless explicitly agreed to by the DDSB and set forth in the purchase order or specifically referred to therein.

5.3 Drawings

The DDSB shall furnish additional instructions, by means of drawings or otherwise, necessary for the proper execution of the Work, consistent with the Contract.

The Vendor/Contractor shall submit a schedule establishing the dates for the submission of shop drawings for the beginning of manufacture and installation of materials and for the completion of the various parts of the Work. The Vendor/Contractor shall advise the DDSB where circumstances necessitate a change to the schedule

6.0 EXECUTION OF THE WORK

6.1 Conduct of Work

The Vendor/Contractor shall have complete control of the Work and shall effectively direct and supervise the Work so as to ensure conformance with the Contract Documents. The Vendor/Contractor shall be solely responsible for construction means, methods, techniques, sequences and procedures and for coordinating the various parts of the Work under the Contract.

The Vendor/Contractor shall review the Contract Documents and shall promptly report to the DDSB any error, inconsistency or omission discovered.

The Vendor/Contractor is required, before the Bid Closing Date, and by personal examination, to thoroughly acquaint themselves with all existing conditions at the site which may in any way affect the proper completion of the Work specified.

The Vendor/Contractor shall maintain good order and discipline among their employees engaged on the Work and shall not employ on the Work; anyone not skilled in the task assigned.

The Vendor/Contractor must comply with all safety standards established by law and with safety standards established by industry associations where applicable.

The Vendor/Contractor shall conduct the Work with all skill and diligence and shall cooperate with the DDSB and the DDSB's representatives in every legitimate way to conduct their respective business in an effective, successful and harmonious manner, so as to complete the Work specified.

The Vendor/Contractor shall provide site and material security at their expense.

The Vendor/Contractor shall be fully responsible for protecting the Work from inclement weather and the barricading of the site.

6.2 Confidentiality

The parties agree that any information concerning the business or affairs of the other party or its directors, officers, agents, principals, elected officials or employees and clients, as applicable, about which the other party becomes aware of in the course of Bidder supplying the equipment shall:

- Be treated as confidential;
- Not be disclosed to any third party or to the Bidder’s personnel of the purchaser’s staff except as may be required under the agreement; and
- Not be used for any purpose other than that contemplated by this agreement and for the benefit of the other party.

The parties agree that any combination of information which includes such information shall be treated as confidential even if individual parts thereof are not confidential. The parties shall use all reasonable efforts to keep such information confidential, using a standard of care no less than the degree of care that the recipient would be reasonably expected to use for its own confidential information. The parties shall ensure that all recipients of the said information, including the Vendor/Contractor's personnel or the purchaser's staff assume obligations identical in principle with those which the parties assume under this Section.

In the event a party is required by any applicable law to make disclosure of any such information, the party required to make disclosure shall consult with the other party to the extent reasonably practicable in advance as to the contents and timing of such disclosure.

Exceptions

While neither party shall disclose any confidential information of the other, it shall not constitute a breach of the obligations hereto if such confidential information was:

- Already lawfully in the public domain or becomes known within the public domain from no breach of such party;
- Already known to such party at the time of disclosure;
- Independently developed by the party without reference to or use of the information;
- Lawfully received by the party from a third party; or
- Made public with the prior consent in writing of the other party.

6.3 Emergencies

In an emergency affecting or threatening the safety of life, the Work or adjoining property, the DDSB has the authority to stop the progress of the Work.

Upon commencement of the Work, the Contractor shall provide DDSB with a list of emergency contacts for the related project Work. The Contractor will notify DDSB in the event of any revisions said list provided at the commencement of the project.

6.4 Health & Safety, Laws, Notices, Permits and Fees

The Vendor/Contractor shall obtain the permits, licences and certificates and pay the fees required for the performance of the Work which are in force subsequent to the Bid Closing Date.

The Vendor/Contractor shall give the required notices and comply with the laws, ordinances, rules, regulations, codes and orders of the Authorities Having Jurisdiction, which are or become applicable during the performance of the Work and which relate to the Work, to the preservation of the public health, and to construction safety, in accordance with the Occupational Health & Safety Act.

6.5 Hot Work Permit

Contractor is required to supply a Hot Work Permit for any temporary operation involving open flames or producing heat and/or sparks. This includes but is not limited to: brazing, cutting, grinding, soldering, torch-applied roofing and welding. If the contractor does not have their own Hot Work Permit that meets or exceeds the DDSB standard, then the DDSB can supply one for the contractor to fill out and post on site. All Contractors must employ a Hot Work Policy when conducting work on facilities owned and operated by the DDSB. The sample hot work permit enclosed herein, supported by the Ontario School Board Insurance Exchange (OSBIE) outlines DDSB's minimum requirements for company hot work policy protocols. A copy of the enclosed permit is available to be supplied by the DDSB upon request.

HOT WORK PERMIT

STOP!
Avoid hot work or seek an alternative/safer method, if possible.

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

Part 1

Instructions

1. Firesafety supervisor:
   A. Verify precautions listed at right (or do not proceed with the work).
   B. Complete and retain Part 1.
      (Part 1A is for quality assurance documentation, if necessary.)
   C. Issue Part 2 to person performing hot work.

Hot work by
☐ Employee
☐ Contractor _____

Date | Job number

Location/building and floor

Nature of job

Name (print) and signature of person performing hot work

I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.

Name (print) and signature of firesafety supervisor/operations supervisor

Permit Expires | Date | Time a.m. p.m.

Note: Emergency notification on back of form. Use as appropriate for your facility.

To order additional hot work permits, order online at rm@osbie.on.ca or contact the Risk Management Department at 1-800-668-6724.

OSBIE

Required Precautions Checklist

☐ Available sprinklers, hose streams and extinguishers are in service/operable.
☐ Hot work equipment in good working condition.

Requirements within 35 ft. (11m) of hotwork

☐ Flammable liquid, dust, lint and oily deposits removed.
☐ Explosive atmosphere in area eliminated.
☐ Floors swept clean.
☐ Combustible floors wet down, covered with damp sand or fire-resistive sheets.
☐ Remove other combustible material where possible. Otherwise, protect with welding pads, blankets and curtains, fire-resistive tarpaulins or metal shields.
☐ All wall and floor openings covered.
☐ Welding pads, blankets and curtains installed under and around work.
☐ Protect or shut down ducts and conveyors that might carry sparks to distant combustible material.

Hot work on walls, ceilings or roofs

☐ Construction is noncombustible and without combustible covering or insulation.
☐ Combustible material on other side of walls, ceilings or roofs is moved away.

Hot work on enclosed equipment

☐ Enclosed equipment cleaned of all combustible material.
☐ Containers purged of flammable liquid/vapor.
☐ Pressurized vessels, piping and equipment removed from service, isolated and vented.

Fire watch/hot work area monitoring

☐ Fire watch will be provided during and for 60 min. after work, including any break activity.
☐ Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.
☐ Fire watch is trained in use of equipment and in sounding alarm.
☐ Fire watch may be required in adjoining areas, above and below.
☐ Monitor hot work area for an additional three (3) hours after the 60-min. fire watch.

Other precautions taken:

☐ _____

6.6 No Smoking and/or Vaping

All DDSB facilities and properties are “Non-Smoking” and all vendors/contractors and their employees must abide by this policy.

6.7 Operation of Tools, Equipment & Vehicles On DDSB Property

The Vendor/Contractor will perform service or cleaning after hours if there are restrictions to access during regular school hours. The Vendor/Contractor will not operate power tools, maintenance equipment, snow blowers, lawn mowers, tractors, vehicles or heavy equipment on DDSB property during occupied hours without first reporting to the Principal or the Principal’s designate at the school site. The tools and equipment mentioned above should not be left unsecured or unsupervised on DDSB property.

Drivers of motor vehicles shall not operate these vehicles beyond the parking area without DDSB permission. These vehicles will be operated with due caution at all times while on school property. Speed limits must not exceed 8 kilometers (5 miles) per hour at any time.
Delivery and service vehicles must not enter or leave school grounds when students are in the area unless directed by, or with the permission of the Principal or delegate. Drivers will wait for the yard to clear before entering or leaving i.e. recess, etc.

No power actuated fastening device (i.e. ramset) will be permitted unless prior written approval is received from the DDSB’s designated representative.

Delivery vehicles must shut down their engines when stopped in school yards or when stopped on any street adjacent to any DDSB buildings. When returning to an unattended vehicle and before it is driven, the driver must circle the vehicle to ensure that no child is hiding behind or under the vehicle. Any accidents, no matter how minor, must be reported immediately to the school Principal.

No vehicle should reverse unless there is a person available to guide the driver (except in designated parking areas).

6.8 Police Record Check

Subsequent to Contract Award, police record checks may be required for the Vendor/Contractor’s staff entering DDSB sites. The Vendor/Contractor shall be required to comply at no cost to the DDSB.

6.9 Protection Of Work & Property

Completion of the Work shall in no way interfere with the use of adjacent buildings or surrounding areas. The Vendor/Contractor shall adequately protect adjacent property from damage or injury. If damage or injury does occur, the Vendor/Contractor will return the damaged or injured property to its original or an equivalent state, at the expense of the Vendor/Contractor. The Vendor/Contractor shall provide, erect and maintain all necessary guardrails, barriers, night-lights, sidewalk and curb protection, etc. as may be necessary or as

the bylaws, regulations or statutes may require. Should the job be stopped for any cause, the Vendor/Contractor will be responsible for and will provide all necessary protection to prevent damage by weather or other causes until the project can be safely completed. Nothing contained in this paragraph limits or releases the contractor from any liability.

The Vendor/Contractor will accept full responsibility for the prevention of pilferage and theft, will instruct all trades accordingly, and will be responsible for any losses due to theft.

The Vendor/Contractor will be responsible for repairing all damages its employees, representatives or its sub-contractors may cause to the property during the execution of the Work.

6.10 Quality

Product quality will be of the essence of any Contract issued to successful Bidder(s) through this Bid Request process. The Contractor shall maintain quality control over the area of construction and products provided within until accepted by DDSB.

If product substitutions are necessary after one or more Contract(s) are awarded, any proposed substitute must be approved by the DDSB project representative(s). A formal request (in written or electronic format) for substitution shall be submitted by the Contractor for DDSB review – See subsection 4.2 - “Substitutions”

6.11 Samples

Bidders must provide samples, upon request, for all products during pre-Award evaluations. Failure to do so may result in that Bidder’s product not being considered for Award.

Please note: Samples of small intrinsic value will become the property of the DDSB upon receipt. Bidders must indicate to the DDSB, prior to sample submission, whether title of the product will be relinquished by the Bidder.

6.12 Storage of Materials & Equipment

Materials shall be stored, covered and protected from fire, weather and other damaging conditions at all times. The DDSB may provide temporary storage space for materials if available.

The Vendor/Contractor shall be responsible for all materials and equipment being used on site, and for safeguard of such in case of damage to DDSB property. Refer also to “INDEMNIFICATION”.

6.13 Materials

Unless otherwise specified in Bid Documents, materials and supplies must be new items (not refurbished, not previously used, not re-manufactured), in good operating condition, fit for the purpose for which they are being acquired, and free from defects in workmanship and material.

Any item which fails in any way to meet the specifications of the Bid Request is subject to rejection. The decision of the DDSB pertaining to items being rejected shall be final.

Inferior items shall be removed at once, by the Vendor/Contractor at their own expense. Should the Vendor/Contractor refuse to remove any items so rejected, the DDSB may then take action to remove such items at the Vendor/Contractor's expense.

6.14 Laws and Regulations

The Vendor/Contractor shall comply with all relevant Federal, Provincial and Municipal statutes regulations and by-laws pertaining to the Work and the performance of the Contract.
The Vendor/Contractor shall be responsible for ensuring similar compliance by Vendor/Contractors and subcontractors.

The Contract shall be governed by and interpreted in accordance with the laws of the Province of Ontario.

6.15 Supervision

The Vendor/Contractor shall ensure that adequate and competent supervision is provided at all times by a competent supervisor as defined under the Occupational Health and Safety Act (Ontario). The supervisor shall be an employee of the Prime Contractor whom DDSB has awarded the Work to. The person will represent and be an agent for the Vendor/Contractor for all purposes, and directions given to/by the supervisor shall bind the Vendor/Contractor.

The Vendor/Contractor shall conduct the Work with all skill and diligence and shall cooperate with the DDSB and the DDSB's representatives in every legitimate way to conduct their respective business in an effective, successful and harmonious manner, so as to complete the Work specified.

6.16 Workers' Rights

The Vendor/Contractor will abide by the hours of work and minimum wage rates for occupations involved in accordance with the regulations of the Ministry of Labour or other appropriate legislation of the Province of Ontario or the Government of Canada.

6.17 Workmanship

Quality workmanship is required. The Vendor/Contractor shall employ qualified trades/workers experienced in the use of the specific Goods/Services relative to the Contract.

6.18 Work Schedule

The Vendor/Contractor shall submit to the DDSB for approval, when requested, a written "work schedule" before commencing work. Failure to do so may constitute withdrawal of the Contract.

6.19 Unforeseen Conditions & Toxic/Hazardous Substances

If the Contractor encounters an unforeseen condition or hazardous substance at the Place of Work:

1. Immediately identify the condition to the DDSB's project representative.
2. The DDSB will review with the Contractor and provide further direction based on review with DDSB Health & Safety and the consult of a third-party inspection and testing firm if required.

NOTE: WORK IS NOT TO PROCEED until further advised by the DDSB's project representative.

This procedure must be followed and is in place to ensure all workers (the employees of the DDSB and/or the Vendor/Contractor) are adequately protected under the provisions of the Occupational Health & Safety Act of Ontario.

6.20 Warranty

The successful Bidder(s) warrants to the DDSB that:

- All Goods/Services, materials and equipment supplied under the Contract are free of all defects in manufacture and workmanship for a period of not less than 2 years from date of delivery, installation or performance (whichever is the later);
- The Vendor/Contractor(s) shall promptly remedy any defect or deficiency in any Goods/Services, materials or equipment supplied under the Contract to the full and complete satisfaction of the DDSB within seven (7) calendar days following notice to do so from the DDSB at no additional cost to the DDSB, unless otherwise specified;
- In the event that the Vendor/Contractor(s) does not promptly honour the above warranties to the satisfaction of the DDSB, the DDSB may, at the sole cost of the Vendor/Contractor, do whatever it deems necessary and advisable to remedy, rectify or replace the defective, deficient or non-compliant goods, services, materials or equipment.

6.21 Guarantee

The Vendor/Contractor guarantees that with ordinary use the said work shall, for the period of twelve (12) months, unless otherwise specified from date of final acceptance by the DDSB, remain in such condition as will meet with the approval of the DDSB's representative and that the Vendor/Contractor will, upon request, repair any imperfection due to materials used in the construction or workmanship.

The decision of the DDSB as to the nature, extent and cause of such imperfections and the necessity for correcting the same shall be final.

All Goods/Services and/or equipment furnished or supplied pursuant to the Contract shall be installed or attached in such a manner as to preserve all manufacturer's and

Vendor/Contractor's warranties, which shall, together with all parts and components, become the property of the DDSB after successful and satisfactory installation or attachment.

6.22 Product Data

Provide product data sheets, which show dimensions, appearance, and specifications for Goods/Services included in the Bid Submission, where requested by the DDSB.

6.23 Customs

All commercial customs documents, including but not limited to commercial invoices, Canada Customs Invoices, and bills of lading, as applicable, shall be fully and satisfactorily completed in accordance with Canada Border Services Agency requirements. The Vendor/Contractor shall obtain from the DDSB and show on the relevant commercial documents all that are accessible of the following: The Purchase Order Number or the department/school name of the DDSB purchasing the goods. Goods eligible for duty free entry into Canada according to the Canada-United States-Mexico Agreement (CUSMA) shall be accompanied by a fully completed CUSMA Certificate of Origin or Statement of Origin, stamped or printed, or its equivalent satisfactory to the DDSB. Penalties assessed by CBSA due to incomplete, inaccurate or missing information on a commercial customs document shall be the responsibility of the Vendor/Contractor and shall be charged to and paid by the Vendor/Contractor or shall be deducted from any payment owing to the Vendor/Contractor.

6.24 Workplace Hazardous Materials Information System (W.H.M.I.S)

The successful Bidder must provide Material Safety Data Sheets and any required labeling for products that are designated as hazardous in the workplace in accordance with W.H.M.I.S. Legislation.

Prior to the initial shipment of good/services hereunder, the Vendor/Contractor shall provide the DDSB with, and during the term of this Contract the Vendor/Contractor shall provide and continuously update, a list of all Goods/Services containing hazardous materials, or any physical agents or devices or equipment producing or emitting physical agents or any substance, compound or product that is deemed to be or contains a designated substance under the Occupational Health and Safety Act (Ontario).

In accordance with the Workplace Hazardous Materials Information System (WHMIS) Regulation, the Vendor/Contractor shall provide the appropriate Material Safety Data Sheets including all updates, during the term of the Contract. All Material Safety Data Sheets documentation shall be provided to the DDSB in the format requested.

6.25 Workplace Safety & Insurance Board (W.S.I.B.)

The Vendor/Contractor MUST submit to the DDSB (Purchasing Department) at the time of entering into the Contract, a satisfactory clearance certificate from the Workplace Safety and Insurance Board confirming that all assessments or compensation payable to the Workplace Safety and Insurance Board have been paid, and the DDSB may, at any time during the

performance or upon completion of the Contract, require a further declaration that all such assessments or compensations have been paid.

The DDSB requires all Vendor/Contractors who provide labour and installation services on any of the DDSB properties, as part of the Contract, to be in full compliance with all requirements imposed upon them by the Workplace Safety Insurance Board (WSIB).

Therefore, all of the Vendor/Contractor's personnel must be covered by the insurance plan under the Workplace Safety and Insurance Act, 1997.

A Certificate of Clearance from the WSIB, shall be provided prior to the commencement of work indicating that all payments by the Vendor/Contractor to the WSIB Board have been made.

Clearance certificates shall be renewed by the Vendor/Contractor every ninety (90) days (minimum) and submitted automatically and routinely to the DDSB throughout the period of the Contract.

Prior to final payment, a Certificate of Clearance must be issued indicating all payments by the Vendor/Contractor to the DDSB in conjunction with the subject Contract have been made and that the DDSB will not be liable to the WSIB for future payments in connection with the Vendor/Contractor's fulfillment of the Contract.

For Independent Operators who have elected not to have WSIB coverage, the following shall be provided upon request by the DDSB:

› a letter from the WSIB confirming Independent Operator status;
› and evidence of having obtained WSIB optional Insurance.

The DDSB has the right to reject any Bid Submission it deems to have not provided sufficient WSIB coverage.

The Vendor/Contractor will ensure that any and all subcontractors also have valid WSIB coverage.

6.26 Clean Up

The Vendor/Contractor will:

- Keep the job site free from accumulations of waste materials or rubbish caused by employees or work, and at the completion of the day, will remove all rubbish from/and about the site and all tools and surplus materials, and will leave the Work "construction clean", or its equivalent, unless otherwise specified.
- Clean up on a room-by-room basis as work is completed in that location.
- Use tarps and cover sheets in locations with existing furnishings and equipment. Care must be taken not to damage, dirty or mark floors or walls if furnishings and equipment need to be moved.
- Supply waste/recycling bins and must not use the DDSB's waste/recycling bin without written approval by the designated representative. In the case of a dispute, the DDSB reserves the right to remove waste and/or repair/clean up

where the Vendor/Contractor has failed to do so and charge all costs to the Vendor/Contractor as shall be determined to be fair and just.

- Be responsible for the disposal of material removed from the site in accordance with all legislation and regulations regarding waste handling and disposal. The Vendor/Contractor will not burn any materials on-site and will not allow debris and/or fumes to enter the school's ventilation system or sewers.
- The Vendor/Contractor shall maintain the place of work in a tidy condition and free from accumulations of waste products and debris.
- At the completion of the Work, the Vendor/Contractor shall remove their surplus materials, tools, construction machinery and equipment and also remove waste products and debris caused by the Vendor/Contractor, their subcontractors or employees.

6.27 Asbestos Work Record

The following document is a required submittal to be filled out and submitted by the designated abatement contractor as part of the Work. The document forms a record of all asbestos abatement executed under the subject Contract. The document shall be filled out by the designated abatement contractor and submitted to DDSB (and the Prime Contractor where one exists) with each progressive billing application for record, including DDSB Facilities Services Analyst and designated Health & Safety Leads. The document below is a sample, and each project will have a fillable pdf form along with our Ebase Asbestos Record extract uploaded to bidsandtenders for the successful contractor to use as required.

ASBESTOS PROJECT WORK RECORD

PROJECT INFORMATION	
SCHOOL:	DDSB PROJECT #: P - A
ABATEMENT START DATE:	ASBESTOS WORK RECORD SUBMISSION DATE:
ABATEMENT END DATE:	ASBESTOS WORK RECORD SUBMISSION #:

CONTACT INFORMATION	
ABATEMENT CONTRACTOR	CONSULTANT *(if applicable)*
CONTACT NAME:	CONTACT NAME:
CONTACT EMAIL:	CONTACT EMAIL:
CONTACT PHONE:	CONTACT PHONE:

ABATEMENT ACCOUNTING

PROVIDE A BRIEF DESCRIPTION OF ABATEMENT SCOPE OF WORK:

ACCOUNTING DETAILS

PURCHASE ORDER #	INVOICE/ DRAW #	TOTAL ABATEMENT COST *(including applicable fees & taxes)*

ABATEMENT INFORMATION

PROJECT TYPE

- ☐ PLANNED PROJECT
- ☐ EMERGENCY
- ☐ TYPE 1
- ☐ TYPE 2
- ☐ TYPE 3 **

*** TYPE 3 - FOLLOW PROCEDURES OUTLINED IN ANNEX 1: PLANNING FOR, INSPECTION AND MONITORING TYPE 3 ASBESTOS ABATEMENT*

DESIGNATED SUBSTANCE SURVEY PROVIDED	AIR MONITORING REQUESTED
☐ YES ☐ NO	☐ YES ☐ NO

*NOTE: AIR MONITORING IS REQUIRED FOR ALL **TYPE 3** REMOVALS, BUT MAY BE CONSIDERED FOR TYPE 1 OR TYPE 2 REMOVALS.*

eBASE HAZARDOUS SUBSTANCES SURVEY DATA REPORT

☐ **eBase Hazardous Substances Survey Data Report** generated and reviewed prior to abatement.

Date of Report: _____

ASBESTOS PROJECT WORK RECORD

ASSET RETIREMENT OBLIGATIONS (ARO) LIABILITY ADJUSTMENTS

- **Please review the eBase Hazardous Substances Survey Data Report prior to abatement.**
- **Record all ACM items removed or discovered below.**
  Do not list any ACM items you have not affected (e.g. ACM in other rooms)

➢ **Columns in GREY must be recorded as they are listed in eBase**
➢ Columns in WHITE are actions the contractor has taken during this work record only
(DDSB is responsible to then update all applicable records)

CONTRACTOR ACTIONS EXPLAINED

REMOVED – Known
ACM item is listed in eBase and part/all was removed.

REMOVED – Unknown
ACM item was discovered on site, but NOT listed in eBase and part/all was removed.

DISCOVERED - Unknown
ACM item was discovered on site, but NOT listed in eBase and left in place.

OTHER
Any action performed that does NOT fit any of the others MUST have detailed comments.

GRAY SECTION - As listed in eBase report provided by DDSB					*WHITE SECTION - Updates Required to be Entered as per the Contractor*			
ROOM # / LOCATION	MATERIAL OF ACM ITEM(S)	ASBESTOS ABATEMENT LIABILITY ITEM	PRE-EXISTING QTY	UNIT MEASURE	ACTION TAKEN BY CONTRACTOR	ACTUAL QTY ACTIONED	UPDATED QTY ON SITE AS OF SUBMISSION (enter '0' if all removed)	COMMENTS (if applicable)
(e.g., Room 104)	*(e.g., Aircell)*	*(e.g., THERMAL PIPE STRAIGHT INSULATION)*	*(e.g., 100)*	*(e.g., LF)*	*(e.g., REMOVED - Known)*	*(e.g., -40)*	*(e.g., 60)*	*(e.g., Removed from north side only)*

*** If you require more lines than provided above, we can provide you with additional pages*

ASBESTOS PROJECT WORK RECORD

ACKNOWLEDGEMENT & CHECKLIST
☐ I have included the cost of all applicable invoices to complete the abatement above on page 1.
☐ I have attached the eBase Hazardous Substances Survey Data Report for this location, as referenced on page 1 & 2.
☐ All ACM items removed, repaired, and/or discovered during this project have been listed on page 2, and any additional items affected will require a new work record.
☐ I understand and approve that the financial information and asbestos details listed above will be reported to the Ministry of Education by the Durham District School Board.

NAME:	POSITION/TITLE & COMPANY:
SIGNATURE:	

A COMPLETED AND SIGNED COPY OF THIS ASBESTOS PROJECT WORK RECORD MUST BE SUBMITTED WITH THE INVOICE/DRAW AND VIA EMAIL TO:
jennifer.walterhouse@ddsb.ca *(Facilities Services Analyst),*
lauren.dusty@ddsb.ca *(Health & Safety Lead), and*
anapatricia.franjieh@ddsb.ca *(Health & Safety Lead)*

Please rename this file with the School Name and DDSB Project # prior to sending.
(e.g. "Asbestos Project Work Record_Bellwood PS_P01234.pdf")

7.0 PAYMENT

7.1 Invoicing

Invoicing and ordering format to be in accordance with the latest revision of the Construction Act and DDSB's Contractor Prompt Payment Procedures.

In addition to the requirements of the Construction Act, the following required documentation, and any further required documentation or information that the DDSB and the Contractor may agree upon, must be included in order for the Proper Invoice to be considered complete:

(i) Completed DDSB Formal Application of Payment by Contractor form including Substantial Performance calculations when applying for Substantial Performance.
(ii) Contractor's Proper Invoice including itemized breakdown, claims and reference to Purchase Order number where applicable.
(iii) Cash Allowance breakdown including supporting invoices for claims.
(iv) Change Order breakdown including front page copy of signed change orders being claimed, including signatures of Contractor, Consultant and Owner.
(v) WSIB Clearance Certificate including correct project name, date covering the time frame the Work was completed, listing DDSB as the Owner.
(vi) Completed Statutory Declaration CCDC form 9A, with date.

7.2 Liens (Construction Act)

The Contractor shall comply with the terms and conditions of the latest revision of the Construction Act (Ontario) as amended from time to time.

7.3 Payments to Vendors

The DDSB, at its discretion, will make payments to Vendor/Contractors electronically or by cheque.

Vendor/Contractors are required to provide the DDSB, upon request, with the necessary banking information (e.g. void blank cheque) in order that payments, at the discretion of the DDSB, can be made electronically.

7.4 Purchase Orders

Purchase orders will be issued by the DDSB for all Goods/Services required. No payment will be made unless the Vendor/Contractor can produce a valid purchase order. All invoices submitted for payment must reference the purchase order number issued by the DDSB.

7.5 Certificate of Substantial Performance

The DDSB reserves the right to request the Vendor/Contractor to publish the date of Substantial Performance of the project. Where the value of the project is greater than or equal to the value

of $100,000, exclusive of HST, the Vendor/Contractor shall be required to post a formal publication of the Substantial Performance of the project within a registered news outlet (i.e. Daily Commercial News), and as further set out in the Construction Act.

Where there is no certification or declaration of Substantial Performance of a Contract, or where the required publication has not occurred, lien rights expire at the conclusion of the sixty (60) day period following the date the Contract is completed, as signified by the payment of the final progress claim.

7.6 Right to Audit

The Bidder must provide a formula or means for which the DDSB can verify, at any point during the Contract, that the pricing or percentage mark-up is being maintained by the Bidder. This formula may be used by the DDSB for random spot checks to validate pricing.

The DDSB reserves the right to periodically audit invoices from Vendor/Contractors, issued to the Vendor/Contractor, to verify adherence to Contract pricing.

In the event that pricing discrepancies exist, the Vendor/Contractor, at their expense, shall correct all invoices and issue payment or credit notes to the DDSB within thirty (30) days of the request by the DDSB.

Where a full audit of all invoices is required, the Vendor/Contractor shall perform the audit to the DDSBs satisfaction within thirty (30) days of the request and issue payment or credit note covering all amounts overcharged within sixty (60) days of request for audit.

The DDSB, in its sole discretion, in each case shall determine whether payment by cheque or credit note is appropriate.

Should the Vendor/Contractor fail to perform any of the audit requirements noted above, the DDSB reserves the right to terminate the Contract, without incurring any cost or liability, giving thirty (30) days written notice.

8.0 CHANGES IN THE WORK

8.1 Change Orders and Mark Ups

The DDSB may, without invalidating the contract, direct the Vendor/Contractor to make changes in the Work.

When a change causes an increase, or decrease in the Work, the Contract Price shall be increased or decreased by the unit price(s) quoted, or in the absence of applicable unit price(s), by an amount to be agreed upon between the DDSB and the Vendor/Contractor.

Any changes in the Contract will be in the form of a written change notice from the DDSB Purchasing Department.

Where changes in the Work are made after the Award of Contract and are not to be valued by the unit prices, the Vendor/Contractor agrees to provide bids for the proposed changes to the DDSB (Purchasing Department) indicating the complete breakdown of material and labour costs, mark-up, profit etc.

Mark-up for changes shall be applied as follows:

Prime Contractor's Own Work:
Prime Contractor Overhead = 10%
Prime Contractor Profit = 5%

Sub-Contractor's Work:
Sub-Contractor Overhead = 5%
Sub-Contractor Profit = 5%
Contractor Overhead (only) on Work of Subcontractor = 10%

In the event that any prices or units costs for a Change Order are determined using All Priser, the Proponent agrees to only include up to 50% of the output cost determined by All Priser, failing which the DDSB reserves the right to reduce any unit pricing determined by All Priser and submitted in a Change Order request to 50% of the amount so determined by All Priser.

For clarity, in calculating the value of any changes, the Vendor/Contractor shall apply markups for profit and overhead independently and only to the actual net cost of any increase. Accordingly, the actual net cost used to determine the percentage increase for profit shall not include the increased value for overhead, and vice versa.

8.2 Force Majeure / Delays in The Work

1.1 Force Majeure

For the purposes hereof, "Force Majeure" means the occurrence of an event or circumstance ("Force Majeure Event") that prevents or impedes a party from performing

one or more of its contractual obligations under this Agreement, if and to the extent that the party affected by the impediment (the “Affected Party”) proves:

(a) that such impediment is beyond its reasonable control; and

(b) that it could not reasonably have been foreseen at the time of the conclusion of the Agreement; and

(c) that the effects of the impediment could not reasonably have been avoided or overcome by the Affected Party.

1.2 Non-Performance by Third Parties

Where a party fails to perform one or more of its contractual obligations because of a default by a third party whom it has engaged to assist such party in performing the Agreement, such party may only invoke Force Majeure only to the extent that the requirements under Article 1.1 are established both for such party and for the third party.

1.3 Presumed Force Majeure Events

In the absence of proof to the contrary, the following events affecting a party shall be presumed to fulfill conditions (a) and (b) of Article 1.1, and the Affected Party only needs to prove that condition (c) of Article 1.1 is satisfied:

(a) war (whether declared or not), hostilities, invasion, act of foreign enemies, extensive military mobilization;

(b) civil war, riot, rebellion and revolution, military or usurped power, insurrection, act of terrorism, sabotage or piracy;

(c) currency and trade restriction, embargo, sanction;

(d) act of authority, whether lawful or unlawful, compliance with any law or governmental order, expropriation, seizure of works, requisition, nationalization;

(e) plague, epidemic, quarantine or other health emergency affecting the general public, natural disaster or extreme natural event;

(f) explosion, fire, destruction of equipment, prolonged break-down of transport, telecommunication, information system or energy;

(g) general labour disturbance, such as boycott, strike and lock-out, go-slow, occupation of factories and premises.

1.4 Notification

The Affected Party shall give notice of the event without delay to the other party.

1.5 Consequences of Force Majeure

A party successfully invoking Force Majeure is relieved from its duty to perform its obligations under this Agreement and from any liability in damages or from any other

contractual remedy for breach of contract, from the time at which the impediment causes inability to perform, provided that the notice thereof is given without delay. If notice thereof is not given without delay, the relief is effective from the time at which notice thereof reaches the other party. The other party may suspend the performance of its obligations, if applicable, from the date of the notice.

1.6 Temporary Impediment

Where the effect of the impediment or event invoked is temporary, the consequences set out in Article 1.5 above shall apply only as long as the impediment invoked prevents performance by the Affected Party of its contractual obligations. The Affected Party must notify the other party as soon as the impediment ceases to impede performance of its contractual obligations.

1.7 Duty to Mitigate

The Affected Party is under an obligation to take all reasonable measures to limit the effect of the event invoked upon performance of the Agreement.

1.8 Agreement Termination

Where the duration of the impediment invoked has the effect of substantially depriving the parties of which they were reasonably entitled to expect under the Agreement, either party has the right to terminate the Agreement by notification within a reasonable period to the other party. Unless otherwise agreed, the parties expressly agree that the Agreement may be terminated by either party if the duration of the impediment exceeds one hundred and twenty (120) days.

1.9 Unjust Enrichment

When Article 1.8 applies, and where either party in the performance of the Agreement derived a benefit before the termination of the Agreement, the party deriving such a benefit shall pay to the other party a sum of money equivalent to the value of such benefit.

9.0 INDEMNIFICATION & LIABILITY

9.1 Indemnification of Client

The Vendor/Contractor agrees to indemnify and save harmless the DDSB from all actions, suits, claims and demands, and costs and damages arising by reason of injury or death to any person or any property resulting from the services or work performed herein.

9.2 Intellectual Property Indemnity

The Vendor/Contractor shall defend, indemnify and hold DDSB harmless against all third- party claims, suits, proceedings, costs, damages, losses and expenses (including reasonable legal fees and settlement fees), and judgments incurred, claimed or sustained by DDSB arising out of or related to any allegation that any portion of the Goods/Services (including software and updates, error corrections, or upgrades thereto) violates any patent, copyright, trade secret, trade-mark, or other third-party intellectual property right. If a claim is filed in a court or other administrative proceeding seeking to enjoin the use of the Goods/Services, the Vendor/Contractor shall either:

(i) at the Vendor's/Contractor's cost, procure for DDSB the right to continue to use the relevant portion of the Goods/Services;
(ii) replace, at the Vendor's/Contractor's cost, the relevant portion of the Goods/Services with a substitute product that functions substantially in accordance with the applicable specifications of that portion of the Goods/Services; or
(iii) at the Vendor's/Contractor's cost, modify the Goods/Services so that it does not infringe or misappropriate, provided that the Goods/Services, as modified, continues to perform substantially in accordance with the applicable specifications.

The Vendor/Contractor will have the right to control the defense, select counsel, and direct the course of resolution, including settlement of any infringement claim (but only if the settlement does not include an admission of liability by DDSB, does not involve more than the payment of money, and grants DDSB a full and unconditional release from all liability with respect to the claim). In addition to the defense provided by the Vendor/Contractor, DDSB may elect to retain its own counsel, but the Vendor/Contractor will not be responsible for any fees or expenses of such counsel.

This indemnity shall survive the expiration or sooner termination of the Contract.

9.3 Insurance (Fire)

The successful Bidder shall be responsible for fire insurance on their own facilities and equipment.

9.4 Insurance (General Liability)

The Vendor/Contractor shall provide and maintain at their own expense, a policy of general liability insurance issued by an insurance company incorporated or licensed to conduct insurance business in the Province of Ontario during the entire contract period.

General liability insurance shall be in the name of the Vendor/Contractor, naming the DDSB and CIMA+ as additional insured, with limits of not less than five million (5,000,000.00) dollars inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof.

In the case of any Roof Replacement or New Roofing projects, General Liability Insurance shall be in the name of the Vendor/Contractor, naming the DDSB as additional insured, with limits of not less than ten million (10,000,000) dollars inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof.

The Vendor/Contractor shall provide the DDSB (Purchasing Department) with proof of insurance within 10 days of issuance of the written notification of intent to award the Contract.

10.0 RIGHTS AND RESPONSIBILITIES

10.1 Environmental

In an effort to reduce environmental waste, the DDSB promotes and supports goods and services that are environmentally friendly and contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the goods or services. Where possible, packaging shall be manufactured from recycled materials.

10.2 Government or Regulatory Actions

Where any governmental or regulatory authority having jurisdiction (AHJ) requires the DDSB or the Vendor/Contractor to recall or cease using any Goods/Services, the DDSB or the Vendor/Contractor, as the case may be, shall promptly notify the other of such decision or requirement providing all relevant particulars.

In the case of any recall, seizure or requirement to cease using any of the Goods/Services by any governmental or regulatory authority having jurisdiction, the Vendor/Contractor, without limiting the DDSB's rights or remedies, shall be provided the opportunity to provide corrective action satisfactory to the DDSB, as follows:

- replace or repair the good/services and deliver replacement or repaired good/services to the DDSB, which is satisfactory to the DDSB; and
- honour all applicable good/services warranties

In any event, the Vendor/Contractor shall defend, indemnify and hold the DDSB and its officers, directors, agents, principals, elected officials or employees harmless from and against all damages, liabilities, and costs including legal costs on a substantial indemnity basis, arising from or related to such recall, seizure or order to cease using, to the extent that such loss was caused by the Vendor/Contractor.

The responsibility of the Vendor/Contractor under this provision shall also apply in the case where any Canadian governmental or regulatory authority issues an order to seize the Goods/Services (for example, where the Vendor/Contractor failed to exercise the required corrective action and/or the license of the Goods/Services was revoked).

For clarity, the responsibility of the Vendor/Contractor to replace or repair the Goods/Services does not apply where the DDSB decides, in its sole discretion, to cease using the Goods/Services due to health or safety concerns and those concerns have not led to the request by the Canadian governmental or regulatory authority that the Vendor/Contractor take appropriate action to correct or to cease using the Goods/Services.

10.3 Lobbying

Lobbying is inappropriate. Engaging in this kind of behaviour may result in your Bid Submission being disqualified.

10.4 No Publicity or Promotion

No vendor, including a preferred Vendor/Contractor, shall make any public announcement or distribute any literature regarding this RFP or otherwise promote itself in connection with this RFP or any arrangement entered into under this RFP without the prior written approval of the DDSB.

In the event that a Vendor/Contractor, including a preferred Vendor/Contractor, makes a public statement either in the media or otherwise in breach of this requirement, in addition to any other legal remedy it may have in law, in equity or within the context of this RFP, DDSB shall be entitled to take all reasonable steps as may be deemed necessary by DDSB, including disclosing any information about a Proposal, to provide accurate information and/or to rectify any false impression which may have been created.

10.5 Subcontractors

The Vendor/Contractor agrees to preserve and protect the rights of the parties under the Contract with respect to work to be performed under subcontract and to:

- Enter into contracts or written agreements with their subcontractors requiring them to perform their work in accordance with and subject to the terms and conditions of the Contract Documents.
- Be fully responsible to the DDSB for acts and omissions of their subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by him.
- The Vendor/Contractor MUST submit a list of any subcontractor who will be carrying out any part of this contract indicating the Work each subcontractor will be responsible to perform.
- The DDSB may for reasonable cause, object to the use of a proposed subcontractor and require the Vendor/Contractor to employ one of the other subcontract Bidders. In the event that the DDSB requires such a change, the Contract Price shall be adjusted by the difference in cost and mark-up occasioned by such a change.
- Nothing contained in the Contract Documents shall create a contractual relationship between a subcontractor and the DDSB.

10.6 Term of Contract

This Contract is for the period herein stipulated, subject to both satisfactory performance and pricing. Pricing is to remain firm as specified and subsequent years pricing will be subject to negotiation acceptable to the DDSB.

The DDSB reserves the right to extend the Contract subject to negotiations acceptable to the DDSB.

This Contract shall come into force on the effective date and shall expire, unless terminated earlier in accordance with the provisions of the Contract, on the occurrence of any of the following:

- Installation of the Goods/Services has been completed to the satisfaction of the DDSB, as applicable;
- All other Bidder obligations under the Contract have been met to the satisfaction of the DDSB;
- The DDSB has made all of the payments required under the Contract.

If required, either party can ask for confirmation that the Contract has expired. The term of the Contract is subject to any and all rights of either party to terminate the Contract pursuant to the terms and conditions, or otherwise available to either party at law or in equity.

10.7 Termination of Contract

The DDSB shall be entitled to terminate the Contract, without liability, cost or penalty in accordance with the following:

- On written notice to the Vendor/Contractor, if any proceeding in bankruptcy, receivership, liquidation or insolvency is commenced against the Vendor/Contractor or its property;
- On written notice to the Vendor/Contractor, if the Vendor/Contractor makes an assignment for the benefit of its creditors, becomes insolvent, commits an act of bankruptcy, ceases to conduct its business or affairs, files a notice of intention or a proposal or seeks any arrangement or compromise with its creditors under any statute or otherwise;
- On written notice to the Vendor/Contractor, following the occurrence of any material change in the DDSB requirements which results from regulatory or funding changes or recommendations issues by any government or regulatory body;
- At any time, without cause, by giving the Vendor/Contractor at least thirty (30) days written notice;
- On thirty (30) days written notice to the Vendor/Contractor in the event of a breach of the representation regarding conflict of interest;
- As per any provision of the Contract that provides for early termination.

If the DDSB terminates the Contract for any of these reasons, it is entitled to:

- Take possession of the Work in progress and materials on site and utilize the construction equipment then on site and complete the Work by whatever method the DDSB may consider expedient but without undue delay or expense.
- Withhold any further payments to the Vendor/Contractor until the Work is complete.

- Recover from the Vendor/Contractor all losses, damages and expense incurred by the DDSB due to the Vendor/Contractor's default (this may be deducted from any monies due or becoming due to the Vendor/Contractor).
- The Vendor/Contractor's obligations under the contract as to quality, correction and general guarantee of the work performance up to the time of termination shall continue to be in force after such termination.

Any termination of the Contract shall not in any respect limit any of either party's rights or remedies either in law or in equity or relieve either of them of any obligation incurred prior to the effective date of such termination.

10.8 Suspension and/or Stoppage of Work

The DDSB may, without invalidating the Contract, suspend performance by the Vendor/Contractor from time to time for any or all work for such reasonable period of time as the DDSB may determine.

The resumption and completion of work after the suspension shall be governed by the schedule established by the DDSB.

The DDSB designated representative has the authority to stop the progress of any work whenever in their opinion, such stoppage may be necessary.

11.0 WORK COMPLIANCE

11.1 Electrical Safety

All electrical/electronic components supplied by the vendor must be CSA / ULC and/or Ontario Hydro/Ontario Electrical Safety Authority approved. Appropriate labels must be affixed to the equipment.

Appropriate label, symbol or seal shall be affixed to all electrical equipment supplied or used in the performance of the Contract. If such label, symbol or seal is absent, the equipment will be returned to the Vendor/Contractor at their expense. The DDSB will not forward payment until this condition is met.

11.2 Electronic Commerce Act

Electronic forms of correspondence for business requirements will be considered a legal medium as prescribed in the Ontario “Electronic Commerce Act, 2000, S.O. 2000.

11.3 Accessibility for Ontarians With Disabilities Act (A.O.D.A.)

DDSB is committed to the highest possible standards for accessibility. The Vendor/Contractor must be capable to recommend and deliver, as appropriate for each deliverable, accessible and inclusive goods and/or services consistent with the Ontario Human Rights Code (OHRC), the Ontarians with Disabilities Act, 2001 (ODA) and Accessibility for Ontarians with Disabilities Act, 2005 (AODA) and its regulations in order to Achieve accessibility for Ontarians with disabilities.

In accordance with Ontario Regulation 429-7 made under the Accessibility for Ontarians with Disabilities Act, 2005 (Accessibility Standards for Customer Service), the DDSB has established regulations, policies, practices and procedures governing the provision of its goods and services to persons with disabilities. DDSB Regulation #1305 is available for review on the Boards website under Policies and Procedures at: DDSB Policies, Regulations & Procedures.

Vendor/Contractors are required to comply with the Board’s accessibility standards, policies, practices and procedures which may be in effect during the Term of the Agreement and which apply to the deliverables to be provided by the Vendor/Contractor.

11.4 Canadian Standards Association (C.S.A.)

All electrical/electronic components supplied by the Vendor/Contractor must be CSA / ULC and/or Ontario Hydro/Ontario Electrical Safety Authority approved. Appropriate labels must be affixed to the equipment.

12.0 LIST OF PREQUALIFIED BIDDERS

12.1 General Contractors:

Anacond Contracting Inc.	Vaughan, ON
Baycrest Project & Construction	Toronto, ON
BWK Construction	Aurora, ON
Deciantis Construction Ltd.	Uxbridge, ON
Gerr Construction Limited	Bowmanville, ON
H.N. Construction Limited	Toronto, ON
J.V.S. Construction Limited	Whitby, ON
Morosons Construction Limited	Toronto, ON
MVW Construction & Engineering Inc.	Lindsay, ON
P & C General Contracting Ltd.	Markham, ON
RJB Construction (1989) Ltd	Newmarket, ON
Rutherford Contracting Ltd.	Aurora, ON
Seaforth Building Group 1992 Ltd	Scarborough, ON
Snyder Construction	Ashburn, ON
Town and Country Contracting Ltd.	Oshawa, ON

LIST OF PREQUALIFIED BIDDERS

12.2 Mechanical Contractors:

Company Name	Location
Active Mechanical	Mississauga, ON
Adamson and Dobbin Ltd.	Peterborough, ON
ANVI Services Ltd.	Vaughan, ON
Black Creek Mechanical Ltd.	Toronto, ON
Mechfield Canada Inc.	Concord, ON
MSB Mechanical Ltd	Aurora, ON
Multitech Trades Corp.	Mississauga, ON
Mutual Mechanical Ltd.	Oshawa, ON
Unified Mechanical Inc.	Courtice, ON
W. Mitchell & Son Mechanical Contractors Limited	Pickering, ON

LIST OF PREQUALIFIED BIDDERS

12.3 Electrical Contractors

Company Name	Location
Brooklin Electric Ltd.	Whitby, ON
CEC Services Limited (Aurora)	Mississauga, ON
Electric Group Limited	Markham, ON
Electro-Light Inc.	Oshawa, ON
Electro-Works Ltd.	Oshawa, ON
Elite Electrical Solutions Ltd.	Inglewood, ON
Ferguson Electric Company Ltd	Cobourg, ON
Kertech Electric Inc.	Scarborough, ON
R.A. Graham Contractors Ltd.	Aurora, ON
Salson Electric Ltd.	Concord, ON
Surefoot Mechanical Inc.	Whitby, ON
Trilogy Electric Ltd.	Whitby, ON

13.0 AUTHORIZED OR RECOMMENDED CONTRACTORS

13.1 Sheet Metal Contractors:

This list is to be considered **"Authorized"** and contractors may use contractors not on this list, **with pre-approval by DDSB, verified via Addendum prior to tender closing date and time. Requests for approval must be submitted via the questions tab on bidsandtenders.**

Company Name	Location
Adamson & Dobbin Ltd.	705-745-5751
Black Creek Mechanical Ltd.	416-604-7558
Briar Group Air Systems	416-740-0221
DM Enterprises Limited	905-375-4436
JC Rogers Sheet Metal Ltd.	905-571-2422
MSB Mechanical Ltd.	905-726-3997
Tam-Kal	905-888-9200
Crozier Environmental Inc.	905-983-9199
Noddle Sheet Metal	705-742-5203
Dunford Liscio Mechanical	905-793-7577
Heritage Sheet Metal	705-277-3056
Lakeland Multitrade	905-372-7413
G&G Sheet Metal	905-888-7728
WHS Sheet Metal	416-301-8615
Townsend Sheet Metal	905-952-2060

13.2 Abatement Contractors:

This list is to be considered **"Authorized"** and contractors may use contractors not on this list, **with pre-approval by DDSB, verified via Addendum prior to tender closing date and time. Requests for approval must be submitted via the questions tab on bidsandtenders.**

Company Name	Location
CRCS DKI	Oshawa, ON
D&F Insulation Ltd.	Peterborough, ON
Environmental Contracting Services	Oshawa, ON
Environmental Response Team	Etobicoke, ON
Ferro Environmental	Uxbridge, ON
Lockdown Environmental Inc.	Toronto, ON
Ontario Insulation	Oshawa, ON

14.0 SPECIFICATIONS

PART 1 - GENERAL

1.1 Instructions to Bidders

.1 Supplementary Bid Form must be submitted to CIMA+ (juli.cluett@cima.ca) **AND** the Durham District School Board (kelly.jennings@ddsb.ca) within twenty-four (24) hours after tender closing. Contractors shall identify all sub-contractors they intend to use and must complete all information requested. Contractor shall sign, date and seal the last page and initial and date all other pages.

.2 The Stipulated Bid Sum shall be for the base bid manufacturer or supplier equipment only, unless otherwise indicated. Where a choice of this equipment is given, this Contractor shall indicate the supplier or manufacturer they intend to use. Where no choice is indicated, the base bid supplier or equipment shall be used.

.3 Equipment or materials manufactured by firms named in the following listing only shall be deemed equal to the equipment or material specified provided the equipment or material will have capacity, performance, rating, construction, physical dimensions, accessories and features which, in the opinion of the Consultant, are equal to those of the specified equipment or material. The Contractor shall not indicate equipment, materials or suppliers which are not listed.

.4 Where modification to the work of other trades are not required as a result or part of the alternative offered, include the cost of said modifications in the work.

1.2 Price Breakdowns

The total of all amounts below shall equal total stipulated sum.

.1	General Trades Work	$ _____
.2	Mechanical Work	$ _____
.3	Electrical Work	$ _____
.4	Cash Allowance – Abatement	$ 5,000.00
.5	Cash Allowance – PA/Data	$ 5,000.00
.6	Cash Allowance – Controls Installation	$ 10,000.00

Contractor Name:_____ Contractor Initial: _____ Date: _____

1.3 Sub-Contractors

The Contractor shall state below the name of the Sub-Contractors they intend to use, which shall not be changed without the consent of the Consultant.

Selective Demolition	
Masonry	
Structural Steel	
Metal Fabrications	
Roofing	
Rough Carpentry	
Finish Carpentry	
Architectural Woodwork	
Firestopping & Smoke Seals	
Joint Sealants	
Doors and Frames	
Door Hardware	
Glazing	
Acoustic Ceilings	
Gypsum Board	
Terrazzo	
Ceramic Tile	
Resilient Flooring	
Painting	
Washroom Accessories	
Mechanical	
Sheet Metal	
Electrical	
Controls Installation	Cash Allowance
Pneumatics Demolition	Analysts of Pneumatic Systems

1.4 Equipment List

The Contractor shall state below the name of the equipment they intend to use, which shall not be changed without consent of the Consultant.

Ductless Split AC Units _____

SUBMITTED BY:

I / We certify that I / We have the authority to bind the company:

_____ _____
Name of Signing Officer(s) SIGNATURE

_____ _____
Name of Signing Officer(s) SIGNATURE

_____ _____
Telephone Number of Signing Officers NAME OF COMPANY

_____
ADDRESS OF COMPANY

_____
HST REGISTRATION NUMBER

_____
CORPORATE SEAL

INDEX TO SPECIFICATIONS

PART I – GENERAL

1.1 General Requirements

.1 The requirements of this section shall apply to all sections in Division 1.

.2 All material, labour, equipment, and services required under this section shall be the full responsibility of the Contractor including any material, labour, equipment, and services provided by their subcontractors.

1.2 Definitions

.1 “Supply” shall mean supply only.

.2 “Install” shall mean install and connect.

.3 “Provide” shall mean supply, install, and connect.

.4 “Drawings and Specifications” shall mean Contract Documents.

.5 “Authorities” or “Authorities having jurisdiction” shall mean all agencies that enforce the applicable laws, ordinances, rules, regulations, or codes of the Place of Work.

.6 “Work” shall mean all equipment, materials, labour, and permits to provide a complete and operational mechanical system as detailed in the drawings and specifications.

.7 “Owner” or “DDSB” shall mean Durham District School Board.

1.3 Related Work

.1 Division 4 – Masonry

.2 Division 5 – Metals

.3 Division 6 – Wood & Plastics

.4 Division 7 – Thermal and Moisture Protection

.5 Division 8 – Door and Windows

.6 Division 9 – Finishes

.7 Division 10 Specialties

1.4 Intent

.1 The drawings and specifications are not a detailed set of installation instructions. Drawings and specifications are complementary to one another and that which is shown on one is as binding as that which is shown on both.

.2 The Consultant shall be immediately informed of any discrepancies between drawings and specifications leaving in doubt the true intent of the work.

.3 Supply all labour, equipment, and materials necessary to install a complete and operational mechanical system described herein and shown on the drawings.

.4 It is the intent of these drawings and specifications to provide for an installation complete and in operating condition. The responsibility for supplying and installing all material necessary to accomplish this, except where specifically noted that such work or materials is not included, shall be part of this section.

.5 Assess and be familiar with existing site conditions prior to pricing and construction and allow for same in tender price.

.6 All work must be done by qualified, certified and experienced persons in such line of work.

.7 All work shall be in accordance with standard industry practice accepted and recognized by the Consultant and the Trade.

.8 This Contractor shall coordinate with and cooperate with all other trades prior to installation. Where work interferes with other trades due to failure to coordinate or cooperate, the work shall be removed and relocated as approved by the Consultant at no extra cost to the Owner.

.9 The Consultant shall have the right to reject any work that does not conform to the Contract Documents and accepted standards of practice including but not limited to performance, quietness of operation and finish.

1.5 Codes, Bylaws, Standards, and Regulations

.1 The work shall comply with the latest editions and revisions of applicable codes, bylaws, standards, and regulations including but not limited to:

.1 Ontario Building Code
.2 Canadian Standards Association
.3 Local Building Bylaws
.4 Ontario Occupational Health and Safety Act

.2 Provide work in accordance with the requirements of all applicable government codes, local by-laws, underwriter’s regulations base building standards, contract documents, and all authorities having jurisdiction.

.3 Where discrepancies occur between contract drawings and specifications and above codes and standards referred to herein, the Contractor is to notify the Consultant in writing and obtain clarification prior to proceeding with the work.

.4 Contractors shall not reduce the requirements on the contract drawings and specifications by applying any codes and standards referred to herein.

1.6 Permits and Fees

.1 Where applicable, the Consultants will apply for the Building Permit on behalf of DDSB. The Contractor shall arrange for all building inspections.

.2 The Contractor shall apply for, obtain, and pay for all other required permits, fees, connections, inspections, licenses, certificates or charges necessary including all taxes.

.3 Coordinate all required inspections and give necessary notice to all authorities.

.4 Upon completion of project, provide inspection certificates confirming acceptance by all authorities having jurisdiction for all applicable disciplines.

1.7 Shop Drawings

.1 Within two (2) weeks of award, the Contractor shall submit shop drawings of all equipment for the project.

.2 Prior to ordering of products or delivery of any products to job site, submit shop drawings electronically in PDF format to the Consultant for review and comments. Submit sufficiently in advance of construction to allow ample time for review. Size of shop drawings shall be 8.5x11. 11x17 will be acceptable where appropriate for content and scale.

.3 Submittals shall contain but not be limited to construction information, product data and dimensional layout.

.4 Clearly mark each sheet of printed submittal material, using arrow, underlining, or circling, to show particular sizes, dimensions, model numbers, ratings and options actually being proposed. Cross out non-applicable material.

.5 **Prior to submission to the Consultant, the Contractor shall review all shop drawings. By this review the Contractor represents that they have determined and verified all field measurements, field construction criteria, materials, catalogue numbers and similar data or will do so and that he has checked and coordinated each shop drawing with the requirements of the Work and of the Contract Documents.**

.6 **The Contractor's review of each shop drawing shall be indicated by their approval stamp, date and signature on the front of each page. Drawings will not be considered if not previously checked by the Contractor.**

.7 Review comments from the Consultant. If shop drawings are modified, confirm changes before proceeding. If shop drawings are not approved, revise and resubmit changes for approval within one (1) week.

.8 Review of the shop drawings by the Consultant does not relieve the Contractor or his Supplier of the responsibility to provide the correct and complete equipment, material or installation.

.9 Keep one complete set of shop drawings at the job site during construction.

1.8 Warranty

.1 Provide a one (1) year full parts and labour warranty for the new system from date of substantial completion.

.2 Submit warranty letter on Company letterhead signed by Company representative stating warranty terms including warranty period from date of substantial completion.

PART 2 - PRODUCTS

2.1 Materials

.1 All material used shall be new, free from defects, of quality specified, and installed in accordance with manufacturer’s instructions.

.2 The same manufacturer shall be used for types of equipment used in similar applications.

.3 It is the responsibility of the Contractor to store and protect materials supplied by this scope.

.4 Materials shall be stored in original containers.

.5 Remove all redundant materials from site and dispose of in an environmentally friendly manner.

2.2 Selected Products and Equivalents

.1 Selected products are specified and/or shown on the drawings, and identified by manufacturer's name, type and catalogue number.

.2 Equivalent products may be considered if sufficient information is submitted at least ten (10) working days prior to tender close to the Consultant to enable the Consultant to determine acceptability of such products.

.3 Where a manufacturer of materials, equipment or products is not specified, they shall meet the requirements and be of quality as specified herein.

2.3 Quality of Product

.1 All products provided shall be listed where applicable.

.2 All products provided shall be new including those not specified and shall be of a quality best suited to the purpose required and their use subject to approval by the Consultant.

2.4 Product Finishes

.1 Shop drawings shall indicate finishes. Use standard finish unless otherwise specified.

.2 Apply primer on all items which are to be finished on the job.

.3 Repair dents and touch up all damaged finishes with matching lacquer, or, if required by the Consultant, completely repaint or replace damaged surface at no extra cost to the Contract.

PART 3 - EXECUTION

3.1 Site Examination

.1 Examine the site of work and become familiar with all features and characteristics affecting this work before submitting tender.

.2 No additional compensation will be given for extra work due to existing conditions which such examination should have disclosed.

.3 Report to the Consultant any unsatisfactory conditions which may adversely affect the proper completion of this work.

3.2 Coordination with Other Divisions

.1 Examine the drawings and all divisions of the specifications. Before commencing any work, obtain a ruling from the Consultant if any conflict exists, otherwise no additional compensation will be made for any necessary adjustments.

.2 Lay out the work and equipment with due regard to architectural, structural and electrical features.

.3 Examine previously constructed work and notify the Consultant of any conditions which prejudice the proper completion of this work. Commencement of this work without such notification shall constitute acceptance of other work.

3.3 Workplace Safety

.1 The workplace must be kept safe at all times.

.2 Conform to all ministries of labour, and health and safety regulations at all times.

.3 Use ladders and proper techniques as approved by the ministry of labour to perform all work.

.4 Cover all holes/openings and provide barriers around hazards, etc. to ensure occupants and workers are not at risk.

.5 Where work does not conform to such regulations, stop work immediately and report the situation to the Owner's representative or Consultant or rectify the situation immediately.

.6 Report any hazards or concerns to the Owner's representative immediately.

.7 Conform to Owner's safety requirements and construction regulations.

3.4 Welding, Grinding, Noisy Work, Odours

.1 No welding, grinding, other noisy work or work generating odours shall be done during regular operating/school hours.

.2 All above work shall be done after hours or on weekends outside of regular hours.

.3 Submit hot work permit prior to any welding. Coordinate any specific requirements in conformance with Client standards.

3.5 Cutting, Coring and Patching

.1 All cutting, coring and patching as it relates to work under this division is the responsibility of this Contractor in a manner acceptable by the Consultant and Owner. Coordinate any cutting or coring with the Owner prior to construction.

.2 Structural members shall not be cut.

.3 Use fire rated materials at all fire separations.

.4 Patching shall match existing surroundings and shall be approved by the Consultant and Owner. Patching shall leave a completely smooth finish.

3.6 Finishing and Painting

.1 All final finishing and painting as it relates to the contract work is the responsibility of this Contractor in a manner acceptable by the Consultant and the Owner.

.2 Protect and clean all surroundings from sanding residue.

.3 Painting shall include two (2) coats of colour approved by the Consultant or the Owner.

.4 Match existing finishes unless otherwise noted.

3.7 Mobilization, Demolition and Security

.1 Supply and erect all signs, barricades and such other protection as may be required to protect the public during construction.

.2 Provide security protection for Contractor's office, plant and stored materials.

.3 Move onto site and set up storage facilities and temporary hoarding as required.

.4 Move off site and remove storage facilities and all temporary facilities and leave the site clean and tidy.

3.8 Damage to Existing Services and Structures

.1 Obtain the necessary drawings and perform any necessary sub-surface, wall and floor investigations in order to determine the exact number and location of all existing services, structures, underground pipes, cables, and other similar items.

.2 The location for existing structures and services shown on the Contract Drawings do not relieve the Contractor of this responsibility.

.3 Take the necessary steps to ensure that no damage is caused to existing structures, buildings, foundations, roads, sidewalks, property, utility services, and other similar items during the progress of the Work.

.4 If any damage is caused, repair and make good such damage at no additional cost within a reasonable time and to the complete satisfaction of the Consultant and Owner.

3.9 Occupying the Site

.1 Use only those areas designated by the Owner for the access, except in so far as is necessary for the execution of the Works, and in so doing, do not unnecessarily obstruct the normal traffic of, to, from or about the Site; and do not unreasonably allow any vehicles or materials to stand in front of, or near to, any buildings on the Site or any access thereto, or any access into any private properties.

.2 Confine operations within areas designated for construction, storage and access as shown on the Contract Drawings and/or as directed by the Consultant/Owner.

.3 Limit access to and from the site as instructed by the Consultant.

.4 Maintain safe access to any existing facilities for the operations staff at all times.

3.10 Contractor Use of Premise

.1 Arrange with the Owner and Consultant for storage areas and access to the Works.

.2 Make arrangements with property owners if additional areas are required. Obtain written agreements and submit copies to the Consultant.

.3 Confine operations within working limits for construction, storage and access.

.4 Carry out the construction of the Works in such a manner that a minimum of inconvenience is caused to the Owners and occupants of properties adjacent to the Works.

.5 Store materials separately on the Site at locations agreed upon with the Consultant, suitably protected to prevent their deterioration or the intrusion of foreign matter. In the opinion of the Consultant, remove any material which has deteriorated or been damaged immediately from the Site at no additional cost to the Owner.

.6 During construction, liaise with the Consultant and the Owner to schedule work to minimize impacts on building operations.

3.11 Equipment and System Protection

.1 Protect equipment and materials from damage in storage and on site before, during, and after installation until final acceptance.

.2 Protect equipment and system openings from dust and debris with appropriate covers that will withstand through the construction.

.3 Where equipment and system components become dirty or damaged, clean and repair to new condition to the satisfaction of the Consultant and Owner at no expense to the Owner.

3.12 Protective Coatings and Painting

.1 Prime and touch up finished paintwork or coatings that have been damaged.

.2 Where damage is beyond minor repair, restore finishes to new condition.

3.13 Owner Occupancy

.1 The Owner and its operators will occupy premises during entire construction period for execution of normal operations.

.2 Cooperate with the Owner in scheduling operations to minimize conflict and to facilitate the Owner usage.

.3 Maintain free access and parking for the Owner’s staff.

3.14 Field Review and Deficiencies

.1 The Contractor shall notify the Consultant when the job is ready for field review at various stages including rough-in stages.

.2 During the course of construction, the Consultants will monitor construction and provide written reports of work progress, discussions and deficiencies.

.3 The Contractor shall correct all deficiencies within the work period prior to the next review.

.4 The Contractor shall not conceal any work until inspected. Where work was concealed, the Contractor shall remove and replace tiles, coverings or other obstructions to allow proper inspection at the Contractor's expense.

.5 Upon completion of the project the Consultant will do a final review. Upon receiving the final inspection report, the Contractor must correct and sign back the inspection report indicated all deficiencies are completed. A re-inspection will only be done once the Consultant receives this in writing. Where the Consultant performs the re-inspection and the work is not complete, the Contractor is responsible for reimbursing the Consultant for the field review. The fee for additional reviews will be at the Consultant's hourly rates plus mileage and applicable taxes to be paid directly to the Consultant prior to performing the next field review.

END OF SECTION

PART I – GENERAL

1.1 Section Includes

.1 Coordination of work between the Contractor and the Owner under administration of the Consultant

.2 Pre-construction, construction progress and special meetings

.3 On-site documents

1.2 Start-up Meeting

.1 Within two (2) weeks after award of Contract, the Contractor shall arrange a pre-construction meeting to discuss and resolve administrative procedures and responsibilities.

.2 Representatives of the Owner, the Consultant and the Contractor shall be in attendance. The Contractor representatives shall include, at a minimum, the project representatives of the Mechanical (Prime) Contractor.

.3 The Agenda for the meeting is to include the following:

.1 Appointment of official representative for participants in Work.
.2 Typical day and time for bi-weekly meetings.
.3 Schedule and sequence of work.
.4 Schedule of submission of shop drawings.
.5 Requirements for storage areas.
.6 Delivery schedule of specified equipment.
.7 Site security.
.8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
.9 Owner supplied Products.
.10 Record drawings.
.11 Operation and maintenance information.
.12 Take-over procedures, acceptance, and warranties.
.13 Monthly progress claims, administrative procedures, and holdbacks.

1.3 Construction Progress Meetings

.1 The Contractor will schedule and administer bi-weekly meetings throughout progress of the Works as required. Bi-weekly meetings will be scheduled for a typical day and time for each week and shall be determined at the pre-construction meeting to suit all parties.

.2 Attend all meetings and have project manager and representatives from major subcontractors attend. All sub-contractors shall attend all meetings unless otherwise pre-approved by the Consultant. The Contractor shall provide written request at least 72 hours before each meeting to obtain approval for absence of any sub-contractor.

.3 Provide any schedule updates.

.4 The Agenda for the meeting is to include the following:

.1 Review and approval of minutes from previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems that impede construction schedule.
.5 Review of delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review of submittal schedules.
.10 Review proposed changes for affect on construction schedule and on completion date.
.11 Review of marked up record drawings and other business.

.5 The Contractor shall record minutes and include significant proceedings and decisions, as well as identifying “action by” and “due date”.

.6 The Contractor shall distribute electronic file of minutes via email within four (4) working days after each meeting and transmit to meeting participants, affected parties not in attendance, and the Owner.

.7 Site meeting frequency shall be twice weekly if performance and schedule are not to the satisfaction of the Consultant or the Owner, at no additional cost to the Contract.

1.4 On-Site Documents

.1 Maintain at job site, one copy of each of the following:

.1 Contract or Issued for Construction Drawings
.2 Specifications
.3 Addenda
.4 Reviewed shop drawings
.5 Contract Change Orders
.6 Other modifications to Contract
.7 Marked up As-Built Drawings
.8 Field test reports
.9 Copy of approved Work schedule
.10 Manufacturers’ installation and application instructions

1.5 Construction Coordination

.1 Comply with Owner’s allocation of mobilization areas, storage, access and parking facilities.

.2 During construction coordinate use of site and facilities with the Consultant and Owner.

.3 Comply with instructions of the Consultant and Owner for use of site facilities.

1.6 Schedules Management

.1 Submit to the Consultant within two (2) weeks of award of the Contract, the preliminary construction progress schedule, based on the tender and all required schedules, in accordance with Section 01320.

.2 After review by the Consultant, revise and resubmit all schedules to comply with revised project schedule.

.3 Identify and track all critical items on all schedules and advise the Consultant of any changes to the schedules.

.4 Actively manage and coordinate the work to avoid delays against reviewed schedules.

.5 Revise schedules, reorganize and replace construction to minimize the impact of any identified delays.

1.7 Coordination of Construction

.1 This is a lump sum contract to be completed in its entirety by the Contractor using the Contractor's own forces and the forces of individual subcontractors and subtrades.

.2 All of the specifications and drawings are interpreted as one contract. Be wholly responsible for coordination of all work by own forces, subtrades or subcontractors to complete the work.

.3 No Section or Division of these specifications shall be construed or interpreted as being the responsibility of any subtrade, subcontractor or supplier.

.4 Examine the work of all trades and ensure that conditions are satisfactory for the completion of any subsequent work.

.5 Notify the Consultant immediately of any adverse conditions which may affect subsequent work and do not proceed with any subsequent work until such conditions are rectified.

1.8 Submittals

.1 Make all necessary submittals to the Consultant for review and approval.

.2 Submit all requests for payment to the Consultant.

.3 Submit requests for interpretation of Contract Documents and obtain instructions from the Consultant.

.4 Submit requests for Contract Change Orders to the Consultant.

.5 Deliver all closeout submittals to the Consultant.

.6 Allow five (5) days for Consultant to respond to Request for Interpretation.

1.9 Closeout Procedures

.1 Notify the Consultant in writing when the works are considered ready for Substantial Completion.

.2 Accompany the Consultant on a preliminary field review of the work to identify and confirm items for completion or correction.

.3 Allow five (5) working days from the date of notification to the first day of joint preliminary field review.

.4 Comply with the Consultant's written instructions for completion or correction of items prior to issuance of Certificate of Substantial Completion.

.5 Complete all outstanding items of work or deficiencies identified in the Certificate of Substantial Completion in a timely manner.

END OF SECTION

PART I – GENERAL

1.1 Description

.1 This section specifies requirements and procedures for preparing and updating construction schedules and reports for planning, coordinating, executing and monitoring the progress of the work.

1.2 Related Work

.1 All Divisions and Sections are related to this Section.

1.3 Schedules

.1 The Contractor shall perform and complete all of the work as set forth on the drawings and in the specifications by the completion date specified in the tender and contract documents.

.2 Prepare construction schedule and submit to Consultant for review and approval. Modify and implement schedules and sequences as modified and approved by the Consultant at no extra cost to the Contract.

.3 The construction schedule shall be provided at or before the pre-construction meeting as specified under Section 01310.

1.4 Welding, Grinding, Noisy Work, Odours

.1 No welding, grinding, other noisy work or work generating odours shall be done during regular operating/school hours.

.2 All above work shall be done during summer break or after hours or on weekends outside of regular school hours.

1.5 Progress of the Work

.1 The work shall be started on the date indicated in the written order for commencement of the works and shall be executed with such progress as may be required to prevent delay to the general completion of such parts of the project, and with such forces, material and equipment, as to assure completion of the work in the time established in the Form of Tender. Additionally, the Contractor shall, at all times, schedule and direct his work so that it provides an orderly progression of the work to completion within the specified time for completion.

.2 The Contractor agrees that whenever it becomes apparent from the current regular schedule update that delays to the approved schedule have resulted and these delays are through no fault of the Owner or Owner's representatives, and hence, that the Contract completion date will not be met, or when so directed by the Owner, he will take whatever action is necessary to achieve the specified milestone and contract completion dates.

.3 With each schedule update, the Contractor shall submit for review a written statement of the steps he intends to take, to address, to remove or arrest any delay to the schedule. If the Contractor fails to submit a written statement of the steps he intends to take or fails to take such steps as required by the Contract, the Owner may direct the level of effort in manpower (trades), equipment and work schedule overtime to remove or arrest the delay to the critical path in the accepted schedule, and the Contractor shall promptly provide such level of effort at no additional cost to the Owner. In addition, should schedule delays persist, the Contractor's bonding agent may be asked to attend meetings to update the schedule.

.4 Failure of the Contractor to comply with the requirements of this provision shall subject him to, at the Owner's Sole discretion, a withholding, in partial or in total of payments otherwise due to the Contractor for work performed under this Contract. The Contractor agrees that any withholding of money is not a penalty for noncompliance, but is an assurance for the Owner that funds will be available to implement these requirements should the Contractor fail to do so, since failure of the Contractor to comply with these requirements shall mean that the Contractor failed to execute the work with such diligence as to ensure its completion within the time for completion.

PART 2 – CONSTRUCTION SCHEDULE

2.1 Requirements

.1 The schedule shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor.

.2 The scheduled activities shall be developed into four major groups:

.1 Procurement Activities

Each of the following procurement items should be tied logically to the correct construction activity in the overall construction schedule:

.1 Permits and Approvals
.2 Submittal Items
.3 Approval of Submittal Items
.4 Fabrication and Delivery of Submittal Items

.2 Construction Activities

.1 Construction activities are the physical work activities that describe how the job will be constructed.

.3 Shutdowns and Tie-ins

.1 Work by Contractor

.4 Testing, Start-up, Training and Closeouts

.1 Activities for this group shall include all work required to satisfy the appropriate specification sections and meet the requirements of substantial performance and contract completion.

.3 Failure to include in the schedule any element of work required for the performance of this Contract shall not excuse the Contractor from completing all the work required within the applicable completion time, notwithstanding the Owner's network review.

.4 A schedule which shows the completion of any milestone or substantial performance prior to the contractual completion dates stipulated may be accepted by the Consultant but shall in no event form the basis of a claim for delay against the Owner by the Contractor.

.5 Schedule of Values

.1 Each activity on the construction schedule shall be allocated a dollar value. Each activity's assigned cost shall consist of labour, equipment, and materials costs. The sum of all activity costs shall be equal to the total contract price. In submitting cost data the Contractor certifies that they are not unbalanced and that the values assigned to each activity represents the Contractor's estimate of the actual costs of performing that activity. The listing of cost loaded activities will become the schedule of values and will serve as a basis for progress payments to the contractor.

.2 The accepted schedule of values shall represent a fair, reasonable and equitable dollar cost allocation for each activity on the Contractor's construction schedule. These values shall be represented in all progress draws.

.3 If it is determined that the cost data do not meet the requirements for a balanced bid breakdown, the Contractor will present documentation substantiating any cost allocation on the cost data. Cost allocations shall be considered unbalanced if an activity on the construction schedule has been assigned a disproportionate allocation of cost.

2.2 Schedule Updates

.1 The Schedule may be reviewed at each construction meeting. The Contractor shall update their schedule as requested by the Owner or Consultant.

PART 3 – CONTRACT COMPLETION TIME

3.1 Causes for Extension of Time

.1 In the event the Contractor requests an extension of any contract completion date, he shall furnish justification and supporting evidence. The Consultant will, after receipt of such justification and supporting evidence, make findings of fact

and will advise the Contractor in writing thereof. If the Consultant finds that the Contractor is entitled to an extension of the Contract completion date under the provisions of the contract, the Consultant's determination as to the total number of day's extension shall be based upon the current accepted and updated schedule and on all data relevant to the extension. Such data shall be included in the next updating of the schedule. The Contractor acknowledges and agrees that actual delays in activities which, according to the schedule, do not affect any contract completion date shown by the critical path in the network do not have any effect on the contract completion date or dates and therefore will not be the basis for a change in Contract completion time.

END OF SECTION

PART 1 - GENERAL

1.1 Construction Safety Measures

.1 Contractor shall implement all required health and safety requirements of the Health and Safety Acts.

.2 Meet the requirements of the following:

1. Occupational Health and Safety Act, Regulations for construction projects, O. Reg. 213/91 (as am. By O. Reg. 631/94), Part II General Construction
2. Occupational Health and Safety Act, Industrial Establishments Regulation, R.R.O. 1990, Reg. 851 (as amended by O. Reg. 516/92; 630/94; 230/95; and 450/97), Part I Safety Regulations.
3. Revised Statutes of Ontario 1980, Chapter 321, Revised Regulation of Ontario1980, Regulation 691 as amended by O. Reg. 156/84 and O. Reg. 645/86, and Ontario Regulation 714/82
4. Canada Labour Code, Canada Occupational Safety and Health Regulations, SOR/86-304 (as amended by SOR/87-623; 88-44; 88-68; 88-632; 89-479; 89-515; 90-180; 91-448; 92-544; 94-33; 94-263; 95-286; 95-533; 96-294; 96-400; and 96-525), Part XI – Confined Spaces
5. Workers Safety & Insurance Board (WSIB) and municipal statutes and authorities.

.3 In event of conflict between any provisions of above authorities, the most stringent provision governs.

.4 Where applicable, the Contractor shall be designated “Constructor” as defined by Ontario Act.

1.2 Overloading

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

1.3 Special Protection and Precautions

.1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials and regarding labelling and the provision of material safety data sheets (MSDS) acceptable to Labour Canada.

.2 Comply with the requirements of the current CAN/CGA B-105-M-93 when working in and around hazardous locations/confined spaces.

.3 Conform to Ministry of Labour requirements for work in hazardous locations. Establish and implement written procedures to assure compliance.

.4 Smoking is not permitted anywhere on the site or on the property.

END OF SECTION

PART 1 – GENERAL

1.1 Section Includes:

.1 Construction aids

.2 Parking

1.2 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove all such work from site after use.

.3 Make all necessary applications, obtain permits and pay for all fees.

1.3 Scaffolding and Supports

.1 Provide and maintain scaffolding, ladders and platforms required to complete the work.

1.4 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of the Works required by governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

.3 Confine work and operations of employees as required by Contract Documents. Do not unreasonably encumber premises with products.

.4 Do not load or permit the loading of any part of the Works with a weight or force that will endanger the Works.

1.5 Construction Parking

.1 Parking will be permitted in areas as approved by the Owner, provided it does not disrupt maintenance vehicles or the performance of operations staff.

.2 Provide and maintain adequate access to project site.

.3 Any damages resulting from Contractors negligence will be the responsibility of the Contractor.

1.6 Equipment, Tools and Materials Storage

.1 Provide and maintain, in a clean and orderly condition, lockable sheds/boxes for storage of tools, equipment and materials.

.2 Locate materials on site in a manner to cause least interference with work activities and normal operation of the existing facility.

1.7 Sanitary Facilities

.1 Utilize facilities on site where approved by the Owner.

.2 Leave site in a clean sanitary condition.

END OF SECTION

PART 1 – GENERAL

1.1 Description

.1 This section specifies requirements for environmental controls including control of noise, dust, surface water and erosion, various pollution control methods and handling of Designated Substances as well as compliance with the Occupational Health and Safety Act and Site Safety.

1.2 General

.1 Establish and maintain site procedures such that noise levels from construction areas are minimized.

.2 Control noise level in accordance with local by-laws and Ministry of the Environment (MOE) Standards.

.3 Prevent dust nuisance resulting from construction operations at all locations on the site and roads used by Contractor's activities.

.4 Protect existing services, land, water courses.

1.3 Measures

.1 Noise Controls:

.1 Use vehicles and equipment with efficient muffling devices.
.2 Provide and use devices that will minimize noise levels in construction areas.

.2 Dust Controls:

.1 Use water, brine or calcium chloride to control dust.
.2 Minimize use of calcium chloride and brine, particularly in close proximity to water courses, aquifers or agricultural lands.
.3 Transport dusty materials in covered haulage vehicles.

.3 Mud Control:

.1 Keep sites and public roadways clean and free from mud at all times.

1.4 Refuelling Areas

.1 Review all proposed construction areas to plan access routes and fuelling areas.

.2 Do not refuel or maintain equipment adjacent to or in watercourse or over water supply aquifers unless non-spill facilities are used.

.3 Do not fuel equipment within 30 metres of any watercourse unless otherwise non-spill facilities are used.

1.5 Cleaning Equipment

.1 Do not clean equipment in streams, lakes, ditches, swales, etc.

.2 Clean construction equipment prior to entering roadways.

.3 Do not clean equipment in locations where debris can gain access to sewers, watercourses or aquifers.

1.6 Spills

.1 Submit procedures for interception, rapid clean-up and disposal of any spillage that may occur, for the Engineer's review, prior to commencing work.

.2 Be prepared at all times to intercept, clean-up and dispose of any spillage that may occur whether on land or water.

.3 Keep all materials required for clean up of spillages readily accessible on site.

.4 Report immediately any spills causing damage to the environment to the MOE Spills Centre.

1.7 Sensitive Areas

.1 Avoid encroachment on unique natural areas and establish boundary protection and signage to avoid such encroachment.

1.8 Management and Disposal of Excess Materials

.1 The requirements of OPSS 180 shall apply except for the following revision/ amendments:

.1 Subsection 180.07.02, Conditions on management by Reuse, shall be amended by the addition of the following:

.1 "Recycled hot mix asphalt or excess bituminous pavement shall not be used as trench backfill or bedding."

.2 Subsection 180.07.04, Conditions on Management by Open Burning, shall be deleted. No open burning will be permitted.

1.9 Removal and Disposal of Hazardous Materials

.1 Hazardous materials shall be removed from the site and handled in accordance with MOE Regulations current at the time of construction.

.2 Comply with the governing Ministry of Labour Regulations respecting protection of works, remedial handling and disposition of the Designated Substances encountered.

.3 Prior to commencement of work on or about any Designated Substance, provide written notification to the MOE of the location(s) proposed for disposal of Designated Substances. Provide a copy of said notification to the Engineer a minimum of 10 working days in advance of starting work on or about any Designated Substance.

.4 In the event that the MOE has concerns with any proposed disposal location, further notification shall be provided until the MOE's concerns have been addressed.

.5 Do not empty fuel, lubricants, paint materials, solvents or other chemicals into sewers or watercourses.

1.10 Compliance with the Occupational Health and Safety Act

.1 It is specifically drawn to the attention of the Contractor that the Occupational Health and Safety Act provides, in addition to other items that:

.1 A Constructor shall ensure, on a project undertaken by the Contractor that:

.1 The measures and procedures prescribed by this Act and regulations are carried out on the project;

.2 Every employer and every worker performing work on the project complies with this Act and the regulations, and;

.3 The health and safety of workers on the project is protected;

.2 This Contract is deemed to be an individual project for the purposes of the Occupational Health and Safety Act and the regulations made thereunder and the Contractor to whom the Contract is awarded unequivocally acknowledges that he is the Constructor as defined in the said Act on this project and shall carry out all of the obligations and shall bear all of the responsibilities of the Constructor as set out in the said Act and Regulations;

.3 If the Owner is designated as the "Constructor" as a result of the Contractor's actions, all the increases in costs shall be borne by the Contractor;

.4 All Occupational Health and Safety Act Regulations for construction projects are to be strictly adhered to.

END OF SECTION

PART 1 - GENERAL

1.1 Work Included

.1 Provide all labour, materials and equipment for all required cutting and patching at penetration of existing roofing system as required to install new roof penetrations.

.2 This contractor shall coordinate with other trades. They shall obtain positive assurance that all pipes, vents and equipment, which pass through the roof have been completely installed. They shall protect walls, etc. from damage due to their work with particular attention to brickwork.

.3 Flashing around the perimeter of the new flues and other roof penetrations.

.4 Tapered insulation to establish positive crickets and crossfalls to suit field conditions.

1.2 Inspection

.1 Inspect all surfaces on which roofing work is to be placed and report to the Contractor immediately any defects which would prevent satisfactory execution or permanency of the work. Do not proceed until all such unsatisfactory work has been corrected.

.2 Failure to examine or report, will be taken as an acceptance that preparatory work is satisfactory.

1.3 Guarantee

.1 Any roofing work shall maintain the existing warranty. The warranty shall be for Labour, Material and Workmanship.

1.4 Qualifications

.1 Roofing shall be done by mechanics skilled in this trade in strict accordance with the manufacturer’s printed instructions with a minimum 5 years documented experience.

.2 All work shall be carried out in complete accordance with acknowledged good roofing practice.

1.5 Delivery, Storage and Handling

.1 Materials shall be delivered to the job site in such a way as to avoid damage. They shall be stored on site in protected locations and isolated from damage or deterioration by impact or weather conditions.

.2 Lap seal and adhesives shall be stored at temperatures between 16 degrees C. (60 degrees F) and 27 degrees C (80 degrees F) to facilitate handling and

ensure shelf life. Where material has been exposed to lower temperatures it shall be placed in a warm room and brought up to application temperature.

.3 Insulation shall be delivered in protective packages and stored under dry conditions at all times. If insulation is stored outdoors, it shall be stacked on pallets at least 10 cm above the ground and shall be covered with tarpaulin or similar opaque waterproof covering.

.4 Stir adhesives thoroughly before use and cover the container immediately after use to avoid evaporation of the solvent.

.5 Adhesives and sealants may contain petroleum distillates and may be flammable. Do not inhale fumes or use near open flame.

.6 Do not use sharp or heavy objects to contact with sheet during or after installation other than those required for filling.

1.6 Project Conditions

.1 No installation work shall be performed during rainy inclement weather and on frost or wet covered surfaces.

.2 Cold temperature does not necessarily restrict the application of the roofing although very low temperature and winter conditions may call for special techniques. Consult the manufacturer's representatives for their recommendations.

1.7 Sequencing Scheduling

.1 Work shall be so scheduled as to provide a watertight seal at the end of each working day on the area worked upon during the day.

.2 Apply roofing as soon as possible after completion of the roof deck to minimize exposure to the elements and to meet the construction schedule.

1.8 Acceptable Roofing Contractors

.1 Refer to Section 00160 for acceptable Roofing Sub-contractors.

PART 2 - PRODUCT

2.1 All new roofing materials shall be compatible with and match existing roof.

PART 3 - EXECUTION

3.1 Preparatory Work

.1 The surface to which the roofing system is to be installed must be smooth, clean, dry and free from protrusions and sharp edges. Debris, oil and grease must be removed. The application is responsible to see that these conditions are met.

.2 Gypsum board installed over steel deck shall be supported on all flutes at end of board and be free of gaps and voids.

3.2 Vent Stack Flashing

.1 Thaler stack jack flashings complete with T.8 Bitumen Protection Cup 460mm (18”) height.

3.3 Adjustments and Clean-up

.1 Installations of details noted as deficient during Final Inspection shall be repaired and corrected by the applicator at his expense, made ready for re-inspection.

.2 Remove all surplus materials, cuttings, etc. off site and leave all of the work clean and complete in all respects.

3.4 Inspections and Approval

.1 Formal final inspection of the completed work shall be made jointly by the manufacturer’s representative, the Roofing Contractor, the Roofing Inspector selected by the Owner and the Consultant.

.2 Warranties shall take effect upon correction of any deficiencies noted during final inspection.

.3 Arrangements shall be made for the manufacturer’s representative to carry out inspections of the work when in progress. The representative shall report to the Consultant on an appropriate form, his findings related to these inspections.

3.5 Clean Up

.1 Clean to the consultant’s approval, soiled surfaces, spatters, and damage caused by work of this section.

.2 Check area drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from the site.

END OF SECTION

PART 1 – GENERAL

1.1 General Requirements

.1 Provide all material, labour, equipment, and services to complete all general trades work as outlined on the drawings and specified herein.

1.2 Shop Drawings

.1 Submit shop drawings for ceilings and floor sealing for review by the Engineer and include in Maintenance Manuals.

1.3 Warranty

.1 Provide a one (1) year full parts and labour warranty for all work from date of substantial completion.

PART 2 - PRODUCTS

2.1 General

.1 Include for all cutting, coring and patching. Use fire rated materials for all fire rated assemblies or requirements.

.2 All new work shall be level, plumb and done in a good workmanlike manner acceptable by the Consultant and Owner.

.3 Provide all materials for new walls, doors, frames, hardware, lintels and other finishes for a complete scope of work as outlined on the drawings.

.4 Provide lintels for all new wall openings as per structural drawings.

.5 Provide new shafts and other enclosures for a complete scope of work to ensure all new and reworked services are concealed unless otherwise noted.

.6 Provide all finishing and painting to match existing surroundings and to the acceptance of the Consultant and Owner.

.7 Coordinate paint colours with Owner.

2.2 Walls and Floor

.1 Walls

.1 Clean walls free of existing peeling paint.
.2 Patch and fire stop all existing and new holes and penetrations. Use fire rated materials at all fire separations.
.3 Prime and paint with two (2) coats. Provide colours as scheduled on drawings.

.2 Floor

.1 Provide flooring as scheduled on drawings.

2.3 Doors

.1 Provide new doors as scheduled on drawings

2.4 Acoustic Tile Ceilings – Non-Rated

.1 Non-rated ceilings shall conform to CAN/CGSB-92.1 and installation to comply with applicable requirements of ASTM C636.

.2 Acoustical Panels – Non-Fire Rated – Except Washrooms

.1 To CAN/CGSB-92.1.
.2 Type: Mineral composition acoustical units, sag resistant.
.3 Pattern: Non-directional fissured.
.4 Flame spread rating of 25 or less.
.5 Smoke developed class of 50 or less.
.6 Noise reduction coefficient (NRC) designation of 0.55 minimum.
.7 Ceiling attenuation class (CAC) designation of 30 minimum.
.8 Light reflectance range of 0.80 and above.
.9 Edge type: Square.
.10 Colour: White.
.11 Size: 16 mm minimum thickness, 610mm by 1220mm.
.12 Shape: Flat.
.13 Acceptable Products:

.1 Armstrong World Industries Canada Ltd.: Fine Fissured 1729
.2 Certainteed Ceilings: Vantage 10, VAN-197
.3 CGC Interiors: Radar Climaplus 2410

.3 Acoustical Panels – Non-Fire Rated – Washrooms

.1 Type: Gypsum core acoustical units with sealed edges, vinyl face and back.
.2 Pattern: Fine-textured.
.3 Flame spread rating of 25 or less.
.4 Smoke developed class of 50 or less.
.5 Noise reduction coefficient (NRC) designation of 0.10 minimum.
.6 Ceiling attenuation class (CAC) designation of 40 minimum.
.7 Light reflectance range of 0.77 and above.
.8 Edge type: Square.
.9 Colour: White.
.10 Size: 13mm minimum thickness, 610mm by 1220mm.
.11 Shape: Flat.
.12 Minimum weight: 9.77kg/m5.
.13 Acceptable Products:

.1 Certainteed Ceilings: Protectone Vinylrock X, 1140-CRF-1.
.2 CGC Interiors: Sheetrock brand lay-in ceiling tile Climaplus 3270
.3 Armstrong World Insdustries Canada LTD.: Clean Room VL 870

.4 Suspension System – Non-Fire Rated

.1 Intermediate duty system to ASTM-C635.
.2 Basic materials for suspension system: commercial quality cold rolled steel zinc coated.
.3 Exposed tee-bar grid components: white colour. Components die cut. Main tee, 43mm high, with double web, rectangular bulb and 25mm rolled cap on exposed face. Cross tee, 43mm high, with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection; wall moulding, 22mm wide by 22mm high, finished to match main tees and cross tees.
.4 Two directional exposed tee-bar grid, double web.
.5 Hot dipped galvanized, painted steel tee with painted aluminum cap.
.6 Acceptable Products:

.1 Armstrong World Industries Canada Ltd.: Prelude XL for exterior applications. Colour: Natural Aluminum
.2 Or approved alternate

.5 Accessories

.1 Hanger Wire: galvanized soft annealed steel wire, 3.6mm minimum diameter.
.2 Hanger inserts: Purpose made.
.3 Carrying Channels: 1.2mm cold rolled galvanized steel channel, 38mm deep with 19mm flanges.
.4 Hanger Anchoring Devices: Philips Red Head by Philips Drill Company of Canada Limited.

.1 T32, self-drilling for use in concrete deck.
.2 WS-3822 wedge anchor with tie wire insert for use in composite concrete and steel deck.

.5 Suspension System Accessories: splices, bull nose corner caps, hold down clips, wire ties, retainers and typical flush wall moulding, to complement suspension system components, as recommended by system manufacturer.

.6 Isolation Hangers (if required):

.1 Welded steel housing with anti-rust paint, and colour-coded stable elastomer springs.
.2 Spring static deflection shall be no less than 6mm and shall provide 50% overload capacity. Brackets shall be designed to carry 500% overload without failure.
.3 Hanger assembly shall be equipped with bottom eye bolt.

.4 Manufacturer/Product: BVA Systems Ltd.: Model HD Hangers.

PART 3 - EXECUTION

3.1 General

.1 Provide all finishing and painting work to match existing.

.2 All general trades work including final finishing and painting as it relates to the contract work is the responsibility of the Contractor in a manner acceptable to the Consultant and Owner.

.3 All new or reworked services shall be concealed unless otherwise noted.

.4 Install lintels at new wall openings as per structural drawings.

.5 Protect and clean all surroundings from sanding residue.

.6 Painting shall include two (2) coats of colour approved by the Consultant or the Owner.

3.1 Doors

.1 Provide new doors as scheduled on drawings.

3.3 Walls and Floor

.1 Walls

.1 Clean walls free of existing peeling paint.
.2 Patch and fire stop all existing and new holes and penetrations. Use fire rated materials at all fire separations.
.3 Prime and paint with two (2) coats. Provide colours as scheduled on drawings.

.2 Floor

.1 Work shall <u>not</u> be done during school hours. Obtain approval from Owner prior to scheduling and application.
.2 Provide flooring as scheduled on drawings.
.3 The substrate shall be cleaned and prepared to the vendors specifications.
.9 Alternate manufacturers and products shall be pre-approved prior to tender closing. The Contractor or Supplier shall submit detailed information for review a minimum of one (1) week before closing.
.10 The Contractor is responsible for:

.1 Supply of garbage container, finish lighting and floor/space temperature 65-70 degrees or as required for the application of all

products.

.2 Coordinate unloading facilities, movement of materials and warm dry storage.

.3 Ensuring area is free of trades or any traffic for a 24 hour period after the installation.

3.4 Acoustic Tile Ceilings

.1 Install new acoustic tile ceilings as indicted on drawings. Ceilings shall be rated or non-rated as noted.

.2 Install in accordance with ASTM-C636. Install rated ceilings in conformance with ULC listings.

.3 Install suspension system to manufacturer's instructions.

.4 Do not erect ceiling suspension system until work above ceiling has been inspected by the consultant.

.5 Do not secure hangers to fluted steel floor. Secure hangers to overhead structure using attachment methods as required for particular structure and acceptable to the consultant. Where structural spacing exceeds ceiling hanger spacing, provide double carrying channels nested and placed perpendicular to and on top of bottom flange of steel beams or on top of the lower chords of the open web steel joists, and secured to each joist with three loops of 1.2mm galvanized soft steel wire.

.6 Where obstructions interfere with the placement of ceiling hangers, provide double carrying channels nested and hung from the structure above on both sides of the obstruction.

.7 Install hangers on main tees spaced at maximum 1200mm centres and within 150mm from ends of main tees and tee splices.

.8 Lay out with border units not less than 50% of standard unit width and according to reflected ceiling plans.

.9 Ensure suspension system is coordinated with location of related components.

.10 Install typical wall moulding to provide correct ceiling height. Existing moulding shall not be reused.

.11 Completed suspension system shall support super-imposed loads, such as lighting fixtures, diffusers, grilles, speakers and other ceiling mounted fixtures.

.12 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture. Install an additional hanger immediately above each fastener for ceiling mounted curtain tracks.

.13 Interlock cross member to main runner to provide rigid assembly. Ensure all main tee splices and cross tee end clips are fully engaged.

.14 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

.15 Finished ceiling system shall be square with adjoining walls and level within 6mm in 3000mm. Install acoustical units parallel to building lines with edge unit not less than 50% of unit width. Refer to reflected ceiling plan.

.16 Scribe acoustic units accurately and neatly to fit adjacent work. Butt joints tight, terminate edges with moulding.

.17 Co-ordinate ceiling work to accommodate components of other sections, to be built into acoustical ceiling components, such as light fixtures, diffusers, speakers and sprinkler heads.

.18 Neatly cut acoustical units to fit tightly around all building elements that penetrate ceiling.

.19 Cleaning

.1 Clean with non-solvent based commercial cleaners.
.2 Touch up minor scratches, abrasions, voids and other defects in painted surfaces as acceptable. Replace damaged sections when touch-up is not acceptable to the consultant.
.3 Replace components which are visibly damaged, marred or not cleanable.
.4 Remove all excess material and debris when work of this section is completed.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Progressive cleaning

.2 Final cleaning

1.2 Project Cleanliness

.1 Maintain the Works in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by the Consultant or Owner. Do not burn waste materials on site.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site drum containers for collection of waste materials and debris.

.5 Provide and use clearly marked separate bins for recycling.

.6 Remove waste material and debris from site and deposit in waste container at end of each working day.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to the start of finish work and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers and remove from premises at the end of each working day.

.10 Provide adequate ventilation while using volatile or noxious substances. The use of building ventilation systems is not permitted for this purpose.

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

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces and will not contaminate building systems or electrical or control panels.

1.3 Final Cleaning

.1 Prior to Substantial Completion, remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.

.2 Remove waste products and debris other than that caused by others, and leave the Works clean and suitable for occupancy.

.3 Remove waste products and debris other than that caused by Owner Staff.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Remove stains, spots, marks and dirt from walls, and floors created during construction.

.6 Clean lighting reflectors, lenses, and other lighting surfaces.

.7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.8 Clean equipment and fixtures to a sanitary condition and clean or replace filters of mechanical equipment.

.9 Remove debris and surplus materials from all areas.

END OF SECTION

1 GENERAL

1.1 General

1.1.1 Provide all warranties outlined in the Contract Documents from the time of Substantial Completion of the Works or components of the works.

1.1.2 Perform warranty work required during progress of the work and during the Warranty Period.

1.1.3 Extend warranties on any component of the work that is required to be placed in operation prior to Substantial Performance for the purpose of complying with the sequence of construction.

1.2 Submittals

1.2.1 Inform the Owner in writing of the arrangements made for carrying out warranty work during the Warranty Period.

1.2.2 Provide a telephone number and address for receipt of notices relating to matters requiring action by the Contractor during the Warranty Period.

1.3 Work During Warranty Period

1.3.1 Perform all warranty work required upon receipt of verbal or written notices from the Owner.

1.4 Repair by Owner

1.4.1 The Owner will, without giving notice to the Contractor, repair shrinkages or defects that are dangerous in nature, that constitute an extreme emergency or that affect the operation of the Works. The Contractor will be notified of less serious conditions prior to work being performed.

1.4.2 The Owner will notify the Contractor of emergency work performed by the Owner.

1.4.3 The cost of labour, equipment and material to perform emergency work will be charged to the Contractor.

END OF SECTION

PART 1 GENERAL

1.1 GENERAL

.1 Conform to Sections of Division 1 as applicable.

1.2 RELATED SECTIONS

.1 Section 04051 - Masonry Mortar and Grout

.2 Section 04052 - Masonry Anchorage and Reinforcing

.3 Section 04220 - Concrete Masonry Unit

.4 Section 05120 - Structural Steel

.5 Section 05500 - Metal Fabrications

.6 Section 07900 – Joint Sealants

1.3 REFERENCES

.1 All products shall conform to the following standards and regulations:

.1 ASTM International (ASTM).

.1 ASTM A153/A153M-16a - Zinc Coating (Hot-Dip) on Iron and Steel Hardware

.2 ASTM A580/A580M-18 - Standard Specification for Stainless Steel Wire

.3 ASTM A666-15 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar

.4 ASTM C67/C67M-20 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile

.5 ASTM C207-18 - Standard Specification for Hydrated Lime for Masonry Purposes

.6 ASTM C1329/C1329M-16a - Standard Specification for Mortar Cement

.7 ASTM D41/D41M-11 (2016) – Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing

.8 ASTM D6769/D6769M-02(2018) – Standard Guide for Application of Fully Adhered, Cold Applied, Prefabricated Reinforced Modified Bituminous Membrane Waterproofing Systems

.2 Canadian Standards Association (CSA):

.1 CAN/CSA A3000-18 - Cementitious Materials Compendium

.2 CAN/CSA A82-14 - Fired Masonry Brick Made From Clay or Shale.

.3 CAN/CSA A165 Series-14 – CSA Standards on Concrete Masonry Units

.4 CAN/CSA A179-14 - Mortar and Grout for Unit Masonry

.5 CSA S304-14 - Design of Masonry Structures

.6 CSA A370-14 (R2018) - Connectors For Masonry

.7 CAN/CSA A371-14 - Masonry Construction for Buildings

.3 Building: The Brick Industry Association (BIA) Technical Notes on Brick Construction

.4 International Masonry Industry All-Weather Council (IMIAC)

.1 Recommended Practices and Guide Specification for Hot and Cold Weather Masonry Construction

1.4 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

.1 Build, bed and secure into the masonry work the following materials which are supplied by other trades:

.1 Masonry inserts, hangers, anchors, sleeves, bolts, etc.

.2 Steel lintels bearing on the masonry work.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Pre-installation meetings: comply with Section 01310 – Project Management and Coordination. Conduct pre-installation meeting one week prior to commencing work of this Section and on-site installations to:

.1 Verify project requirements, including mock-up requirements.

.2 Verify substrate conditions.

.3 Co-ordinate products, installation methods and techniques.

.4 Sequence work of related sections.

.5 Co-ordinate with other building sub-trades leaving all chases, slots and reglets and building-in all frames, sleeves, anchors, bolts, etc. as supplied by others and to ensure proper installation and site preparation.

.6 Review manufacturer's installation instructions.

.7 Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.

.8 Review warranty requirements.

.2 Sequencing: sequence with other work in accordance with Section 01320 – Construction Schedule.

1.6 SUBMITTALS

.1 Make submittals in accordance with Section 01010 General Requirements.

.2 Test Reports:

.1 Submit test reports showing compliance with specified performance characteristics and physical properties including permeability.

.3 Field Reports:

.1 Manufacturer’s field reports within 3 days of manufacturer representative’s site visit and inspection.

.4 Shop Drawings

.1 Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

.2 Provide shop drawings detailing temporary bracing required, designed to resist wind pressure and lateral forces during installation.

.3 Submit showing

.1 locations of control/expansion joints
.2 setting sequence;
.3 stone size and shapes;
.4 bonding details, anchor and insert types;
.5 connections to supporting walls and structure; and
.6 installation methods and anchoring methods.

.5 Product Data: Submit product data including manufacturer's literature for masonry, and accessories, indicating compliance with specified requirements and material characteristics.

.1 Include product names, types and series numbers.

.2 Include contact information for manufacturer and their representative for this Project.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 1330 Submittal procedures

.1 Indicate VOC's mortar, grout, parging, colour additives and admixtures.
.2 Indicate VOC's for epoxy coatings and galvanized protective coatings and touch-up products.

.6 Samples: prior to commencement of the Work submit samples

.1 Four samples of each type of concrete, masonry and stone unit specified to illustrate size, colour and texture.

.2 One cured and coloured sample of mortar and grout, illustrating mortar colour and colour range, supplemented with specific requirements in Section 04051 - Masonry Mortar and Grout.

.3 Two samples of each types masonry accessories and flashing specified, supplemented by specific requirements in Section 04053 - Masonry Accessories

.4 Two types of each tie, connector or reinforcement proposed for use, supplemented by specific requirements in Section 04052 - Masonry Anchorage and Reinforcing.

.1 Samples of panel reinforcing, anchors, expansion strips and sealant for glass block.

.2 Indicate bar bending schedule, placing diagrams, sizes, location, and quantities of reinforcement and connectors.

.3 Samples: used for testing and when accepted become standard for material used.

.7 Quality Control Procedures:

.1 As required, submit proposed quality control procedures for cold/hot weather protection and curing for Engineer's approval.

.8 Statement of Compatibility:

.1 Submit a Statement of Compatibility from manufacturers of insulation, air barrier, air barrier flashing and insulation fastener adhesive. Statement of Compatibility is to indicate that the manufacturer warrants the performance of their product when it is used in contact with other manufacturer's products listed above.

.9 Qualifications:

.1 Manufacturer: capable of providing field service representation during construction and approving application method.

.2 Installer: Membership in good standing of the Ontario Masonry Contractor's Association, Industrial, Commercial Institutional Category. Minimum five years proven satisfactory experience installing masonry on projects of comparable scope and using qualified tradesman.

.3 Masons: Minimum five years proven acceptable experience installing masonry on projects of comparable size and scope and using tradesman trained in the application of air barriers. Prior to commencement of masonry construction submit list of project names, owners, contacts, dates completed and construction costs.

.4 Masons employed on this project must demonstrate ability to reproduce mock-up standards.

.10 Warranty

.1 Submit copy of manufacturer's standard warranty on component fabrication, workmanship and finishes.

.2 For Work in this Section 04050 – Masonry Procedures, 12 months.

.11 Restoration Process: Where indicated, submit Drawings and Specifications including materials, construction methods, equipment, cleaning process and sequence of work.

1.7 QUALITY ASSURANCE

.1 Conform to requirements of CSA S304 for design requirements and for construction requirements to CSA A370, CAN/CSA A371 except where more stringent requirements are noted and/or indicated on Drawings and specified herein.

.2 Certificates

.1 Submit manufacturer's signed certificate verifying that masonry reinforcement supplied to project conforms to ASTM A153 / A153M-05, Class B-2 hot dipped galvanized requirements.

.2 Submit manufacturer's certificate verifying that stainless steel masonry reinforcement is Type 304/316 and conforms to ASTM A580/A580M wire ties/reinforcing and ASTM A666 plates/strips/sheets.

.3 Provide for compartments in long cavity wall and at corners to achieve appropriate pressure equalization and drainage in cavity wall design. Where not provided in other specifications, the following minimal dimensions shall be followed.

.1 Compartments located within 1.2 m along the edges of the façade, including top of parapets, outside and inside corners, shall have a horizontal dimension no larger than 1.2 m

.2 Compartments located within the central portion of the façade, shall have a horizontal dimension no greater than 6.0 m.

.3 All Compartments shall have a vertical dimension no greater 6.0 m

.4 Conform to CAN/CSA A179, for type and grade specified and ensure bricks pass ASTM C67, No Dry Freeze Thaw Test.

.5 Conform to the Occupational Health and Safety Act. Lay masonry from scaffolds erected on same side as face work. Do not support scaffolding from finished building surfaces.

.1 Erect, maintain and remove on completion, scaffolding adequate for proper execution of work

.6 Conform to CSA A371 for temporary wind bracing for masonry during construction.

.1 Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

.7 Mock-Up

.1 Construct mock-ups in accordance with Section 01730 – General Trades Work.

.2 Purpose: To judge quality of work and material installation.

.3 Mock-up: Construct full size 3 x 3 m mock-up of masonry wall using proposed procedures, materials and quality of work where directed by Engineer.

.4 Include: door frame, plus related transitions, sealants, masonry accessories, masonry connectors and ties and any other products outlined in pre-installation meetings.

.5 Assemble to illustrate component assembly, colour, texture, coursing and joints including masonry materials, weep drainage, through-wall flashing.

.6 Allow Consultant **48** hours minimum prior to inspection of mock-up.

.7 Construct additional panels, if required, to obtain approval. Do not proceed with work prior to receipt of written acceptance of mock-up by Engineer.

.8 Approved panels shall become standard of comparison for masonry work on Site and shall not be destroyed or moved until authorized by Consultant.

.9 Perform test clearing on mock-up panel to ensure desired result.

.10 Start work only upon receipt of written approval of mock-up by Engineer.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store masonry units on Site on pallets and locate well away from roads. If not used immediately after delivery, cover with waterproof cover adequately secured. Keep units protected from roofing bitumen, concrete, mortar, and other materials which could stain them. Do not double stack cubes of masonry.

.2 Protect masonry in accordance with requirements of CAN/CSA A371. Keep masonry materials completely free from ice and frost.

.3 Store bagged products, such as lime, cement, and metal accessories in dry, waterproof sheds.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 CSA A371, Masonry Construction for Buildings

.1 Clause 5.16.2 Cold Weather Requirements

.2 Clause 5.16.4 Hot Weather Requirements

1.10 COLD WEATHER REQUIREMENTS

.1 When laying masonry in ambient temperature below 5^0C, use heat and maintain temperature of masonry materials. Protect completed work from freezing to satisfaction of Consultant. Heat and maintain temperature of masonry materials to at least 5^0C, but not more than 50^0C, and maintain air temperature above 5^0C on both sides of masonry for period of at least 7 days.

.2 Preheat unheated wall sections in enclosure for minimum 72 hours above 10 degrees C, before applying mortar.

.3 Use warm water and use less mix water in winter; cover sand to keep dry; heat sand and ensure no frozen lumps; use small batches; provide temporary heat and weather protection enclosure at area of masonry work; cover top of all unfinished work to prevent water or ice getting into masonry work.

1.11 HOT WEATHER REQUIREMENTS

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

.2 Avoid using dry masonry in hot weather conditions. Use predampened brick nominally saturated, but surface dry at time of laying. Do not dip brick in bucket of water.

.3 Spread only enough mortar to permit soft setting of masonry units; do not over mix mortar materials; do not retemper mortar after two hours of use; do not retemper pigment coloured mortar; do not spread more than 900 mm of mortar for placement of brick.

.4 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until

masonry work is completed and protected by flashings or other permanent construction.

.5 Spray mortar surface at intervals and keep moist for maximum of three days after installation.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Refer to related Sections for materials.

PART 3 EXECUTION

3.1 INSTALLERS

.1 Experienced and qualified masons to carry out erection, assembly and installation of masonry work.

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 EXAMINATION

.1 Verify that site conditions are ready to receive work.

.2 Examine openings to receive masonry units. Verify opening size, location, and that opening is square and plumb, and ready to receive work of this Section.

.1 Inform Engineer of unacceptable conditions immediately upon discovery.

.2 Proceed with installation after unacceptable conditions have been remedied and after receipt of written approval from Engineer.

.3 Verification of Conditions:

.1 Verify that:

.1 Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete block.

.2 Field conditions are acceptable and are ready to receive work.

.3 Built-in items are in proper location, and ready for roughing into masonry work

.4 Beginning of installation means acceptance of site conditions.

3.4 PREPARATION

.1 Surface Preparation: prepare surface in accordance with manufacturer's instructions and written recommendations.

.2 Establish and protect lines, levels, and coursing.

.3 Protect adjacent materials from damage and disfiguration.

.4 Supply metal anchors to Section 04052 - Masonry Anchorage and Reinforcing for placement. Direct correct placement of metal anchors.

.5 Verify items provided by other sections of work are properly sized and located.

3.5 CUTTING OF MASONRY UNITS

.1 Wet saw masonry units

.2 Pre-soak units using clean water prior to cutting.

.3 Make cuts straight, clean, and free from uneven edges.

.4 Clean cut units using a stiff fibre brush and clean water. Allow units to surface dry prior to placement.

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

.6 Make cuts in existing concrete block for doors to be neat, straight and true. Grout solid all voids.

3.6 WETTING OF BRICKS

.1 Except in cold weather, wet bricks having initial rate of absorption exceeding 1g/minute/1000 mm²: wet to uniform degree of saturation, 3 to 24 hours before laying, and do not lay until surface dry.

.2 Wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

3.7 INSTALLATION

.1 Do masonry work in accordance with CSA S304.1 and CAN/CSA A371 except where specified otherwise.

.2 Do masonry mortar and grout work in accordance with CAN/CSA A179 and CAN/CSA A371 except where specified otherwise.

.3 Perform work by skilled workmen under the continuous supervision and direction of skilled and experienced foreman in each branch of the work. At least one thoroughly experienced and competent workman is to be in charge of all mortar mixing.

.4 Do not use scorched sand. Do not use salts or anti-freezes. Use approved smokeless heaters.

3.8 COURSING

.1 Execute work to prevent marking or staining of exposed faces. Clean exposed masonry faces as work proceeds.

.2 Set out and build masonry work to the respective dimensions called for on the drawings. Build and lay masonry plumb, level, and true to line, with vertical joints in alignment, respecting construction tolerances permitted by CAN/CSA A371.

.1 Buttering corners of units, throwing mortar droppings into joints, deep or excessive furrowing of bed joints will not be permitted. Demonstrate

practices and procedures for maintaining clean cavity to Engineer in mock-up panel.

.2 Do not shift or tap units after mortar has taken initial set. Where adjustment must be made after mortar has started to set, remove mortar and replace with fresh supply.

.3 Lay all joints approximately 10 mm thick unless otherwise specified or otherwise indicated on Drawings. Fill joints full of mortar except where specifically designated to be left open.

.4 Allow joints to set just enough to remove excess water, then tool as follows:

.1 When mortar is "thumb-print," hard tool joints slightly concave for exposed work; elsewhere, strike joints flush. Use sufficient force to press mortar tight against masonry units on both sides of joints. Remove excess material or burrs left after jointing. Use trowel or rub with burlap bag.

.2 When mortar is "thumb-print," rake joints uniformly to approximately 6mm and compress with square tool to provide smooth compressed finish. Remove excess material or burrs left after jointing. Use trowel or rub with burlap bag.

.3 At exterior walls, match joint profile of existing adjacent joints.

.4 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.

.5 Use only non-corroding joint forming tools made of stainless steel or hard plastic.

.5 Point and fill holes and cracks in exposed mortar joints. Cut out defective joints, refill solidly with mortar and tool to form a neat joint to match existing.

.6 Use bullnose and double bullnose block at all external corners where block is left exposed.

3.9 CONSTRUCTION

.1 Exposed masonry:

.1 Percentage of chipped block faces installed shall be 0%.

.2 Remove chipped, cracked, and otherwise damaged units, in accordance with CSA A165, in exposed masonry and replace with undamaged units

3.10 CONTROL JOINTS

.1 Control joints shall be spaced in accordance with BIA technical notes 18 and 18A.

.2 Do not continue horizontal joint reinforcing across movement control joints.

.3 Form movement control joints by leaving head joints between stacked units void of mortar, ready for application of bond breaker and joint sealant.

.4 Size joint in accordance with Section 07900 Joint Sealants for sealant performance.

.5 Joints in masonry shall be located at least 300mm from any opening in the wall, unless specifically noted otherwise.

.6 In no case shall the distance between control joints exceed 10m and 6m from corners.

3.11 CONTINUOUS HORIZONTAL REINFORCEMENT AND REINFORCING TIES

.1 Refer to section 04052 – Masonry Anchorage and Reinforcing

3.12 SETTING AND BUILDING-IN

.1 Build in items occurring in masonry provided by other Sections including; door frames; anchor bolts; sleeves; inserts; loose steel lintels; shelf angles; access panels; masonry flashings not in direct connection with roofing and other such items.

.2 Build in items to present neat, rigid, true and plumb installation.

.3 Leave wall openings required for ducts, grilles, pipes, and other items.

.4 Accurately locate and neatly finish chases and openings to the required sizes.

.5 Do not cover pipe, conduit chases or enclosures until advised that the work has been inspected and tested.

.6 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.

.7 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with sealant in accordance with Section 07900 Joint Sealants.

.8 Firestopping and Smoke Seal: Firestopping and smoke seals around penetrations, at control joints and deflection spaces in fire separations shall be part of work of Section 07840 Fire Stopping. Provide assistance as required to trade performing firestopping.

.1 Fill voids between masonry and metal frames with masonry mortar or insulation, as indicated.

3.13 SUPPORT OF LOADS

.1 Use 20 MPa concrete, where concrete fill is used in lieu of solid units.

.2 Use grout to CAN/CSA A179 where grout is used in lieu of solid units.

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

3.14 PROVISION FOR MOVEMENT

.1 Leave 3 mm space below shelf angles.

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

.3 Built masonry is to tie in with stabilizers, with provision for vertical movement.

.4 Build-in continuous expansion joints as indicated.

3.15 CONCRETE MASONRY UNIT LINTELS

.1 Unless otherwise noted, provide reinforced concrete masonry unit lintels for full thickness of the wall. Provide reinforcement as indicated on the drawings.

.1 Lintels shall have minimum bearing of 200 mm on the masonry walls.

.2 Fill such lintels with grout and leave the shoring in place for a minimum of 7 days before removal.

.3 Lintels may be precast on the ground.

.4 Set concrete unit masonry over lintel units in full mortar bedding which shall have approved horizontal joint reinforcement laid therein

3.16 LOOSE STEEL LINTELS

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

.2 Clean all steel lintels by scraping, wire brushing or other effective means to remove loose scale, rust, grease, oil or other foreign matter.

.3 Angle lintels shall have a bearing of not less than 200 mm at each end.

.4 Touch-up damaged galvanized coating w/ zinc-rich coating.

3.17 TOLERANCES

.1 Tolerance to CAN/CSA A371.

.2 Variation in vertical alignment: ±20mm (±3/4 in)

.3 Variation in lateral alignment: ±13mm (±1/2 in)

.4 Variation in level alignment - joints: ±13mm (±1/2 in)

.5 Variation in relative alignment in 3m (10 ft): ±6mm (±1/4 in)

.6 Variation of mortar joint thickness ±3mm (±1/8 in)

3.18 FIELD QUALITY CONTROL

.1 Inspection and Testing will be carried out in accordance with Section 01010 – General Requirements.

.2 Notify inspection agency minimum of 24 hours in advance of requirement for tests.

3.19 PROTECTION

.1 Temporary Bracing

.1 Provide temporary bracing to masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

.2 Moisture Protection

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

.2 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each workday. Anchor securely in position.

.3 Air Temperature Protection: protect completed masonry as recommended in 1.9 Environmental Requirements.

1.1.1 Protect face work liable to become splashed or marked.

.4 Construct and maintain temporary protection as required by varying weather conditions, to permit continuous progress of the work. Areas so protected shall be of sufficient size to permit progress of all work necessary to maintain an orderly and efficient sequence of construction operations.

3.20 CLEANING

.1 Clean in accordance with Section 01740 - Cleaning.

.2 Obtain cleaning materials manufacturer's instructions and brick manufacturer's written instructions for cleaning and verify cleaning procedures outlined in CAN/CSA A371 with manufacturers.

.3 Test sample area, 10 m^2, to judge effectiveness of cleaning procedures and obtain Consultant's approval.

.4 Keep wall clean and free of mortar stains during laying. Allow mortar droppings which adhere to wall to dry out but not set. Remove with trowel, then rub with small piece of masonry followed by brushing to remove all traces. On completion of masonry construction, after mortar is thoroughly set and cured, clean masonry thoroughly.

.5 Protect windows, trim and metal from cleaning agents.

.6 Remove mortar with wood paddles and scrapers before wetting. Saturate masonry with clean water and flush off loose mortar and dirt. Clean blockwork using water, scrubbing brushes and wood paddles only.

.7 Clean masonry to be left exposed, using procedures as outlined herein and, where this is inadequate, follow recommendations outlined in Technical Notes on Brick Construction No. 20, revised Nov. 1990, published by the Brick Institute of America and distributed by Clay Brick Association of Canada. Should these methods prove inadequate consult masonry manufacturer before undertaking unusual cleaning procedures and obtain Consultant's prior consent.

END OF SECTION

1 GENERAL

1.1 General

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 Related Sections

1.2.1 Section 04050 - Masonry Procedures

1.2.2 Section 04052 - Masonry Anchorage and Reinforcing

1.2.3 Section 04220 - Concrete Masonry Unit

1.3 References

1.3.1 All products shall conform to the following standards and regulations:

.1 ASTM International (ASTM)

.1 ASTM C144-18 - Standard Specification for Aggregate for Masonry Mortar
.2 ASTM C150 / C150M-20 - Standard Specification for Portland Cement
.3 ASTM C207-18 - Standard Specification for Hydrated Lime for Masonry Purposes
.4 ASTM C270-19ae1 - Standard Specification for Mortar for Unit Masonry

.2 Canadian Standards Association (CSA):

.1 CSA A23.1-19/A23.2-19 - Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete
.2 CAN/CSA A179-14 - Mortar and Grout for Unit Masonry
.3 CSA S304-14 - Design of Masonry Structures
.4 CAN/CSA A371-14 - Masonry Construction for Buildings
.5 CAN/CSA A3000-18 - Cementitious Materials Compendium

.3 Brick Industry Association (BIA) Technical Notes on Brick Construction

1.4 Submittals

1.4.1 Product Data

.1 Submit manufacturer's product data and installation instructions in accordance with Specification 01010 – General Requirements.. Include product characteristics, performance criteria, and limitations.

.2 Submit digital PDF file format of WHMIS MSDS - Material Safety Data Sheets.. Indicate the VOC content of mortar grout, parging, colour, additives, and admixtures.

1.4.2 Samples: prior to commencement of the Work submit samples in accordance with Section 01010 – General Requirements, and as follows;

.1 Submit one 500 ml size sample for each type and colour of mortar.

1.4.3 Test Reports:

.1 Submit test report for strength and colour of mortar.

1.5 Quality Assurance

1.5.1 Conform to requirements of CSA S304 for design requirements and for construction requirements to CAN/CSA A371 except where more stringent requirements are noted and/or indicated on Drawings and specified herein.

1.5.2 Certificates

.1 Submit manufacturer's signed certificate verifying that masonry mortars meet the performance characteristics and physical properties.

1.6 Delivery, Storage, and Handling

1.6.1 Deliver, store and handle masonry mortar and grout materials as follows:

.1 Deliver prepackaged, dry-blended mortar mix to project site in labelled plastic-lined bags each bearing name and address of manufacturer, production codes or batch numbers, and colour or formula numbers.

.2 Maintain mortar, grout and packaged materials clean, dry, and protected against dampness, freezing, traffic and contamination by foreign materials.

1.7 Site Conditions

1.7.1 Ambient Conditions: maintain materials and surrounding air temperature to:

.1 Minimum 10 degrees C prior to, during, and 48 hours after completion of masonry work.

.2 Maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.

1.7.2 Weather Requirements: CAN/CSA A371, International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Hot and Cold Weather Masonry Construction.

2 PRODUCTS

2.1 Approved Manufacturers

.1 King, A Sika Company, 555 Michigan Dr, Oakville, Ontario, L6L 0G4, Phone: (905) 639-2993, info@ca.sika.com, URL: can.sika.com Equivalent products may be submitted for Engineer’s approval providing the product submitted meets or exceeds the performance criteria of the products specified.

2.2 Materials

2.2.1 Use same brands of materials and source of aggregate for entire project.

2.2.2 Mortar and Grout Materials: follow CAN/CSA A179

2.2.3 Aggregate: to CAN/CSA A179, except that the maximum allowable percentage passing 600 um (No. 30) sieve shall be 80 percent and maximum passing 300 um (No. 50) sieve shall be 50 percent.

2.2.4 Cement:

.1 Normal Portland: follow CAN/CSA A3000.

.2 Portland Cement: comply CAN/CSA A3000, Type GU - General use hydraulic cement (Type 10) grey colour.

.3 Masonry Cement: follow CAN/CSA A3000 and CAN/CSA A179, Type S.

.4 Mortar Cement: follow CAN/CSA A3000 and CAN/CSA A179, Type S.

.5 Packaged Dry Combined Materials for mortar: follow CAN/CSA A179, Type S, (using grey colour cement).

2.2.5 Aggregate: supplied by one supplier.

.1 Fine Aggregate: follow CAN/CSA A179, silica sand.

2.2.6 Water: clean and potable.

2.2.7 Lime:

.1 Quick Lime: follow CAN/CSA A179, Type S

.2 Hydrated Lime: follow CAN/CSA A179, Type S

2.2.8 Bonding Agent: latex type

2.2.9 Polymer Latex: organic polymer latex admixture of butadiene-styrene type non-emulsifiable bonding admixture.

2.2.10 Proprietary Mortar and grout Mixes: Use preblended and prepackaged products

2.3 Colour Additives

2.3.1 Mortar Colouring Compounds: Pure, synthetic, or organic pigments, in proportions recommended by manufacturer, but not exceeding 10% of cement content by mass. Match approved sample. Use coloured mortar at all stone unit masonry locations.

.1 Acceptable Manufacturers

.1 Solomon Colours, Inc.

2.3.2 Portland Cement Mortar Colour: White Type 60.

2.4 Mixes

2.4.1 Mixing Method 1: Prepare and mix mortar materials under strict supervision, and in small batches for immediate use only. Use and mix proprietary mortar, and use and store ready mixed mortars, in strict accordance with manufacturer's instructions to produce following mortar types, CAN/CSA A179-14. Do not use retempered mortars except for ready mixed mortar, which shall be retempered in accordance with manufacturer's instructions. Mixed mortar shall be discarded after two (2) hours.

2.4.2 Mortar for interior masonry:

.1 For Loadbearing Stone and Faceblock: Use proprietary or ready mixed type "S" masonry mortar mixes specified, mixed in accordance with manufacturer's instructions.

.2 For non-Loadbearing Stone and Faceblock: Use proprietary or ready-mixed type "N" masonry mortar mixes specified, mixed in accordance with manufacturer's instructions.

2.4.3 For Bedding Steel Bearing Plates, Lintels, for Laying Bearing Courses Under Concentrated Loads and for Laying Masonry Below Grade: Use Type 'M' cement mortar, having a compressive strength of 20.0 MPa minimum.

2.4.4 Portland Cement: Type I in accordance with ASTM C150/C150M. If a waterproof Portland Cement is used, the integral type waterproofer shall be omitted. Color: Grey

2.4.5 Lime: Shall be a dolomitic pressure-hydrated lime, special hydrate, Type S, in accordance with ASTM C207.

2.4.6 Sand: A clean, white quartzite or silica type, essentially free of iron compounds, in accordance with ASTM C144, not less than 100% passing a No. 8 sieve.

2.5 Mortar Mixing

2.5.1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.

2.5.2 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.

2.5.3 Add mortar colour and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.

2.5.4 Do not use anti-freeze compounds including calcium chloride or chloride based compounds.

2.5.5 Do not add air entraining admixture to mortar mix.

2.5.6 Use a batch type mixer in accordance with CAN/CSA A179.

2.5.7 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.

2.5.8 Use mortar within 2 hours after mixing at temperatures of 32 degrees C, or 2-1/2 hours at temperatures under 10 degrees C.

2.6 Grout Mixes

2.6.1 Bond Beams and Block Lintels: grout mix 20 MPa strength at 28 days; 200-250 mm slump; premixed type in accordance with CAN/CSA A23.1/A23.2 mixed in accordance with CAN/CSA A179 fine grout.

2.6.2 Grouted Cores: Minimum compressive strength of 20 MPa at 28 days. Maximum aggregate size and grout slump: CAN/CSA A179.

2.7 Grout Mixing

2.7.1 Mix batched and delivered grout in accordance with CSA A23.1/A23.2 pre-blended under factory controlled conditions.

2.7.2 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179 fine grout.

2.7.3 Add admixtures in accordance with manufacturer's instructions; mix uniformly.

2.7.4 Do not use calcium chloride or chloride based admixtures.

2.8 Mix Tests

2.8.1 Testing Mortar Mix:

.1 Test mortar to requirements of Section 01450 - Quality Control, and in accordance with CAN/CSA A179, for mortar based on property specification. Test prior to construction and during construction for:

.1 Compressive strength.
.2 Consistency.

.2 Testing Grout Mix:

.1 Test grout to requirements of Section 01450 - Quality Control, and in accordance with CAN/CSA A179, for grout based on property specification. Test prior to construction and during construction for:
.2 Compressive strength.
.3 Slump.

3 EXECUTION

3.1 Examination

3.1.1 Request inspection of spaces to be grouted.

3.2 Preparation

3.2.1 Apply bonding agent to existing concrete surfaces.

3.2.2 Plug clean-out holes with block masonry units. Brace masonry for wet grout pressure.

3.3 Manufacturer's Instructions

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

3.4 Installation

3.4.1 Do masonry mortar and Grout work in accordance with CAN/CSA A179 except where specified otherwise.

3.4.2 Repointing and Tuckpointing: Repoint defective joints as follows:

.1 Cut back joints 13 mm taking care not to damage units. Remove dust and loose materials by brushing or by water jet. If water jet is used, allow excess water to drain before repointing.

.2 Repoint with preblended prepackaged mortar mix based on proportion specification..

.3 Pack mortar tightly in thin layers, and tool joint to match non-defective joints.

3.5 Mixing

3.5.1 Clean all mixing boards and mechanical mixing machine between batches.

3.5.2 Mortar must be weaker than the units it is binding.

3.5.3 Contractor to appoint one individual to mix mortar, for duration of project. In the event that this individual must be changed, mortar mixing must cease until the new individual is trained, and mortar mix is tested.

3.6 Mortar Placement

3.6.1 Install mortar, premix mortar to manufacturer's instructions.

3.6.2 Install mortar and grout to requirements of CAN/CSA A179.

3.6.3 Remove excess mortar from grout spaces.

3.7 Grout Placement

3.7.1 Install grout in accordance with manufacturer's instructions.

3.7.2 Install grout in accordance with CAN/CSA A179.

3.7.3 Work grout into masonry cores and cavities to eliminate voids.

3.7.4 Do not install grout in lifts greater than 1500 mm, or 2400 mm high lifts where cleanouts are provided, without consolidating grout by rodding or vibrating.

3.7.5 Do not displace reinforcement while placing grout.

3.8 Field Quality Control

3.8.1 Site Tests, Inspection: in accordance with Section 04050 - Masonry Procedures supplemented as follows:

.1 Test and evaluate mortar prior to construction and during construction in accordance with CAN/CSA A179.

.2 Test and evaluate grout prior to construction and during construction to CAN/CSA A179; test in conjunction with masonry unit sections specified.

3.8.2 Manufacturer's Field Services: in accordance with Section 04050 - Masonry Procedures.

3.9 Cleaning

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

3.9.2 Remove droppings and splashings using clean sponge and water.

3.9.3 Clean masonry with low pressure clean water and soft natural bristle brush.

3.10 Protection of Completed Work

3.10.1 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

END OF SECTION

1 GENERAL

1.1 General

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 Related Sections

1.2.1 Section 04050 - Masonry Procedures.

1.2.2 Section 04051 - Masonry Mortar and Grout

1.2.3 Section 04220 - Concrete Masonry Unit

1.2.4 Section 05120 - Structural Steel

1.2.5 Section 05500 - Metal Fabrications.

1.2.6 Section 07900 – Joint Sealants.

1.3 References

1.3.1 All products shall conform to the following standards and regulations:

.1 ASTM International (ASTM).

.1 ASTM A123/A123M-17 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.2 ASTM A153/A153M-16a - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

.3 ASTM A580/A580M- 18 - Standard Specification for Stainless Steel Wire

.4 ASTM A666-15 - Specification for Annealed or Cold Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar

.5 ASTM A951/A951M-16e1 - Standard Specification for Steel Wire for Masonry Joint Reinforcement

.6 ASTM A1064/A1064M-18a - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

.2 Canadian Standards Association (CSA)

.1 CAN/CSA-A3000-18 - Cementitious Materials Compendium

.2 CAN/CSA A179-14 - Mortar and Grout for Unit Masonry

.3 CAN/CSA G40.20-13/G40.21-13 (R2018) - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels

.4 CSA A23.1-19/A23.2-19 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.5 CSA A165 Series-14 – CSA Standards on Concrete Masonry Units

.6 CSA A370-14 (R2018) - Connectors for Masonry

.7 CAN/CSA A371-14 - Masonry Construction for Buildings

.8 CSA G30.18-09 (R2014) - Carbon Steel Bars for Concrete Reinforcement

.9 CSA S304-14 - Design of Masonry Structures

.3 Brick Institute of America (BIA) Technical Notes on Brick Construction.

1.4 Submittals

1.4.1 Product Data: submit manufacturers' MSDS product data sheets for epoxy coatings, and galvanized protective coatings. Indicating VOC content.

1.4.2 Submit vertical reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada outlined in Section 03200.

1.5 Quality Assurance

1.5.1 Certificates: Submit manufacturer's certificate verifying that masonry reinforcement supplied to project conforms to ASTM A153/A153M; Class B-2 hot dipped galvanized requirements. Submit manufacturer's certificate verifying that stainless steel masonry reinforcement is type 304/316 and conforms to ASTM A580/A580M wire ties/ reinforcing and ASTM A666 plates/strips/sheets.

1.5.2 Conform to requirements of CSA S304 for design requirements and for construction requirements to CSA A370, CAN/CSA A371 except where more stringent requirements are noted and/or indicated on Drawings and specified herein.

1.5.3 Conform to CSA A371 for temporary wind bracing for masonry during construction.

.1 Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

1.6 PRODUCTS

1.7 Materials

1.7.1 Bar Reinforcement: to CAN/CSA A371 and CSA G30.18, Grade 400.

1.7.2 Wire reinforcement: to CAN/CSA A371 and ASTM A951/A951M.

1.7.3 Connectors: to CSA A370 and with corrosion protection to CSA A304.1, and as follows;

.1 Mill Galvanized: For interior masonry not subject to moisture.

.2 Hot Dip Galvanized: For interior masonry subject to moisture, below grade masonry in contact with ground and above grade exterior masonry. In buildings less than 11 m in height; hot dip galvanized after fabrication with min zinc coating in accordance with ASTM A153/A153M, Class B for wire ties/reinforcing 458 g/m² (1.5 oz/f²) and ASTM A123/A123M for plates/strips/sheets 610 g/m² (on each face).

.3 Masonry Reinforcement for Non-Cavity Walls: 4.8 mm diameter sized 50 mm narrower than wall or partition. Provide shop fabricated corners and intersections and curved configuration where required. Finish as specified herein before depending upon location of walls.

.1 Acceptable Products

.1 Hohmann and Barnard, Inc., 220 Ladder – Mesh SHD

.2 Blok Lok Ltd., BL-10 EHD

.3 JV Building Products, WL-10 EHD

.4 Approved Equivalent

1.7.4 Vertical Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G30.18, Grade 400:

.1 All load bearing walls to have 15M bars at 600 mm O.C. minimum, in fully grouted cores, unless noted otherwise on drawings.

.2 All non-load bearing walls to have 15M bars at 800 mm O.C. minimum, in fully grouted cores, unless noted otherwise on drawings.

.3 All 15M vertical bars are to have matching lapping 15M dowels, ~~1200~~1350 mm long, embedded 600 mm into the foundation walls.

.4 Refer to structural drawings for additional reinforcing steel locations.

1.7.5 Horizontal Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G30.18, Grade 400:

.1 All bond beams to be minimum 400 mm deep and to have 1-15 M T& B bars minimum unless noted otherwise, in a fully grouted bond beam course.

1.7.6 Interior Concrete Block Joint Reinforcement to CSA-G30.3.

.1 Use galvanized steel wire ladder type joint reinforcement. Acceptable system: Blok-Lok BL42 as manufactured by Blok-Lok.

.2 Non-Load bearing Interior Partition Walls: Use Block-Lok BL10, 4.8 mm dia. wires every second course.

.3 Wall Corners and Intersections: Use prefabricated corner and tee reinforcing.

1.7.7 Masonry to masonry at infill conditions: galvanized, corrugated steel.

1.7.8 Corrosion protection: to CSA-S304.1, galvanized to CSA-S304.1 and CAN/CSA A370.

1.7.9 Fasteners: installed post-construction:

.1 Bolts and Screws: size and type to suit application, locate where indicated.

.2 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.

.3 Powder-Driven Fasteners: pin styles and lengths to suit fastening application in accordance with manufacturers use, load and hold recommendations.

.4 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.

1.7.10 Adhesive Anchors: proprietary systems, pre-mixed, self-contained system with double glass vial system to contain epoxy, consisting of resin, hardener and aggregate.

1.8 Fabrication

1.8.1 Fabricate reinforcing in accordance with CSA A23.1 and Reinforcing Steel Manual of Standard Practice and Reinforcing Steel Institute of Ontario

1.8.2 Fabricate connectors in accordance with CSA A370.

1.8.3 Obtain engineer approval for locations of splices not shown on placing diagrams.

1.8.4 Lintels: Fabricate steel lintels as indicated on Drawings.

1.9 EXECUTION

1.10 Installation

1.10.1 General

.1 Do masonry reinforcement and connectors in accordance with CSA A370, CAN/CSA A371, CSA A23.1/A23.2, and CSA S304.1 unless indicated otherwise.

.2 Do masonry work in accordance with Section 04050 – Masonry Procedures

1.10.2 Continuous Horizontal Reinforcement and Reinforcing Ties

.1 Reinforce all masonry walls with continuous masonry wall reinforcement in every second block.

.2 Adjustable masonry reinforcement not permitted to correct poorly laid masonry. Bending of masonry reinforcement or ties are not permitted.

.3 At corners of openings, provide extra masonry/cavity wall reinforcement, so that first and second courses above and below openings are reinforced. Extend extra reinforcement 600 mm (2') beyond opening in each direction.

.4 Non-conventional Ties

.1 Not Used.

1.10.3 Engineered Masonry: Engineered masonry shall conform to CAN/CSA A371 and CSA A304 and to details as indicated on structural Drawings.

.1 Install masonry wall base anchors in masonry foundation walls to line up with voids in masonry walls above as indicated on Drawings. Solidly fill voids between anchors and masonry with mortar.

1.10.4 Lintels and Bond Beams

.1 Reinforce masonry lintels and bond beams as indicated.

.2 Place and grout reinforcement in accordance with CSA S304.1, CAN/CSA A371 and CAN/CSA A179.

1.10.5 Anchors

.1 Supply and install metal anchors as indicated on drawings.

.2 Supply and install lateral support and anchorage in accordance with CSA S304.1

1.11 Setting and Building-In

1.11.1 Refer to section 04050 – Masonry Procedures

1.12 Field Touch-Up

1.12.1 Do not field bend reinforcement and connectors except where indicated or authorized by Consultant. Replace damaged bars and connectors.

1.12.2 Touch up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide a continuous coating. Ensure touch-up coating meets VOC limit requirements.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 Provision and installation of concrete unit masonry.

1.2 Related Sections

1.2.1 Conform to Sections of Division 1 as applicable

.1 Section 04050 Masonry Procedures

.2 Section 04051 Masonry Mortar and Grout

.3 Section 04052 Masonry Anchorage and Reinforcing

.4 Section 05120 Structural Steel

.5 Section 05500 Metal Fabrications

.6 Section 07900 Joint Sealants

1.3 References

1.3.1 ASTM International Inc.

.1 ASTM C207-18 - Standard Specification for Hydrated Lime for Masonry Purposes

.2 ASTM C331/C331M-17 - Standard Specification for Lightweight aggregates for Concrete Masonry Units

.3 ASTM E514/E514M-14a - Standard Test Method for Water Penetration and Leakage Through Masonry.

.4 ASTM A123M / A123M-17 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products

1.3.2 Canadian Standards Association (CSA International)

.1 CAN/CSA A3000-18 - Cementitious Materials Compendium

.2 CAN/CSA A165 Series-14 - Concrete Masonry Units

.3 CAN/CSA-A179-14 - Mortar and Grout for Unit Masonry

.4 CSA A370-14 - Connectors for Masonry

.5 CAN/CSA A371-14 - Masonry Construction for Buildings

.6 CSA G40.20-13/G40.21-13 (R2018) - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel

.7 CSA S304-14 - Design of Masonry Structures

1.3.3 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S101-14 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.

1.3.4 Brick Institute of America (BIA)

.1 The Brick Industry Association (BIA) - Technical Notes on Brick Construction.

1.4 Quality Assurance

1.4.1 Certificates: provide in accordance with Section 04050 - Masonry Procedures

1.4.2 Test and Evaluation Reports: provide certified test reports in accordance with Section 04050 - Masonry Procedures.

1.4.3 Pre-Installation Meetings: conduct pre-installation meeting in accordance with Section 04050 - Masonry Procedures to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 Shop Drawing Submittals

1.5.1 Provide submittals in accordance with Section 01010 – General Requirements.

1.5.2 Product Data:

.1 Product Data: provide product data, including manufacturer's printed data sheets and catalog pages illustrating products to be incorporated into project for specified products.

1.5.3 Samples:

.1 Provide unit samples in accordance with Section 04050 - Masonry Procedures

.2 Manufacturer's Written Instructions: provide in accordance with Section 04050 - Masonry Procedures.

1.6 Delivery, Storage, and Handling

1.6.1 Deliver, store and handle concrete unit masonry in accordance with Section 04050 - Masonry Procedures.

1.7 PRODUCTS

1.8 Materials

1.8.1 Concrete Block: Modular, CSA A165 and as follows:

.1 H/15/A/M, filled solid for top two courses of load bearing walls, for all locations where structural members bear on concrete block, and where indicated on Drawings. H/15/C/M or H/15/D/M for all other locations with width greater than 140mm

.3 SS/15/C/M for all sections with widths of or less than 140mm.

.4 Provide special shapes and sizes as indicated or specified such as halves, jambs, lintels, solids, corners, bullnoses and double bullnoses, semi-solids, and other shapes. Use only bull-nosed units with full and complete radius with no vertical ridge.

.5 Where concrete block walls are required to act as fire separations or barriers, provide blocks conforming to OBC with respect to classification, thickness, fire resistant ratings and type of concrete.

.6 Exposed block shall be uniform in colour, shade and texture, and made by one manufacturer.

1.9 Reinforcement and Connectors

1.9.1 Reinforcement and connectors in accordance with Section 04052 - Masonry Anchorage and Reinforcing.

1.10 Mortar and Grout Mixes

1.10.1 Mortar, mortar mixes and grout mixes in accordance with Section 04051 - Masonry Mortar and Grout.

1.11 Cleaning Compounds

1.11.1 Compatible with substrate and acceptable to masonry manufacturer for use on products.

1.11.2 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

1.12 Tolerances

1.12.1 Tolerances for standard concrete unit masonry and architectural concrete masonry units in accordance with CAN/CSA A165, supplemented as follows:

.1 Maximum variation between units within specific job lot not to exceed 2 mm.

.2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.

.3 Out of square tolerance not to exceed 2 mm.

.4 Maximum variation in width between architectural concrete masonry units within specific job lot for specified dimension not to exceed 2 mm.

2 EXECUTION

2.1 Examination

2.1.1 Verify surfaces and conditions are ready to accept work of this Section.

2.1.2 Commencing installation means acceptance of existing substrates.

2.2 Preparation

2.2.1 Protect adjacent finished materials from damage due to masonry work.

2.3 Installation

2.3.1 Concrete block units:

.1 Bond: running.

.2 Coursing height: 200 mm for one block and one joint.

.3 Jointing: concave where exposed or where paint or other finish coating is specified.

2.3.2 Special Shapes:

.1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.

.2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.

.3 End bearing: not less than 200 mm or as indicated on drawings whichever is greater.

2.3.3 Reinforcement and connectors:

.1 Install reinforcing and connectors in accordance with Section 04052 - Masonry Anchorage and Reinforcing.

2.3.4 Mortar and Grout Placement:

.1 Place mortar and grout in accordance with Section 04051 - Masonry Mortar and Grout.

2.3.5 Construction

.1 Construct concrete masonry units in accordance with Section 04050 – Masonry Procedures

.2 Maintain dimensions, lines and levels.

.3 When mortar is "thumb-print" hard, tool joints slightly concave for exposed work; elsewhere, strike joints flush. Use sufficient force to press mortar tight against masonry units on both sides of joints. Remove excess material or burrs left after jointing. Use trowel or rub with burlap bag.

.4 Lay all joints approximately 10 mm thick unless otherwise specified or otherwise indicated on Drawings. Fill joints full of mortar except where specifically designated to be left open.

.5 Use bullnose and double bullnose block at all external corners where block is left exposed.

2.3.6 Blockwork

.1 Lay block to align plumb over each other with thick ends of webs up. Leave no cells open in exposed work. Reinforce all blockwork as hereinafter specified.

.2 Minimize cutting block. Cut exposed block with power driven abrasive cutting disc or diamond cutting wheel where cutting is required and for flush mounted electrical outlets, grilles, pipes, conduit, leaving 3 mm maximum clearance

.3 Do not wet concrete masonry before or during laying in wall.

.4 Locate corners accurately.

.5 Use full bed of mortar for first course. For remaining courses bed face shells and vertical end joints fully in mortar. Compress joint mortar to thumb print hard.

.6 Stagger end joints in every course. Align joints plumb over each other in every other course.

.7 Bond intersecting block walls in alternate courses with metal anchors. Where blockwork abuts concrete, bond each block course with dovetail anchors.

.8 Do not break bond of corridor walls or other walls of exposed units where partitions intersect and if bonding would show through on exposed face of walls. Bond these partitions, to walls they intersect, with prefabricated intersection masonry anchor reinforcement in each course.

.9 Distribute units of varying colour and texture where walls are exposed. Ensure that quality monolithic appearance is achieved. Do not use units that contrast greatly from overall range.

2.3.7 Interior Load Bearing and Non-Load bearing Partitions

.1 Carry loadbearing partitions at stair wells and elevator walls, at mechanical and at electrical shafts to structure above, wedge and grout. (i.e., to underside of floor and roof slabs and to structural framing). Rake out full mortar joint between partition and structure for a depth of 13 mm on one (1) side for

sealing specified under Section 07900, Joint Sealants. Rake joint shall be on side of suspended ceiling (if any). If no ceiling then on side as directed.

.2 Carry non-loadbearing partitions such as corridor partitions, demising partitions, partitions in areas without suspended ceilings and other partitions so indicated on Drawings, up through ceiling to structure above, unless indicated or specified otherwise. Terminate such partitions 19 mm below structure and fill space between top of masonry and structure with compressed packing insulation.

.3 Co-ordinate bracing to provide lateral support for tops of partitions required to extend to within 19 mm of underside of structure where they occur under steel joists and beams, slabs and other structural elements with Section 05500 – Metal Fabrications.

.4 Where walls and partitions are pierced by structural members, ducts, pipes, fill voids with mortar within 19 mm of such items flush with wall finish.

.5 Fill spaces between partition and structure, ducts and pipes with compressed packing insulation completely from one side of wall to other.

2.3.8 Load Bearing Walls

.1 Wedge and grout load bearing walls to underside of structure.

2.3.9 Movement Joints: Provide control joints in interior and/or exterior masonry walls as indicated on Drawings and/or as directed at following general locations:

.1 Where wall height changes; where wall direction changes; where wall thickness changes; at pipe and column chases; at bond beam breaks; at abutments of columns and walls; at abutment of cold garages to warm basements or walls; at openings in walls such as doors and windows; and at intervals in continuous walls as follows:

.1 Up to: 2400 mm high 9000 to 10500 mm oc

.2 2400 mm to 3600 mm 10500 to 12000 mm oc

.3 Over: 3600 mm high 12000 to 13500 mm oc

2.3.10 Expansion Joints: Provide expansion joints within wall construction in locations indicated on Drawings.

2.4 Field Quality Control

2.4.1 Site Tests, Inspection: in accordance with Section 04050 – Masonry Procedure.

2.4.2 Manufacturer's Field Services: in accordance with Section 04050 – Masonry Procedure.

2.5 Protection

2.5.1 Brace and protect concrete unit masonry in accordance with Section 04050 - Masonry Procedure.

2.6 Cleaning

2.6.1 Clean in accordance with Section 01740 Cleaning, and 04050 Masonry Procedures, supplemented as follows.

.1 Standard Concrete Unit Masonry:

.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block.

.2 Clean wall surface with suitable brush or burlap.

.2 Rub smooth all ridges and protrusions on block faces. Rub smooth forming ridges at bullnose blocks.

.3 Rub smooth all ridges and sharp edges where existing masonry has been sawn cut for new openings.

.4 Clean exposed masonry to satisfaction of Engineer after mortar has hardened.

.5 Where new block is stained or soiled, clean in accordance with manufacturer's instructions.

2.7 Repair/Restoration

2.7.1 Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.

END OF SECTION

1 General

1.1 SECTION INCLUDES

1.1.1 Design, labour, Products, equipment and services necessary for the structural steel Work in accordance with the Contract Documents.

1.2 REFERENCES

1.2.1 ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

1.2.2 ASTM A325M, Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric).

1.2.3 ASTM A563M, Standard Specification for Carbon and Alloy Steel Nuts (Metric).

1.2.4 ASTM C1107/C1107M, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).

1.2.5 ASTM F1554, Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

1.2.6 ASTM F436, Standard Specification for Hardened Steel Washers.

1.2.7 CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

1.2.8 CSA S16, Design of Steel Structures.

1.2.9 CISC, Handbook of Steel Construction.

1.2.10 CISC/CPMA 2-75, A Quick-drying Primer for Use on Structural Steel.

1.2.11 CSA S136 PACKAGE, North American Specification for the Design of Cold-Formed Steel Structural Members and S136.1, Commentary on North American Specification for the Design of Cold-Formed Steel Structural Members.

1.2.12 CSA W47.1, Certification of Companies for Fusion Welding of Steel.

1.2.13 CSA W55.3, Certification of Companies for Resistance Welding of Steel and Aluminum.

1.2.14 CSA W59, Welded Steel Construction (Metal Arc Welding).

1.2.15 CWB, Canadian Welding Bureau.

1.2.16 SSPC-SP6/NACE No. 3, The Society for Protective Coatings, Commercial Blast Cleaning.

1.3 DESIGN REQUIREMENTS

1.3.1 Design details and connections in accordance with requirements of CSA S16 and CSA S136 to resist forces, moments, shears indicated or implied and handling, transportation and erection loads and as indicated on the Contract Drawings.

.1 Include in design for connections between columns, beams, girders, and braces, and between such members as spandrel angles and beams, hangers, stiffeners and their supporting members.

.2 Standard connections such as connections for shear only:

.1 Select shear connections from the CISC, Handbook of Steel Construction.

.2 If forces are not indicated, select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, if no point loads act on beam, assuming fully supported compression flange.

.3 Non-standard connections: Designed and stamped by a Professional Engineer, licensed in the Province of Ontario.

1.3.2 Structural design to accommodate active loads including live, dead, lateral, wind, seismic, handling, transportation and erection loads.

1.3.3 Design Connections:

.1 To safely withstand the combined effects of shear, moment and torque at applicable design stresses.

.2 Not to interfere with architectural clearance lines or finishes.

.3 Of base plate and cap plate bearing on column to column section by welding or grinding column to bear.

.4 Taking into account any eccentricity.

.5 With direct fastening to flanges of spandrel beams to restrain twisting.

.6 Single angle and fish-plate type connections are not permitted except for secondary, lightly loaded elements.

.7 Make single angle connections of wrapped type.

1.4 SUBMITTALS

1.4.1 Shop Drawing(s):

.1 Submit shop drawings indicating:

.1 Shop and field splices, cuts, copes, camber, connection details, holes, reinforcements, bearing plates, welds, anchors, identification marks, surface preparation, and finishes.

.2 Indicate welds in accordance with CSA W59 welding symbols standard.

.3 Sketches and design calculations for structural members and connections with the corresponding Shop Drawings.

.4 Details and information necessary for assembly and erection purposes such as description of methods, sequence of erection, type of equipment used in erection and temporary bracings.

.2 Reproduction of the Contract Drawings for use as Shop Drawings is not permitted. Do not use Contract CADD files.

1.4.2 Quality Assurance Submittal(s):

.1 Four weeks minimum, prior to structural steel fabrication, submit 2 copies of mill test reports by steel manufacturer indicating chemical and physical properties of steel to be used in the Work and confirming that tests completed are in accordance with CSA G40.20/G40.21.

.2 Submit certifications for welding companies under Division 1 or 2.1 in accordance with CSA W47.1 for fusion welding of steel structures, and CSA W55.3 for resistance welding of structural components.

.3 Submit confirmation by the Professional Engineer that fabrication and erection complies with the Contract Documents.

1.4.3 Closeout Submittal(s):

.1 Submit field reports of shop and field inspections.

1.5 QUALITY ASSURANCE

1.5.1 Retain a Professional Engineer, licensed in the Province of Ontario, with experience in design, fabrication and erection of structural steel work of comparable complexity and scope, as described in this Section, to perform the following services:

.1 Design of structural members and connections.

.2 Stamp and sign Shop Drawings, design calculations and amendments.

.3 Review and report on manufacturer's and fabricator's quality control tests and reports for compliance with the Contract Documents.

.4 Conduct fabrication and erection inspections and prepare and submit written inspection reports verifying that the Work is in accordance with the Contract Documents and reviewed Shop Drawings.

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 Exercise care in handling primer finished materials.

1.6.2 Do not handle steel until primer paint has cured sufficiently to handle without damage to same. Use nylon slings for handling and a combination of wood or polystyrene blocking between units in stockpile and in transit.

1.6.3 Schedule and sequence the Work so a minimum of handling occurs prior to erection.

2 Products

2.1 MATERIALS

2.1.1 Rolled structural steel shapes and flat hot-rolled steel Products: In accordance with CSA G40.20/G40.21, Grade 350W.

2.1.2 Hollow structural sections (HSS): In accordance with CSA G40.20/G40.21, Grade 350W, Class H.

2.1.3 Beam connections, columns, base plates, beams, purlins, girts and sag rods: In accordance with CSA G40.20/G40.21.

2.1.4 Surface preparation: Remove moisture, oil, grease, dirt, excessive rust, loose mill scale and clean in accordance with SSPC-SP6/NACE No. 3.

2.1.5 Shop paint primer (prime painted steel): In accordance with CISC/CPMA 2-75.

2.1.6 Hot-dip galvanizing: In accordance with ASTM A123/A123M; minimum zinc coating of 705 g/m².

2.1.7 Welding materials: In accordance with CSA W59 and certified by the CWB.

2.1.8 Anchor rods: In accordance with ASTM F1554, Grade 105, with hexagon heads and nuts, lengths shown with a minimum of 13 mm projecting beyond the nut. Nuts: In accordance with ASTM A563M.

2.1.9 High strength bolts: In accordance with ASTM A325M, Type 1, heavy hexagon high strength bolts, of standard size, of lengths required for thickness of members joined and for type of connection.

.1 Lock washers, lock nuts, burr thread to prevent bolts from working loose.

.2 In accordance with ASTM A563M; hexagon semi-finished nuts.

.3 In accordance with ASTM F436; flat, smooth hardened washers, quenched and tempered.

2.1.10 Field touch-up primer (prime painted steel): In accordance with CISC/CPMA 2-75.

2.1.11 Field touch-up primer (galvanized steel): Refer to Section 09 91 00, Painting and Finishing Schedule - EXT-MISC and INT-MISC.

2.2 FABRICATION

2.2.1 Fabricate structural steel in accordance with CSA S16 and CISC, Handbook of Steel Construction fabrication tolerances except as indicated otherwise.

2.2.2 Splicing of members is not permitted except as indicated on the Contract Drawings or as accepted by TTC.

2.2.3 Clean, prepare surfaces and shop prime structural steel in accordance with CSA S16.

2.2.4 Prime interior structural steel in shop except if galvanized finish is indicated. Galvanize exterior structural steel unless indicated otherwise.

2.2.5 Do not paint surfaces which will be embedded in concrete.

2.2.6 Continuously weld structural steel members where indicated. Galvanize vent/weep holes for structural steel members.

2.2.7 Grind shop fabrication welds smooth.

2.2.8 Fabricate structural steel members true and without twists or open joints.

2.2.9 Weld in accordance with CSA W59.

2.2.10 Fabricate properly sized holes to accommodate other parts of the Work including holes required for attachment; locate holes to prevent appreciable reduction of structural member strength. Reinforce openings as necessary to maintain strength of structural members.

2.2.11 Fabricate HSS members with sufficient holes to prevent the accumulation of water.

2.3 STRUCTURAL GROUT

2.3.1 Premixed, flowable, non-shrink grout without aggregate fillers: In accordance with ASTM C1107/C1107M, Masterflow 713 by Master Builders Technologies Ltd.; Sika Grout 212 by Sika Canada Inc.

2.4 EXECUTION

2.5 EXAMINATION

2.5.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to TTC. Commencement of Work means acceptance of existing conditions.

2.5.2 Obtain written approval from TTC prior to field cutting or altering of structural members.

2.6 MARKING

2.6.1 Mark materials in accordance with CSA G40.20/G40.21.

2.6.2 Match marking: Mark bearing assemblies and splices in shop for fit and match.

2.7 STRUCTURAL STEEL ERECTION

2.7.1 Supply and coordinate the location and placement of anchor bolts and base plates.

2.7.2 Erect structural steel in accordance with reviewed Shop Drawings and tolerances of CSA S16 and CISC, Handbook of Steel Construction tolerances except restrict the maximum variation in elevation to 6 mm.

2.7.3 Splicing of members is not permitted except as indicated on the Contract Drawings or as accepted by TTC.

2.7.4 Set steel accurately to lines and elevations indicated. Set column bases and shim to proper elevations. Install structural grouting in accordance with details and the manufacturer's recommendations.

2.7.5 Assemble structural steel members true, plumb and level, free of twists and open joints.

2.7.6 Make high strength bolted connections in accordance with CSA S16.

2.7.7 Weld in accordance with CSA W59.

2.8 FIELD TOUCH-UP PAINTING

2.8.1 Upon completion of erection, mechanically brush clean bolts, rivets, welds and burned or scratched surfaces.

2.8.2 Touch-up damaged surfaces and surfaces without shop coat with field touch-up primer or touch-up primer for galvanized steel as applicable.

END OF SECTION

1 GENERAL

1.1 Scope of Work

1.1.1 Design, supply and install the following items including bolts, nuts, washers, anchors, hardware,

.1 Lintels, concrete protection angles, embedded grating supports

.2 All other miscellaneous metal items shown on the drawings.

1.2 Related Sections

1.2.1 Section 01010 – General Requirements

1.2.2 Section 04050 - Masonry Procedures

1.2.3 Section 04052 - Masonry Anchorage and Reinforcing

1.2.4 Section 05120 - Structural Steel

1.2.5 Section 09900 – Painting

1.3 References

1.3.1 All products shall conform to the following standards and regulations:

1.3.2 ASTM International (ASTM).

.1 ASTM A307-14e1 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 psi Tensile Strength

.2 ASTM F1554-20 – Standard Specifications for Anchor Bolts

1.3.3 Canadian Standards Association (CSA):

.1 CSA G40.20-13/G40.21-13 (R2018) - General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel

.2 CAN/CSA S16-19 - Design of Steel Structures

.3 CSA W48-18 - Filler Metals and Allied Materials for Metal-Arc Welding

.4 CSA W59-18 - Welded Steel Construction (Metal-Arc Welding)

1.3.4 American Welding Society (AWS)

.1 AWS D1.6/D1.6M-17 – Structural Welding Code – Stainless Steel

1.4 Shop Drawings

1.4.1 Submit shop drawings in accordance with Section 01010 – General Requirements..

1.4.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.

1.4.3 Design loads and general arrangement shall be clearly identified on the shop drawings.

1.4.4 In preparing shop drawings, the fabricator shall verify that all component parts and assembly of each item will support the superimposed loads without deflection detrimental to function, appearance or safety.

1.4.5 Provide signed and sealed shop drawings certified by a Professional Engineer licensed in the Province of Ontario.

1.4.6 Upon request, submit design calculations signed and sealed by a Professional Engineer licensed in the Province of Ontario.

1.5 Protection

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

1.5.2 Prevent metals from collecting standing water and protect from staining.

2 PRODUCTS

2.1 Materials

2.1.1 Structural steel columns and beams: to CSA G40.20/G40.21, Grade 350W.

2.1.2 Steel angles, channels and plates: to CSA G40.20/G40.21, Grade 300W.

2.1.3 Hollow Structural Sections (HSS): conform to CAN/CSA G40.21, Grade 350W, Class H.

2.1.4 Welding materials:

.1 to CSA W59 for Steel.

2.1.5 Welding electrodes: to CSA W48 Series.

2.1.1 Anchor Rods: to ASTM F1554.

2.1.2 High Strength Bolts and Nuts: to ASTM F3125

2.1.3 Grout: non-shrink, non-metallic, flowable, 24h, 15 MPa at 24 hours, pull-out strength 7.9 MPa.

2.2 Fabrication

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

2.2.2 Use self-tapping shake-proof screws on items requiring assembly by screws or as indicated.

2.2.3 Where possible, fit and shop assemble work, ready for erection.

2.2.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 Finishes

2.3.1 Galvanizing: hot-dipped galvanizing with zinc coating 610 g/m^2 to ASTM A123M.

2.3.2 Zinc primer: zinc rich, ready mix in accordance with Section 09900 Paint.

2.4 Shop Painting

2.4.1 Apply one (1) coat of primer to metal items, with exception of galvanized or concrete encased items.

2.4.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7ºC.

2.4.3 Clean surfaces to be field welded. Do not paint.

2.5 Miscellaneous Lintel Angles

2.5.1 Miscellaneous lintel angles as indicated on the design drawings. Galvanized for face masonry supports.

2.6 Miscellaneous Items

2.6.1 Review all drawings and include all other metal fabrication not included in the above noted list.

3 EXECUTION

3.1 Erection

3.1.1 Do welding work in accordance with CSA W59, unless specified otherwise.

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

3.1.3 Provide suitable means of anchorage acceptable to engineer such as dowels, anchor clips, bar anchors, expansion bolts and shields, chemically anchored bolts and toggles.

3.1.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

3.1.5 Provide components for building by other sections in accordance with shop drawings and schedule.

3.1.6 Make field connections with bolts to CAN/CSA S16 or weld.

3.1.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

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

3.1.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 This section describes the materials and procedures for the installation of rough carpentry including but not limited to miscellaneous interior carpentry, blocking, rough in framing and equipment mounting panels.

1.2 Related Specification Sections

1.2.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Section 01720 - Roofing

.2 Section 05550 - Anchorage in Concrete and Masonry

.3 Section 07900 – Joint Sealants

1.3 References

1.3.1 National Building Code of Canada (NBCC)

1.3.2 Canadian Standards Association (CSA):

.1 CSA O121-17 - Douglas Fir Plywood

.2 CSA O141-05 (R2014) - Softwood Lumber

.3 CSA O151-17 - Canadian Softwood Plywood

.4 CAN/CSA-O80 SERIES-15 CONSOLIDATED - Wood Preservation

.5 CAN/ULC-S102-18 - Standard Method of Test for Surface Burning Characteristics of Building Material Assemblies.

1.3.3 American Society for Testing and Materials (ASTM):

.1 ASTM A123/A123M-17 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.2 ASTM F1667-20 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples

1.3.4 National Lumber Grades Authority (NLGA):

.1 Standard Grading Rules for Canadian Lumber (2014 Edition)

1.4 Quality Assurance

1.4.1 Lumber identification: by Grade Stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

1.4.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

1.4.3 “Treated” and “fire treated” identification: by grade mark in accordance with the Canadian Wood Preservers Bureau.

1.5 Delivery Storage and Handling

1.5.1 Store lumber in a dry place and protect from dampness and damage

1.5.2 Store lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

2 PRODUCTS

2.1 Lumber Material

2.1.1 Lumber: unless specified otherwise, softwood, SPF 1/2, moisture content 19 percent or less, in accordance with the following standards:

.1 CSA O141

.2 NLGA Standard Grading Rules for Canadian Lumber.

.1 Light Framing: Species Group D, Standard Grade.

.2 Studding: Species Group D, Stud Grade.

.3 Structural Light Framing: Species Group D, No. 1 Grade.

.4 Appearance Lumber: Species Group B, Appearance Grade.

.5 Hardwood Lumber: Of grade conforming to grading rules of U.S. National hardwood Lumber Association, solid Yellow Birch, select or better

.6 Concealed Framing Lumber: No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, Balsam Fir or Jack Pine, kiln dried, free from sap, shakes, splits, knots and other defects.

.7 Grounds, Nailing Strips, Blocking Furring, rough bucks, cants, curbs, fascia backing and sleepers: No 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, kiln dried, free from sap, shakes, splits, knots and other defects.

.3 Glue: Waterproof

.4 Field Applied Wood Preservative: For field cut ends, supply “Wolman End Cut” by Koppers Company Inc. or same CCA preservative as used for shop impregnation.

.5 “Treated” Wood and Plywood (Decay and Termite Resistant):

.1 Koppers Company Inc., Womanized, Distributed by Hickson Building Products Limited.

.2 Timber Specialties K-33

.3 Provide vacuum/pressure impregnated lumber treated in accordance with CSA O80.

.4 Retention/Penetration Standards: Conform to CSA O80.

.5 Provide treated wood kiln dried to maximum 19% moisture content.

.6 Cut end liquid wood preservative as recommended by manufacturer of treated wood.

2.2 Panel Materials

2.2.1 Exterior Plywood: 19 mm (3/4”) thick, waterproof, grade stamped exterior grade Douglas Fir plywood (DFP), select grade, unsanded conforming to CSA O121.

2.2.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.

2.3 Accessories

2.3.1 Rough Hardware: Supply rough hardware to frame and fix rough carpentry. This includes bolts, anchors, nails, expansion shields and other fastenings required. Hot dip galvanize hardware for exterior work; elsewhere, provide cadmium plated hardware. Provide spiral thread nails except as indicated otherwise.

2.3.2 Nails, spikes and staples: to ASTM F1667.

2.3.3 Bolts: 12.5 mm diameter, unless indicated otherwise, complete with nuts and washers.

2.3.4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

2.4 Finishes

2.4.1 Galvanizing: to ASTM A123/A123M, use galvanized fasteners for exterior work, interior highly humid areas, pressure-preservative, fire-retardant, treated lumber.

2.4.2 Stainless steel: use stainless steel 316 alloy, as indicated.

2.5 Wood Preservative

2.5.1 Pressure treated lumber CAN/CSA O80 Series to average net retention of 4.0 kg/m^3 of CCA preservative.

2.5.2 Pressure treated plywood CAN/CSA O80 to average net retention of 4.0 kg/m^3 of CCA preservative.

3 EXECUTION

3.1 Examination

3.1.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Engineer in writing of any conditions which would be detrimental to the installation.

3.1.2 Beginning of installation indicates acceptance of site conditions.

3.2 Preparation

3.2.1 Treat surfaces of material with wood preservative, before installation.

3.2.2 Apply preservative by dipping or by brush to completely saturate and maintain wet film on surface for minimum three (3) minute soak on lumber and one (1) minute soak on plywood.

3.2.3 Retreat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.2.4 Mix intumescent paint coating product to manufacturer's recommendations. Do not thin or stain. Apply primer and paint coating providing fire resistant barrier in accordance with manufacturer's recommendations to achieve requirements of authorities having jurisdiction.

3.2.5 Treat material as indicated:

.1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.

.2 Wood furring and framing on outside surface of exterior masonry and concrete wall.

.3 Plywood backing for cement stucco.

3.3 Installation

3.3.1 Comply with requirements of the OBC, supplemented by the following paragraphs.

.1 Properly frame together parts of the work with members accurately cut to size, closely fitted, well spiked and erected in a substantial manner, plumb, level, square and true to dimension.

.2 Install furring and blocking as required to space out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work, as required.

.3 Locate joints over bearing or supporting surfaces.

.4 Provide running members full length wherever possible.

.5 Design for expansion and contraction of the materials.

.6 Install prefabricated roof trusses, plywood sheeting and any related framing, as required to complete installation.

.7 Align and plumb faces of furring and blocking to tolerance of 1:600.

.8 Install rough bucks, nailers and linings to rough openings, as required to provide backing for frames and other work.

.9 Install wood cants, fascia backing, nailers, curbs and other wood supports, as required, and secure using galvanized steel fasteners.

.10 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.11 Countersink bolts where necessary to provide clearance for other work.

3.4 Post-Installation

3.4.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Engineer at no cost to Owner.

3.5 Cleaning

3.5.1 Clean in accordance with Section 01740- Cleaning.

3.5.2 Progress Cleaning: Perform cleanup as work progresses

.1 Leave work area clean at end of each day.

3.5.3 Final cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment

3.5.4 Waste Management:

.1 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

.2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 General

1.1 SECTION INCLUDES

1.1.1 Labour, Products, equipment, and services necessary for finish carpentry Work in accordance with the Contract Documents.

1.2 REFERENCES

1.2.1 ANSI A208.2, Medium Density Fiberboard (MDF) for Interior Applications.

1.2.2 ANSI Z124.3, Plastic Lavatories.

1.2.3 ANSI Z124.6, Plastic Sinks.

1.2.4 ANSI/ASME B18.6.1, Wood Screws (Inch Series).

1.2.5 ANSI/HPVA HP-1, American National Standard for Hardwood and Decorative Plywood.

1.2.6 ANSI/NEMA LD 3, High-Pressure Decorative Laminates.

1.2.7 ANSI/NPA A208.1, Particleboard.

1.2.8 ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

1.2.9 ASTM A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

1.2.10 ASTM C1378, Standard Test Method for Determination of Resistance to Staining.

1.2.11 ASTM C501, Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.

1.2.12 ASTM D1037, Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

1.2.13 ASTM D3023, Standard Practice for Determination of Resistance of Factory-Applied Coatings on Wood Products to Stains and Reagents.

1.2.14 AWI/AWMAC/WI, Architectural Woodwork Standards.

1.2.15 CAN/CGSB 11.3, Hardboard.

1.2.16 CSA O151, Canadian Softwood Plywood.

1.2.17 CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.2.18 CAN/ULC S102.2, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

1.2.19 National Hardwood Lumber Association (NHLA) Rules for the Measurement and Inspection of Hardwood and Cypress.

1.3 DEFINITIONS

1.3.1 Exposed Interior Surfaces:

.1 Interior surfaces exposed to view in open casework or behind transparent doors.

1.3.2 Semi-Exposed Surfaces:

.1 Interior surfaces exposed to view when doors or drawers are opened.

1.3.3 Concealed Surfaces:

.1 Exterior or interior surfaces covered or not normally exposed to view.

1.4 SUBMITTALS

1.4.1 Submit in accordance with Section 01010 – General Requirements.

1.4.2 **Shop Drawing(s):**

.1 Submit:

.1 Performance criteria, compliance with appropriate reference standards, characteristics, limitations, and troubleshooting protocol.

.2 Product transportation, storage, handling, and installation requirements.

.3 Materials, thicknesses, sizes, finishes, hardware, wood species, profiles, connection attachments, shop jointing, field jointing, reinforcing, anchorage, fastener types and sizes, special installation conditions, mechanical and electrical service routes, cutout locations, and sizes. Include erection Drawings, plans, elevations, sections, and details as applicable.

1.4.3 **Sample(s):**

.1 Submit the following samples:

.1 Each colour, pattern, and texture of decorative laminate, in manufacturer's standard tag size.

1.5 QUALITY ASSURANCE

1.5.1 Execute Work of this Section by member of AWMAC with 5 years' experience in finish carpentry work of comparable complexity and scope.

1.5.2 Fabricate finish carpentry Work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Premium Grade materials, and installation.

1.5.3 Perform Work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, First-Class Workmanship.

1.5.4 Perform metal Work of this Section by firm possessing modern architectural metal fabricating equipment and capable of cutting, fitting, bending, and installing stainless steel finishes, and capable of producing required quality Shop Drawings.

1.5.5 Remove and replace finish carpentry Work not meeting AWI/AWMAC/WI Architectural Woodwork Standards requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 Deliver, store, and handle finish carpentry in accordance with AWMAC Quality Standards.

1.6.2 Control temperature and humidity in accordance with AWMAC recommendations, before, during, and after finish carpentry delivery, and during storage and installation.

1.6.3 Provide suitable protective covering material for decorative laminate items. Take special precautions at corners.

1.6.4 Set up suitable area before millwork is delivered to Site. Avoid damage by excessive changes in moisture content.

2 Products

2.1 MATERIALS

2.1.1 **Lumber:**

.1 For concealed framing:

.1 In accordance with AWI/AWMAC/WI Architectural Woodwork Standards Custom Grade, S4S, eastern spruce, balsam fir, or jack pine, average moisture content 7% +/-2% at installation.

2.1.2 **Softwood Plywood:**

.1 In accordance with CSA O151, 19 mm unless indicated otherwise, G2S.

2.1.3 **Wood Mouldings:**

.1 Provide interior millwork in accordance with Architectural Woodwork Standards, Section 6 for profiles and configurations required for Contract, and as follows:

.1 Hardwood trim:

.1 In accordance with Architectural Woodwork Standards Custom Grade.

.2 Kiln dried. Species white maple finished lumber (S4S), selected for compatible grain and colour.

.3 Edge grain (vertical).

.4 Suitable for clear finish.

2.1.4 **Decorative Laminate:**

.1 High-pressure decorative laminate (HPDL):

.1 In accordance with ANSI/NEMA LD 3, decorative surface papers impregnated with melamine resins, and pressed over kraft paper core sheets impregnated with phenolic resin.

.2 Sheets bonded together under minimum pressure 6895 kPA (1000 lbs. per sq. in.) and high temperatures approaching 149°C. Finished sheets trimmed and backs sanded to facilitate bonding to substrate.

.3 Type: P-LAM 1 & P-LAM 2 as indicated.

.2 Unless otherwise specified, use:

.1 General purpose type: P-LAM 1

.1 Horizontal (HGS) sheet thickness: Minimum 1.2 mm (0.048").

.2 Vertical (VGS) sheet thickness: Minimum 0.7 mm (0.028”).

.2 Post-formed type: P-LAM 2

.1 Horizontal (HGP) sheet thickness: Minimum 1 mm (0.039").

.2 Vertical (VGP) sheet thickness: Minimum 0.7 mm (0.028").

.3 Decorative laminate (Type P-LAM 1):

.1 Colour: As indicated on Millwork Finishes Schedule

.4 Decorative laminate (Type P-LAM 2):

.1 Colour: As indicated on Millwork Finishes Schedule.

2.1.5 Sinks: Refer to Division 22.

2.1.6 **Draw Bolts and Splines:**

.1 Type: In accordance with fabricator's recommendations.

2.1.7 Nails and Staples:

.1 Size and type to suit application.

.2 Galvanized in accordance with ASTM A153/A153M for exterior Work, interior humid areas, and for treated lumber.

2.1.8 Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws:

.1 Size and type to suit application and nature of components joined.

.2 Stapling not permitted.

2.1.9 **Wood Screws:**

.1 In accordance with ANSI/ASME B18.6.1 stainless steel.

.2 Type and size to suit application.

2.1.10 **Adhesive:**

.1 In accordance with manufacturer's recommendations.

2.1.11 **Bituminous Mastic:**

.1 Selected by millwork fabricator.

2.2 HARDWARE

2.2.1 Pilasters:

.1 As indicated on Millwork Hardware & Specifications Schedule.

2.2.2 Clips:

.1 As indicated on Millwork Hardware & Specifications Schedule.

2.2.3 Cabinet hinges:

.1 As indicated on Millwork Hardware & Specifications Schedule.

2.2.4 Drawer and cabinet pulls:

.1 As indicated on Millwork Hardware & Specifications Schedule.

2.3 FABRICATION – DECORATIVE LAMINATE WORK

2.3.1 Perform Work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

2.3.2 Laminate decorative laminates to core materials in accordance with manufacturer's instructions.

2.3.3 Fabricate core surfaces and profiles with continuous support and bond over entire surface to receive decorative laminate.

2.3.4 Apply decorative laminate backing sheets to balance shrinkage stresses induced by decorative laminate face sheets.

2.3.5 Minimize joints in decorative laminate Work.

.1 Do not install joints in decorative laminate Work less than 2400 mm. o.c.

.2 Locate joints minimum 600 mm from cutouts.

.3 Offset core and decorative laminate facing joints.

2.3.6 Cap exposed edges with chamfered decorative laminate edge banding to match adjacent colour, finish, and pattern.

2.4 FABRICATION – CASEWORK

2.4.1 General:

.1 In accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 10, Premium Grade, and as detailed on Contract Drawings.

.2 Lumber and sheet Products used: In accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 3 and 4.

.3 Shop assemble finish carpentry to accommodate delivery and handling, and ensure passage through building openings.

.4 Coordinate locations of concealed supports and blocking with other parts of Work.

.5 Conceal joints and connections in casework, wherever possible.

.6 Design and construct shelving to support designed live load with deflection not exceeding 1/240 of span. Recess shelf standards, unless noted otherwise. Stagger recessed shelf standards on opposite sides of divider.

.7 Do not exceed maximum 750 mm unsupported span for 19 mm thick shelving. House fixed shelving into gables and divisions.

.8 Fabricate removable plywood access panels, finished to match adjacent surfaces, where necessary for access to concealed wiring or piping.

2.5 EXAMINATION

2.5.1 Verify condition and dimensions of previously installed Work upon which this Section depends.

2.5.2 Report defects to Consultant.

2.5.3 Commencement of Work means acceptance of existing conditions.

2.6 INSTALLATION

2.6.1 General:

.1 Install Work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards and tolerances for architectural woodwork.

.2 Position items of finished carpentry Work accurately, level, rigid, plumb, square, and true, and fasten or anchor securely.

.1 Use appropriate devices in accordance with manufacturer's recommendations.

.2 Scribe and cut as required.

.3 Fit to abutting walls and surfaces.

.4 Fit into recesses and accommodate piping, columns, fixtures, outlets, other projecting, intersecting, and penetrating objects.

.5 Form joints to conceal shrinkage.

2.6.2 Trim and scribe moulds to conceal voids at walls, partitions, and ceilings, leaving maximum 1 mm gap.

2.6.3 Coordinate cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures, in finish carpentry. Round internal corners of cutouts and seal exposed cores.

2.6.4 **Hardware:**

.1 Coordinate wall securement, anchorage, and blocking for finish carpentry items.

.2 Provide hardware for completion of architectural woodwork including:

.1 Adjustable shelf supports.

.2 Cabinet hinges, catches, pulls, drawer accessories, bumpers, drawer slides, closet hanger bars, and similar items.

.3 Install millwork hardware in shop wherever possible.

.4 Install millwork hardware secure, plumb, level, true to line, and in accordance with hardware manufacturer's recommendations.

.5 Cut and fit to millwork for proper installation and operation.

.6 Provide smooth operating units free from binding.

.7 Clean and adjust hardware for proper operation.

.8 Remove and replace damaged, marked, or stained finish carpentry.

.9 Adjust moving and operating parts to function smoothly and correctly.

2.7 CLEAN-UP

2.7.1 Upon completion of installation:

.1 Clean installed items of pencil and ink marks and broom clean area.

.2 Remove adhesives, sealants, and stains in accordance with manufacturer's recommendations.

2.8 PROTECTION

2.8.1 Protect surfaces from damage until Contract completion.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

1.1.1 Labour, Products, equipment, and services necessary for sealants Work in accordance with Contract Documents.

1.2 Related Specification Sections

1.2.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Section 04050 Masonry Procedures.

1.2.2 Refer to other sections for other caulking and sealants

1.3 Code and Regulatory Requirements

1.3.1 All products shall conform to the following standards and regulations:

.1 ASTM International Inc.

.1 ASTM C510-16, Standard Test Method for Staining and Color Change of Single-or Multicomponent Joint Sealants.

.2 ASTM C834-17 – Specification for Latex Sealants

.3 ASTM C919-19, Standard Practice for Use of Sealants in Acoustical Applications.

.4 ASTM C920-18, Standard Specification for Elastomeric Joint Sealants.

.5 ASTM C1021-08(2019), Standard Practice for Laboratories Engaged in Testing of Building Sealants.

.6 ASTM C1184-18e1, Standard Specification for Structural Silicone Sealants.

.7 ASTM C1193-16, Standard Guide for Use of Joint Sealants.

.8 ASTM C1248-18, Standard Test Method for Staining of Porous Substrate by Joint Sealants.

.9 ASTM C1311-14 – Standard Specification for Solvent Release Sealants

.10 ASTM C1330-18, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

.11 ASTM D5893/D5893M-16, Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements.

.2 Canadian General Standards Board (CGSB)

.1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).

.2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.

.3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).

.4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

.5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS)

.1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.6 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 SUBMITTALS

1.4.1 Submit in accordance with Section 01010 – General Requirements.

1.4.2 Shop Drawing(s):

.1 Provide a summary chart listing all submitted products, applicable accessories, proposed application type, and sealant location. Include labels as outlined in this specification.

.2 Sealant type, composition, recommendations or directions for surface preparation, material preparation, and material installation.

1.4.3 Quality Assurance Submittal(s):

.1 Submit pre-installation meeting reports.

.2 Submit field quality control inspection and test report results.

1.5 QUALITY ASSURANCE

1.5.1 Applicator qualifications:

.1 Execute Work by applicators trained and approved by the manufacturer and having 5 years proven experience.

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 Deliver materials to the Site in their original, unopened containers, with Product labels intact.

.1 Product labels: Identify the manufacturer's name, brand name, date of manufacture, grade, and type, application directions, and expiry date or shelf life.

1.6.2 Store flammable materials in safe containers to eliminate fire hazards.

1.6.3 Store materials in accordance with manufacturer’s recommendations.

1.6.4 Maintain materials to prevent deterioration or contamination by foreign materials.

1.6.5 Keep materials dry and free from snow, ice and frost.

1.7 SITE CONDITIONS

1.7.1 Do not proceed with installation of joint sealants when:

.1 Ambient air temperatures are less than 5°C.

.2 Joint substrates and recesses are wet or damp.

.3 Where contaminates which may interfere with adhesion have not been removed from joint substrates.

.4 Site conditions do not meet manufacturer's recommendations.

2 PRODUCTS

2.1 MATERIALS - SEALANTS

2.1.1 Type A:

.1 Single component, non-sag, non-paintable, silicone joint sealant, in accordance with ASTM C920, Type S, Grade NS, minimum Class 25, and non-staining when tested in accordance with ASTM C510 or ASTM C1248.

.2 Colour:

.1 To match adjacent substrate.

.3 Manufacturer's Products:

.1 Dow Corning Contractors Weatherproofing Sealant (CWS) by Dow Corning Corp.

.2 Tremsil 400 by Tremco (Canada) Ltd., division of RPM Company.

.3 Sikasil-N plus by Sika Canada Inc.

.4 GE SWS by Momentive Performance Materials.

.5 Pecora PCS by Pecora Corporation.

2.1.2 Type C:

.1 Anti-microbial (mildew-resistant), non-paintable, silicone joint sealant, in accordance with ASTM C920, Type S, Grade NS, minimum Class 25, and non-staining when tested in accordance with ASTM C510 or ASTM C1248.

.2 Colour:

.1 White.

.3 Manufacturer's Products:

.1 Dow Corning 786 Silicone Sealant by Dow Corning Corp.

.2 Tremsil 200 Silicone Sealant (with Fungicide) by Tremco (Canada) Ltd., division of RPM Company.

.3 Sikasil-GP by Sika Canada Inc.

.4 GE SCS1700 Sanitary by Momentive Performance Materials.

.5 898NST by Pecora Corporation.

2.1.3 Type G:

.1 Silicone joint sealant, in accordance with ASTM C920, Type S, Grade NS, minimum Class 50, and non-staining in accordance with ASTM C510 or ASTM C1248. General purpose type.

.2 Colour:

.1 As selected by Engineer. Allow for more than one colour, for selection from the manufacturer's full colour range, and for custom colours.

.3 Manufacturer's Products:

.1 Dow Corning Contractors Weatherproofing Sealant (CWS) by Dow Corning Corp.

.2 Tremsil 200 Silicone Sealant (without Fungicide) by Tremco (Canada) Ltd., division of RPM Company.

.3 SikaSil WS-295 by Sika Canada Inc.

.4 GE SCS 1000 Contractors by Momentive Performance Materials.

.5 Pecora PCS by Pecora Corporation.

2.2 ACCESSORIES

2.2.1 Primers:

.1 Type recommended by sealant manufacturer for substrate, to promote adhesion and to prevent staining of adjacent surfaces for conditions encountered.

2.2.2 Joint backing:

.1 Extruded, round, solid section, skinned surface, closed cell, soft polyethylene foam gasket stock, compatible with primer and sealant materials.

.2 30% to 50% oversized.

.3 Shore A hardness of 20, tensile strength 140 kPa to 200 kPa, in accordance with ASTM C1330.

.4 Bond breaker type surface.

2.2.3 Bond breaker tape:

.1 Polyethylene tape or other plastic tape recommended by sealant manufacturer to prevent sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint.

.2 Provide self-adhesive, pressure sensitive tape where applicable.

.3 Do not use material impregnated with oil, bitumen, non-curing polymer or similar deleterious material.

2.2.4 Cleaning agents:

.1 Recommended by sealant manufacturer.

.2 Free of oily residues or other substances capable of staining or harming joint substrates and adjacent surfaces.

2.2.5 Masking tape:

.1 Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.

3 EXECUTION

3.1 EXAMINATION

3.1.1 Verify substrate conditions and dimensions of previously installed Work upon which this Section depends.

3.1.2 Report defects to Owner. Commencement of Work means acceptance of existing conditions.

3.2 PREPARATION

3.2.1 Ensure joint sealants, primers, joint backing, bond breaker and cleaning agents are compatible with one another and with joint substrates.

3.2.2 Prior to the commencement of sealant application, arrange for sealant manufacturer's representative to perform a site adhesion test on each substrate type to which each sealant will be applied.

3.2.3 Ensure surface preparation and primer recommendation is compatible with each substrate type.

3.2.4 Ensure masonry and concrete substrates have cured a minimum of 28 Days prior to proceeding with sealant Work.

3.2.5 Clean joints to receive sealants in accordance with the manufacturer's recommendations and as specified in this Section.

3.2.6 Remove foreign matter from joint substrates that could interfere with adhesion of joint sealant, including surface dirt, dust, old joint sealants, oil, grease, waterproofing, water repellents, water, sealers, curing compounds, mortar, loose material, frost, and other substances detrimental to sealant’s performance.

3.2.7 Remove paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer.

3.2.8 Remove lacquer or other protective coatings from metal surfaces, without damaging metal finish, using oil-free solvents.

3.2.9 Remove laitance and form-release agents from concrete.

3.2.10 Remove rust, mill scale, and coatings from ferrous metals.

3.2.11 Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.

.1 Remove loose particles remaining after porous joint cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

.2 Porous joint substrates include, but are not limited to the following:

.1 Cast-in-place concrete.

.2 Unit masonry.

.3 Unglazed surfaces of ceramic tile.

3.2.12 Clean nonporous joint substrate surfaces with cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

.1 Wire brush, grinding, or sand blasting methods may be used on ferrous metals.

.2 Non-porous joint substrates include, but are not limited to the following:

.1 Metal.

.2 Glass.

.3 Porcelain enamel.

.4 Glazed surfaces of ceramic tile.

3.2.13 Joint priming:

.1 Prime joint substrates and apply primer in accordance with sealant manufacturer's recommendations.

.2 Confine primers to areas of joint-sealant bond.

.3 Spillage or migration to adjoining surfaces is not permitted.

3.2.14 Masking tape:

.1 Prior to performing Work, use masking tape of other means to protect adjacent exposed surfaces from damage including, but not limited to smearing and staining.

.2 Remove protection immediately upon completion and clean adjacent, exposed surfaces of any compound deposited upon such surfaces.

3.3 INSTALLATION

3.3.1 Perform Work in accordance with manufacturer’s recommendations for Products and applications indicated, unless more stringent requirements apply.

3.3.2 Use Products without additives or adulteration. Use one manufacturer's Product for each location in accordance with Article 3.7.

3.3.3 Perform Work in accordance with ASTM C1193.

3.3.4 Joint backing:

.1 Install joint backing to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

.1 Depth of recess: Maintain 2:1 joint width to depth ratio, up to a maximum of 13 mm, and not less than 6 mm at centre of joint.

.2 Where recess is less than specified depth, cut back surface of recess to specified depth.

.2 Do not leave gaps between ends of joint backings.

.3 Do not stretch, twist, puncture, or tear joint backings.

.4 Remove absorbent joint backings that have become wet before sealant application, and replace with dry materials.

.5 Support joint backing on horizontal surfaces against vertical movement which might result from pedestrian or vehicular traffic loads.

3.3.5 Install bond breaker tape between sealant and back of joints where joint backing is not used.

3.3.6 Apply sealant immediately after adjoining Work is in condition to receive sealant Work and as follows:

.1 Apply sealant in a continuous bead using gun with correctly sized nozzle. Use sufficient pressure to completely fill joint recess.

.2 Ensure sealant has full, direct uniform contact with, and adhesion to, side surfaces of recess. Superficial pointing with skin bead is not acceptable.

3.3.7 Tooling:

.1 Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified to form smooth, uniform sealant bead, free from ridges, wrinkles, sags, air pockets, embedded impurities, dirt, stains, or other defects.

.2 At recesses in angular surfaces, finish sealant with flat profile, flush with face of material at each side.

.3 At recesses in flush surfaces, finish sealant with concave face and flush with face of material at each side.

3.3.8 Immediately remove excess sealant and droppings.

3.3.9 Ensure sealant bead is uniform in colour.

3.3.10 Cure in accordance with the sealant manufacturer's recommendations. Do not cover up sealants until proper curing has taken place.

3.3.11 Remove defective sealant and reapply.

3.4 FIELD QUALITY CONTROL

3.4.1 Retain an independent inspection and testing agency to conduct field inspection and testing of sealant.

3.4.2 Prepare and submit inspection reports to Owner.

3.5 CLEANING

3.5.1 Clean surfaces adjacent to joints. Immediately remove sealant smears or other soiling resulting from application of sealants.

3.5.2 Remove masking tape and other residue.

3.5.3 Do not mar or damage finishes on materials adjacent to joints. Repair or replace marred or damaged materials.

3.6 PROTECTION

3.6.1 Protect joint sealants:

.1 During and after curing period from contact with contaminating substrates.

.2 From damages by construction operations or other causes.

3.6.2 If damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated sealants immediately.

3.7 Sealant locations schedule

Sealant Locations Schedule	
Type A	**Above grade level, vertical applications**
	- General perimeter caulking (window, doors and frames, louver frames, shelf angles, thresholds, bedding of mullions, precast and tilt-up panels). - Vertical expansion, control, lap joints application. - Painted metals. - Mullion joints. - Interior partition head to structure above. - Interior metal frames joints. - Exterior metal flashing.

- Locations not indicated on Contract Drawings and required sealant for Work.

Type C	Above grade level, horizontal and vertical applications
	- Around sinks, urinals, and bathroom fixtures. - Tiled areas' horizontal and vertical control and expansion joints. - Between vanity and mechanical fixtures/fittings. - Between access panels and tiles. - At corners of tiled walls.

Type G	Above grade level, both vertical and horizontal
	- Glazing but not structural glazing. - Conventional glazing and replacement glazing of glass and plastic. - Aluminum sheet cover for insulation on metal pipes in exterior locations.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 This section describes the materials and procedures for Steel Frame Products installed by trades in relation to building veneers and all openings through walls that will facilitate a door assembly.

1.2 Scope of Work

1.2.1 Work supplied under this section includes Steel Frame Products including frames, transom frames, side light and window assemblies, fire labelled and non-labelled, accessories as indicated on drawings and door schedule.

1.2.2 Steel doors, swing type, flush, glazed or louvered, fire labelled, with or without temperature rise ratings and rated louvers, and non-labelled as indicated on drawings and door schedule

1.3 Related Specifications Sections

1.3.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Section 07840 Fire Stopping

.2 Section 07900 Joint Sealers

.3 Section 08710 Door Hardware

.4 Section 08810 Glazing

.5 Section 09900 Paint

1.4 Code and Regulatory Requirements

1.4.1 All products shall conform to the following standards and regulations:

.1 ANSI - American National Standards Institute

.1 ANSI/DHI A115 - Specifications for Hardware Preparations in Standard Steel Doors and Frames.

.2 ANSI/DHI A115.IG - Installation Guide for Doors and Hardware.

.2 American Society for Testing and Materials (ASTM):

.1 ASTM A568/A568M-19 – General Requirements for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled

.3 Master Painters Institute (MPI):

.1 MPI #18 – Primer, Zinc Rich, Organic.

.4 Canadian Standards Association (CSA):

.1 CAN/CSA A440.4-19 – Window, Door and Skylight Installation

.2 CAN/CSA G40.20-13/G40.21-13 (R2018) - Structural Quality Steels

.3 CSA W59-18 - Welded Steel Construction Metal Arc Welding

.4 CAN/CSA A440.2-19/A440.3-19 – Fenestration Energy Performance / User Guide to CSA A440.2-09, Fenestration Energy Performance

.5 Canadian Steel Door Manufacturers' Association (CSDMA):

.1 CSDMA - Specifications for Commercial Steel Doors and Frames, 2006

.2 CSDMA - Recommended Selection and Usage Guide for Commercial Steel Doors, 2009

.6 NAAMM/HMMA - Hollow Metal Manufacturers Association

.1 HMMA 840 - Guide Specification for Installation and Storage of Hollow Metal Doors and Frames

.2 HMMA 820 TN01- Grouting Hollow Metal Frames

.3 HMMA 820 TN03 - Guidelines for Glazing of Hollow Metal Transom, Sidelight and Windows

1.5 Quality Assurance

1.5.1 Metal door and frame manufacturer shall be a member in good standing of the Canadian Steel Door and Frame Manufacturers' Association.

1.5.2 Supply material manufactured to standards of Canadian Steel Door and Frame Manufacturer's Association "Canadian Manufacturing Standards for Steel Doors and Frames" – 1/78.

1.5.3 Defective materials or quality of work whenever found at any time prior to final acceptance of the work, shall be rejected regardless of previous inspection. Inspection will not relieve responsibility, but is a precaution against oversight and error. Remove and replace defective materials, and the work of other trades affected by this replacement, at no additional cost.

1.6 Submittals

1.6.1 General: Complete submittals in accordance with Specification Section 01010 – General Requirements.

1.6.2 Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods.

1.6.3 Samples: Submit in accordance with Section 01010 – General Requirements.

1.6.4 Shop drawings: Submit in accordance with Section 01010 – General Requirements.

.1 Details of each opening, showing elevations, glazing, louvered, frame profiles and identifying location of different finishes, if any.

.2 Indicate each type of door and frame, material, steel core thickness, mortises, reinforcements, stops, location of anchors, location of exposed fasteners, arrangement of hardware and fire rating.

.3 Include schedule identifying each unit with door marks and numbers relating to numbering on drawings and door schedule.

1.6.5 Colour: to be selected by Engineer during shop drawings.

1.1.1 Closeout Submittals:

.1 Submit in accordance with Section 01010 – General Requirements.

.2 Provide final certified shop drawings for incorporation into manual.

1.6.6 Warranty: Submit manufacturer's standard warranty.

1.7 Delivery Storage and Handling

1.7.1 Shipping and Delivery

.1 Doors and frames shall be shipped pre-hung in containers such as to prevent damage to finish.

.2 Doors and frames shall be delivered by common carrier with shipping containers intact and door manufacturer's name clearly identifiable. Manufacturers must be notified if shipping containers arrive damaged. Acceptance of damaged shipment may void warranty.

.3 Containers shall be labelled clearly identifying opening door mark.

.4 Co-ordinate delivery schedule of materials with the suppliers.

1.7.2 Handling and Storage

.1 Storage of Doors

.1 Doors shall be stored vertically in a dry area, under proper cover. Place the units on at least 100 mm high wood sills on floors in a manner that will prevent rust and damage. Avoid storage in non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. If the door becomes wet, or moisture appears, remove protective wrapping immediately. Provide a 100 mm space between the doors to permit air circulation. Proper storage is required to meet the requirements of ANSI/SDI A250.10 and HMMA 840.

.2 Storage of Frames

.1 Building Contractor shall store frames in an upright position with heads uppermost under cover on 100 mm wood sills on floors in a manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters, which create a humidity chamber and promote rusting. Store assembled frames in a vertical position, five

units maximum in a stack. Provide a 50 mm space between frames to permit air circulation.

.2 Provide proper storage for doors and frames, to maintain the quality and integrity of the factory applied paint and maintain the requirements of ANSI/SDI A250.10 and HMMA 840.

.3 Building Contractor shall sand, touch up and clean prime painted surfaces prior to finish painting in accordance with the manufacturer's instructions.

1.8 Warranty

1.8.1 In addition to the contractual warranty terms, the manufacturer shall provide a lifetime warranty for the door and frame against failure due to corrosion, and a 15-year warranty.

.1 The warranty shall cover: Defects in material and workmanship, delaminating, core expansion and warping.

2 PRODUCTS

2.1 Materials

2.1.1 Only steel doors and frames and product manufactured by CSDMA members are eligible for use on this project.

2.1.2 Sheet steel for:

.1 Interior doors: commercial grade steel to ASTM A568, Class 1, hot-dip galvanized and coating designation, ZF75 (A25), to ASTM A653/A653M. Minimum base steel thickness shall be as per Table 1 / CSDFMA.

.2 Interior Frames: commercial grade steel, W25 wiped zinc finish or to ASTM A525M, Zinc coating designation to Z275, full galvanized sheet steel.

.3 Exposed fasteners:

.1 Stainless steel Type 304 to ASTM A240.

.4 Other components: SDI, Specification for Commercial Steel Doors and Frames, Thickness of Steel for Component Parts, commercial grade steel to ASTM A653/A653M, ZF75, minimum base steel thickness to SDI - Thickness of Steel for Component Parts.

2.1.3 Door Faces Sheet Metal:

.1 For interior doors 1.274 mm (18 Gauge) base thickness, or as required for fire resistance rating.

2.1.4 Reinforcement channel: to CAN/CSA G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF75.

2.1.5 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 Door Core Materials

2.2.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m³ minimum sanded to required thickness.

2.2.2 Stiffened: face sheets honeycomb], and uninsulated core.

2.3 Adhesives

2.3.1 Select adhesives that are accompanied by:

.1 detailed instructions for proper application, so as to minimize health concerns and maximize performance; and

.2 information describing proper disposal methods for containers.

2.3.2 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

2.3.3 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.3.4 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 Primers

2.4.1 For touch-up prime rust inhibiting primer to MPI #18.

.1 Maximum VOC limit [50] g/L [to GC-03].

2.5 Paint

2.5.1 Steel doors and frames shall be field painted in accordance with Section 09900 – Paint. Finish shall be free of scratches or other blemishes.

2.6 Accessories

2.6.1 Door silencers: single stud rubber/neoprene type.

2.6.2 Door Caps:

.1 Interior Doors top and bottom caps: Rigid polyvinyl chloride extrusion conforming to ASTM D4726

2.6.3 Specialty trims: "J" shaped electrogalvanized steel trims, to cover cut ends of concrete blocks where new doors cut into existing walls. Trims shall be custom shaped and sized to suit door and wall conditions.

2.6.4 Metallic paste filler: to manufacturer’s standard.

2.6.5 Floor Anchors, Channel Spreaders and Wall Anchors: Minimum l.6 mm (16 Gauge) base thickness steel.

2.6.6 Guard Boxes: Minimum 0.8 mm (21 Gauge) base thickness steel.

2.6.7 Corrugated Steel Frame Tee Anchors: Thickness and design approved by ULC.

2.6.8 Door bottom seal: to Section 08710 - Door Hardware.

2.6.9 Sealant: to Section 07900 – Joint Sealants.

2.6.10 Glazing: 08810 – Glazing.

2.6.11 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fasteners to frame sections with counter-sunk oval head sheet metal screws.

2.6.12 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersink stainless steel screws.

.2 Glazing Stops Non Fire Rated Doors and Frames: Minimum 0.9 mm (20 Gauge) base thickness sheet steel with zinc finish as per door, tamperproof on exterior doors, screw fixed on interior doors.

2.6.13 Where specified in the contract documents, provide doors with louvers.

2.7 Frames Fabrication General

2.7.1 Fabricate frames in accordance with CSDMA specifications.

2.7.2 Fabricate frames to profiles and maximum face sizes as indicated.

2.7.3 Interior frames: 1.6 mm (16 Gauge) welded type construction.

2.7.4 Blank, reinforce, drill and tap frames for mortised, templated hardware [and electronic hardware] using templates provided by finish hardware supplier. Reinforce frames from surface mounted hardware.

2.7.5 Protect mortised cut-outs with steel guard boxes.

2.7.6 Prepare frame for door silencers, three (3) for single door, two (2) at head for double door.

2.7.7 Manufacturer’s nameplates on frames and screens shall be located on hinge side of frame and leaf concealed from view.

2.7.8 Conceal fastenings, except where exposed fastenings are indicated.

2.7.9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

2.7.10 Prepare frames for electrical devices, including operators and security devices.

2.7.11 Reinforce head of frames wider than 1200 mm.

2.8 Frame Anchorage

2.8.1 Provide appropriate anchorage to floor and wall construction.

2.8.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

2.8.3 Provide 1.5 mm angle clips, with two holes for floor anchorage welded to frame.

2.8.4 Provide two (2) anchors for rebate opening heights up to 1520 mm and one (1) additional anchor for each additional 760 mm of height or fraction thereof.

2.8.5 Provide three (3) jamb anchors per jamb for frames in masonry up to 2286 mm high and one (1) additional for each 600 mm over 2886 mm high for doors up to 900 mm wide.

2.8.6 Provide five (5) jamb anchors per jamb for frames in masonry up to 2286 mm high and one (1) additional for each 400 mm over 2286 mm for doors over 900 mm wide, unless noted otherwise.

2.8.7 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.8.8 Provide frames with manufacturer's proprietary anchorage system suitable to secure frame rigidly to wall assembly. Secure frames set into previously constructed concrete or masonry openings by countersunk expansion bolts at same centres as for adjustable Tee anchors. Reinforce frame at fastening location to prevent indentation of frame by fastening device.

2.9 Frames: Welded Type

2.9.1 Welded in accordance with CSA W59.

2.9.2 Accurately mitre or mechanically join frame product and secure weld on inside of profile.

2.9.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

2.9.4 Grind welded joints and corners to a flat plane; fill with metallic paste; and sand to uniform smooth finish.

2.9.5 Securely attach floor anchors to inside of each jamb profile.

2.9.6 Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.9.7 Securely attach lead to inside of frame profile from return to jamb soffit, inclusive on door side of frame only.

2.9.8 Electrical Requirements:

.1 General: Coordination all electrical requirements for doors and frames. Make provisions for installation of electrical items arranged so that wiring can be readily removed and replaced.

.1 Provide cutouts and reinforcements required for metal door frame to accept electric components.

.2 Frame with Electrical Hinges: Weld UL listed grout guard cover box welded over center hinge reinforcing. Top or bottom hinge locations are not permitted. Contractor to reference 3.01 .E, for continuous hinges.

.3 Provide cutouts and reinforcements required to accept security system components.

.4 Refer to 08710 for electrified hardware items.

2.10 Door Fabrication General

2.10.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

2.10.2 Interior doors: honeycomb construction.

2.10.3 Fabricate doors with longitudinal edges welded.

.1 Seams: grind welded joints to a flat plane; fill with metallic paste filler; and sand to a uniform smooth finish.

2.10.4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

2.10.5 Factory prepare holes 12.7 mm diameter and larger, except mounting and through-bolt holes, on site, at time of hardware installation.

2.10.6 Reinforce doors where required, for surface mounted hardware. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

2.10.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

2.11 Hollow Steel Construction

2.11.1 Form each face sheet for interior doors from 1.6 mm steel.

2.11.2 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

2.11.3 Hardware Reinforcing: 1.6 mm minimum.

2.11.4 Floor anchors: 1.6 mm minimum.

2.11.5 Channel spreaders: 1.2 mm minimum.

2.11.6 Guard boxes: 0.9 mm minimum.

2.11.7 Hinge reinforcing: 5.2 mm minimum.

2.11.8 Glass moulding: 0.9 mm minimum.

2.11.9 Jamb anchors: 1.6 mm minimum.

2.11.10 Top, bottom, door and channel: 1.2 mm minimum.

2.11.11 Frame members: 1.6 mm minimum.

2.11.12 Fill voids between stiffeners of interior doors with honeycomb core.

2.12 Acceptable products:

.1 D Series, manufactured by S.W. Fleming

.2 LS Series, manufactured by Daybar.

.3 TRR doors, manufactured by Metal Door Ltd.

.4 Flood doors, manufactured by Savannah Trims, Inc. 150

3 EXECUTION

3.1 Manufacturer's Instructions

3.1.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Examination

3.2.1 All doors and frames shall be verified to comply with approved production drawings and meet the requirements for type, size, location and swing.

3.2.2 Notify the Engineer immediately of conditions that may adversely affect door installation. Correct conditions prior to installation

3.3 Installation General

3.3.1 Install doors and frames to CSDMA Installation Guide.

3.4 Frame Installation

3.4.1 Isolate from each other dissimilar metals and metal from concrete or masonry to prevent electrolysis.

3.4.2 Set frames plumb, square, level and at correct elevation.

3.4.3 Secure anchorages and connections to adjacent construction.

3.4.4 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

3.4.5 Make allowances for deflection of structures to ensure structural loads are not transmitted to frames.

3.4.6 Apply sealant to perimeter of frames between frame and adjacent material in accordance with section 7900.

3.4.7 Install trims to cover cut concrete block ends in walls where new doors installed in existing block walls. Do not impede installation of finish floor and base to make good materials to match typical existing condition.

3.5 Door Installation

3.5.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08710 - Door Hardware.

3.5.2 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association

3.5.3 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:

.1 Hinge side: 1.0 mm.

.2 Latch side and head: 1.5 mm.

.3 Finished floor, top of thresholds: 13 mm.

3.5.4 Adjust operable parts for correct function.

3.5.5 Install louvres.

3.6 Finish Repairs

3.6.1 Touch-up with primer finishes damaged during installation.

3.6.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.7 Glazing

3.7.1 Install glazing for doors and frames in accordance with Section 08810 – Insulated Glass Units and Section 08810 - Glazing.

3.8 Cleaning

3.8.1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01740 Cleaning.

.1 Leave work area clean at end of each day.

3.8.2 Final cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment in accordance with Section 01740 – Cleaning.

3.8.3 Waste Management:

.1 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

3.8.4 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 To establish the technical, functional, jurisdictional, or regulatory and quality requirements for the implementation of door hardware installed by trades including work in relation to doors and frames. These technical specifications define the supply and installation of the door hardware and identify approved manufacturers and models.

.1 Supply of finish hardware for all pedestrian doors, complete with all fixing and anchoring devices.

.2 Supply templates and information necessary for installation of hardware.

1.2 Scope of Work

1.2.1 Supply all labour, material, equipment and supervision necessary to complete the installation of door hardware.

1.3 Related Work

1.3.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Section 07900 Joint Sealants

.2 Section 08110 Steel Doors and Frames

1.4 Code and Regulatory Requirements

1.4.1 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturer's Association.

1.4.2 American National Standards Institute (ANSI):

.1 ANSI/BHMA A156.1-2016 – Butts and Hinges

.2 ANSI/BHMA A156.2-2017 - Bored and Pre-assembled Locks and Latches

.3 ANSI/BHMA A156.3-2014 - Exit Devices

.4 ANSI/BHMA A156.4-2019 - Door Controls (Closers)

.5 ANSI/BHMA A156.36-2016 – Auxiliary Locks

.6 ANSI/BHMA A156.6-2015 - Architectural Door Trim

.7 ANSI/BHMA A156.7-2016 - Template Hinge Dimensions

.8 ANSI/BHMA A156.8-2015 - Door Controls – Overhead Stops and Holders

.9 ANSI/BHMA A156.10-2017 - Power Operated Pedestrian Doors.

.10 ANSI/BHMA A156.12-2018 - Interconnected Locks and Latches.

.11 ANSI/BHMA A156.13-2017 - Mortise Locks and Latches

.12 ANSI/BHMA A156.14-2019 - Sliding and Folding Door Hardware.

.13 ANSI/BHMA A156.15-2015 - Closer/Holder Release Device

.14 ANSI/BHMA A156.16-2018 - Auxiliary Hardware

.15 ANSI/BHMA A156.17-2014 - Self-closing Hinges and Pivots.

.16 ANSI/BHMA A156.18-2016 - Materials and Finishes

.17 ANSI/BHMA A156.19-2019 – Power Assist and Low Energy Power Operated Doors

.18 ANSI/BHMA A156.20-2017 - Strap and Tee Hinges and Hasps.

.19 ANSI/BHMA A156.21-2019 - Thresholds.

.20 ANSI/BMHA A156.22-2017 - Door Gasketing and Edge Seal Systems.

1.4.3 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA)

.1 CSDFMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.5 Quality Assurance

1.5.1 In addition to the requirements of 01010 – General Requirements, the following measures are required:

.1 Regulatory Requirements:

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 Submittals

1.6.1 General:

.1 Complete submittals in accordance with 01010 – General Requirements

1.6.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish, limitations and order code.

1.6.3 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

1.6.4 Hardware List:

.1 Submit contract hardware list.

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

1.6.5 Test Reports:

.1 Certified test reports showing compliance with specified performance characteristics and physical properties.

1.6.6 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.6.7 Closeout Submittals:

.1 Submit in accordance with Section 01010 – General Requirements.

.2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.6.8 Warranty:

.1 Submit manufacturer’s standard warranty.

1.7 Maintenance Materials

1.7.1 Extra Stock Materials:

.1 Supply maintenance materials in accordance with Section 01010 – General Requirements.

.2 Tools:

.1 Supply 2 sets of wrenches for door closers, locksets and fire exit hardware.

1.8 Delivery and Storage

1.8.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.8.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.8.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

1.8.4 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect door hardware from nicks, scratches, and blemishes.

.3 Protect prefinished surfaces with wrapping and strippable coating.

.4 Replace defective or damaged materials with new.

.5 Clearly label cartons and packages designating contents and locations for which each item is intended. Indicate on packing memos carton in which each item is packed

2 PRODUCTS

2.1 Approved Manufacturers

2.1.1 Allegion, 11819 N. Pennsylvania St., Carmel, Indiana, United States 46032, Phone: (317) 810-3700, URL: www.allegion.com.

2.1.2 ASSA ABLOY Entrance Systems, 4020B Sladeview Crescent. Unit 3&4, Toronto, Ontario, Canada, L5L 6B1, Phone: (905) 608-9242, email: service.ca.aaes@assaabloy.com, URL: http://www.sargentlock.com

2.1.3 Best, 6161 East 75th Street, Indianapolis, IN, USA 46250, Phone: (855) 365-2407, e-mail, URL: www.bestaccess.com.

2.1.4 Canaropa, 1866 Kipling Avenue, Rexdale, Ontario, Canada M9W 4J1, Phone: (416) 241-4445, e-mail: salestor@canaropa.com, URL www.canaropa.com.

2.1.5 Door Security Solutions of Canada, 160 Four Valley Drive, Vaughan, Ontario, Canada V4K 4T9, Phone: (866)-243-9816, URL: www.pemko.com

2.1.6 Gallery Specialty, 676 Petrolia Road, Toronto, Ontario, Canada M3J 2V2, Phone: (416) 667-9593, e-mail: info@galleryspecialty.com, URL: www.galleryspecialty.com.

2.1.7 Hager, P.O. Box 124, Kitchener, Ontario, Canada N2C 1K1, Phone: (314) 772-4400, URL: www.hagerco.com.

2.1.8 Horton Automatics of Ontario, 1150 Blai Road, Unit 1N, Burlington, Ontario, Canada L7M 3T4, Phone: (905) 331-7491, email: brian@hortonontario.com, URL: www.hortonontario.com

2.1.9 K.N. Crowder MFG Inc., 1220 Burloak Drive, Burlington, Ontario, Canada L7L 6B3, Phone: (905) 315-9788, e-mail: paiken@dmbsales.ca, URL: www.kncrowder.com.

2.1.10 McKinney Products Company, 225 Episcopal Road, Berlin, Connecticut, USA 06037, Phone: (800)-888-2772, email: ed.soloski@assaabloy.com, URL: http://www.mckinneyhinge.com/en/site/mckinney-hinge/

2.1.11 Sargent Manufacturing Company, 100 Sargent Drive, New Haven, Connecticut, United States 06536-0915, Phone: (800) 727-5477, e-mail: webmaster@sargentlock.com URL: www.sargentlock.com.

2.1.12 Standard Metal Hardware Mfg Ltd., 29 Rangemore Road, Toronto, Ontario, Canada M8Z 5H8, Phone: (416)-744-1510, URL: www.smhardware.com

2.1.13 Stanley Hardware, 711 Ontario St., Cobourg, Ontario, Canada K9A 4L3, Phone: (800)-667-7466, email: HDW-NAT-CustomerService-CBG@spectrumhhi.com, URL: http://ca.stanleyhardware.com/

2.1.14 Medeco Security Locks, 3625 Alleghany Drive, Salem, USA VA 24153, Phone: (800)-839-3157, email: customerservice.medeco@assaabloy.com , ULR: https://www.medeco.com/en/m/en/

2.2 Hardware Items

2.2.1 Only door locksets and latches listed on CGSB Qualified Products List are acceptable for use on this project.

2.2.2 Use one (1) manufacturer's products only for all similar items.

2.3 Door Hardware

2.3.1 Provide new materials in perfect condition, free from defects impairing durability or appearance. In every case hardware shall be of high quality design, and finish suitable for the purpose for which it is intended.

2.3.2 Locks and latches

.1 Bored and preassembled locks and latches: to ANSI/BHMA A156.2.

.2 Interconnected locks and latches: to ANSI/BHMA A156.12.

.3 Mortise locks and latches: to ANSI/BHMA A156.13.

.4 Normal strikes: box type, lip projection not beyond jamb.

.5 Cylinders: key into keying system as outlined in section 2.6 Keying.

.6 Interior Operators:

.1 Finished to 626 (US26D) Satin Chromium plated.

.2 Acceptable product: Entrance Locksets - (I10)

.1 Schlage # ND50PD X RHO X ASA X 626

.2 Best 9K37AB15C STK 626

.3 Sargent 28-10G05 LL 26D

.2 Privacy - (I12)

.1 Schlage # ND40S X RHO X ASA X 626

.2 Best 9K30L15C STK 626

.3 Sargent 28-10U65 LL 26D

2.3.3 Butts and Hinges:

.1 As listed in drawing Door Schedule.

.1 Butts and hinges: to ANSI/BHMA A156.1.

.2 Provide one (1) hinge for every 760 mm of door height and one (1) extra hinge for doors over 900 mm wide to 1200 mm width.

.3 Acceptable product:

.1 Hinges on locked doors: (H1)

.1 Hager BB1191 X 114 X 101 X NRP X 630

.2 Stanley FBB191 X 114 X 101 NRP X 32D

.3 McKinney TA2314 X 114 X 101 NRP X 32D

.2 Standard Hinges: (H2)

.1 Hager BB1279 X 114 X 101 X 626

.2 Stanley FBB179 X 114 X 101 X 26D

.3 McKinney TA2714 X 114 X 101 X 26D

2.3.4 Auxiliary Hardware: to ANSI/BHMA A156.16

.1 As listed in Hardware Requirements Schedule.

.2 Finished to 630 (US32D) Satin stainless steel.

.1 Door Stop

.1 Floor Stops - (DS1)

.1	Hager	#259F & 259H.
.2	Standard Metal	S108 & S107
.3	IVES	FS17

2.3.5 Electric Door Strikes

.1 Provide electric door strikes for all doors scheduled for security systems in door schedule and coordinate with Division 16 to provide all power and control components for a complete operational system.

.2 The electric strikes shall be CSA or ULC listed, having a holding strength of greater than 2,000 lbs. Latch bolts, switches and strike locked switches shall be monitored. Coordinate exact unit with door and frame style and configuration as required.

.3 Provide the electric strike power supplies, consisting of a CSA or ULC listed transformer with 120/347VAC input and regulated and filtered 24VDC output. The power supply shall have individual zoned outputs to each lock or set of locks. The power supply shall be complete with manual reset capability and low voltage ground fault circuitry. The power supply shall be rated to deliver 150% of the actual connected load.

.4 The new door strike make and model shall match existing. Prior to ordering, the Contractor is responsible for verification of the existing door strike make and model and determining the quantity of door strikes based on architectural drawing set.

.5 The new door strikes will replace existing and be connected to the same source as existing door strikes. Contractor shall coordinate with Division 16 to re-use existing wires and conduits for old strikes and re-connecting new strikes to existing wires and conduits.

2.3.6 Electric Door Operator:

.1 Barrier Free Door Operator: to CSA B651-12.

.2 Power-operated pedestrian doors: to ANSI/BHMA A156.10.

.3 Power assist and low energy power operated doors: to ANSI/BHMA A156.19.

.4 Heavy duty electric door closer.

.5 Mount operator on interior side of door.

.6 Actuation of operators by push button (PB1) with handicap symbol on black face with red button (Horton C521-2 Series or approved equal).

.7 Supply 120VAC line voltage to door operator from LP-MCC3, CCT #36 as shown on the contract documents.

.8 Supply low voltage wiring to each push button station in ½" conduit.

.9 Mount control box in location as directed by consultant.

.1 Swing doors - (DPO1)

.1	Horton Operators	Series 7100
.2	ASSA ABLOY Entrance Systems	SW200i
.3	Approved equal	

2.4 Fastenings

2.4.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

2.4.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

2.4.3 Exposed fastening devices to match finish of hardware.

2.4.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices and install so pull can be secured through door from reserve side. Install push plate to cover fasteners.

2.4.5 Use fasteners compatible with material through which they pass.

2.5 Keying

2.5.1 Lay out the keying system for the building in consultation with the Engineer and Client. Keying system shall include locks as required.

2.5.2 Keying chart and related explanatory data shall be prepared and submitted to the Engineer for approval, and lock work shall not be commenced until written confirmation of keying arrangements is received from the Engineer.

2.5.3 Provide keys in duplicate for every lock in this contract.

2.5.4 Supply 3 master keys for each master key or grand master key group.

2.5.5 Stamp keying code numbers on keys and cylinders.

2.5.6 Supply construction cores.

2.5.7 Hand over permanent cores and keys to.

3 EXECUTION

3.1 Installation Instructions

3.1.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.1.2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

3.1.3 Supply manufacturer’s instructions for proper installation of each hardware component.

3.1.4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).

3.1.5 Where door stop contacts door pulls, mount stop to strike bottom of pull.

3.1.6 Install key control cabinet.

3.1.7 Use only manufacturer's supplied fasteners.

.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.1.8 Remove construction locks when directed by the Engineer.

.1 Install permanent cores and ensure locks operate correctly.

3.2 Adjusting

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3 Cleaning

3.3.1 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.3 Remove protective material from hardware items where present.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01740 - Cleaning.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01740 - Cleaning.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 Demonstration

3.4.1 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.1 Proper care, cleaning, and general maintenance of projects complete hardware.

.2 Description, use, handling, and storage of keys.

.3 Use application and storage of wrenches for door closers, locksets and fire exit hardware.

.2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 Protection

3.5.1 Protect installed products and components from damage during construction.

3.5.2 Repair damage to adjacent materials caused by door hardware installation.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 This section describes the materials and procedures for the installation of insulated glass units within building assemblies by all trades including work in relation to window, door, curtain wall, entrance, and ribbon assemblies.

1.2 Related Sections

1.2.1 Drawings, General and Supplementary Conditions of the Contract, Division 1 and the following specifications sections, apply to this section:

.1 Section 07900 Joint Sealants.

.2 Section 08110 Steel Doors and Frames.

1.3 References

1.3.1 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-12.1-2017 – Safety Glazing

1.3.2 American Society for Testing and Materials (ASTM):

.1 ASTM C542-05(2017) - Standard Specification for Lock-Strip Gaskets.

.2 ASTM E1300-16 – Standard Practice for Determining Load Resistance of Glass in Buildings

.3 ASTM F1233-08(2019) - Standard Test Method for Security Glazing Materials and Systems.

1.3.3 ANSI Z97.1 - Safety Glazing Materials Used in Buildings

1.3.4 CPSC 16 CFR1201 (Cat. I and II) – Safety Standard for Architectural Glazing Materials

1.3.5 International Energy Conservation Code (IECC)

1.3.6 National Fenestration Rating Council (NFRC)

1.3.7 Insulating Glass Manufacturers Association of Canada (IGMAC) – Glazing Guidelines

1.3.8 Environmental Choice Program (ECP)

.1 CCD-045-95(R2005), Sealants and Caulking Compounds.

1.3.9 Glass Association of North America (GANA):

.1 GANA Glazing Manual

.2 GANA Sealant Manual

1.4 Coordination

.1 Pre-Installation Meetings:

.1 Convene pre-installation meeting 1 week prior to beginning work of this Section and on-site installation, with Contractor's Representative and the Engineer in accordance with Section 01300 – Administrative Requirements to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's written installation instructions and warranty requirements.

1.5 Quality Assurance

1.5.1 Comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this section or referenced standards.

.1 GANA Publications

.2 AAMA Publications

.3 IGMA/IGMAC Publications

1.5.2 Safety glass products are to comply with the testing requirements of CAN/CGSB-12.1-M, Class A for Laminated Glass and Class B for Tempered Glass.

.1 Provide safety glass permanently marked with the company name or logo and CAN/CGSB-12.1 if the product meet Class A and Class B, or mark as CAN/CGSB 12.1 if the product meets the requirements of Class B only.

1.5.3 Single-source fabrication responsibility: All glass fabricated for each type shall be processed and supplied by a single fabricator.

1.5.4 Defective materials or quality of work whenever found at any time prior to final acceptance of the work, shall be rejected regardless of previous inspection. Inspection will not relieve responsibility, but is a precaution against oversight and error. Remove and replace defective materials, and the work of other trades affected by this replacement, at no additional cost.

1.6 Submittals

1.6.1 Complete submittals in accordance with Specification Section 01010 – General Requirements.

1.6.2 Product Data:

.1 Submit manufacturer's product data sheet and glazing instructions.

.2 Glazing Contractor shall obtain compatibility and adhesion test reports from sealant manufacturer, indicating that glazing materials were tested for compatibility and adhesion with glazing sealant, as well as other glazing materials including insulating units.

.3 Submit glass manufacturers thermal stress analysis for insulating glass.

.4 Glazing Contractor shall provide test reports showing that the glass meets the requirements of any security test reports specified on drawings.

1.6.3 Samples:

.1 Submit 300 mm square samples of each type of glass.

1.6.4 Certificates:

.1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6.5 Closeout Submittals

.1 Submit operation and maintenance data for glazing for incorporation into manual.

1.7 Delivery, Storage and Handling

1.7.1 Comply with manufacturer's instructions for receiving, handling, storing and protecting glass and glazing materials.

1.7.2 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

1.7.3 Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1.7.4 Exercise exceptional care to prevent edge damage to glass, and damage/deterioration to coating on glass.

1.8 Environmental and Site Conditions

1.8.1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.

1.8.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds

1.8.3 Field Measurements: When construction schedule permits, verify field measurements with drawing dimensions prior to fabrication of glass products.

1.9 Warranty

1.9.1 Provide a written 10-year limited warranty from date of installation for glazing from deteriorating in accordance with General Conditions of the Contract. Warranty covers deterioration due to normal conditions of use and not to handling, installing, protecting and maintaining practices contrary to glass manufacturer's published instructions. Promptly correct any defects or deficiencies which become apparent within warranty period to satisfaction of the Engineer and at no expense to the owner.

2 PRODUCTS

2.1 Design Criteria

2.1.1 Performance Characteristics:

.1 Centre-of-Glass: Performance values that take only the centre portion of a glass makeup into account and not the framing members. Customarily found in Manufactures Sweets catalogs and used in 08800 architectural specifications.

.2 Glass thermal and optical performance properties shall be based on data and calculations from the current LBNL WINDOW 5.2 computer program.

2.1.2 Design Requirements

.1 Size glass to withstand dead loads and positive and negative live loads to ASTM E330.

.2 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.

.3 Provide glazing systems capable of withstanding normal thermal movements, and impact loads, without failure, including loss due to defective manufacture, fabrication and installation; deterioration of glazing materials and other defects in construction.

.4 Provide glass products in the thicknesses and strengths (annealed or heat-treated) required to meet or exceed the following criteria based on project loads and in-service conditions per ASTM E1300.

.1 Minimum thickness of annealed or heat-treated glass products is selected, so the worst-case probability of failure does not exceed the following:

.1 Eight (8) breaks per 1000 for glass installed vertically or not over 15 degrees from the vertical plane and under wind action.

.2 One (1) break per 1000 for glass installed 15 degrees or more from the vertical plane and under action of wind and/or snow.

2.1.3 Canadian Requirements:

.1 Tempered float glass shall comply with CAN/CGSB-12.1-, Type 2, Tempered Glass, Class B-Float Glass.

2.1.4 Glass shall be annealed, heat-strengthened or tempered as required by codes, or as required to meet thermal stress and wind loads.

2.1.5 Glass heat-treated by horizontal (roller hearth) process with inherent roller wave distortion parallel to the bottom edge of the glass as installed when specified.

2.1.6 Glazing Products

.1 Select appropriate glazing sealants, tapes, gaskets and other glazing materials of proven compatibility with other materials that they contact. These include glass products, insulating glass unit seals and glazing channel substrates under installation and service conditions, as demonstrated by testing and field experience.

2.2 Approved Manufacturers

2.2.1 Manufacturer is used in this section to refer to a firm that produces primary glass or fabricated glass as defined in the referenced standards.

.1 Oldcastle Glass, 275 Brittanai Rd. E., Mississauga, Ontario, Canada M9W 5S2, Phone: (416) 745-4222, or (800) 561-9854, URL: www.oldcastlebe.com.

.2 Guardian Industries, 2300 Harmon Rd., Auburn Hills, Michigan, USA 48326-1714, Phone: 1-866-482-7374, URL: www.guardian.com.

.3 PPG Industries, 400 Guys Run Rd, Pa, USA 15024, Phone: (888) 774-4332, e-mail: sheffo@ppg.com, URL: www.ppgideascapes.com.

.4 Pilkington, 51 N 3rd Street #179, Philadelphia, Pennsylvania, USA 19106, Phone: (267) 414 4897, e-mail: laura.mecklenborg@nsg.com, URL: www.pilkington.com.

.5 Technical Glass Products (Allegion Canada, Inc.) 1076 Lakeshore Rd East, Mississauga, ON, Canada L5E 1E4, Phone: (416) 312-1059 or (800) 426-0279, ULR: www.fireglass.com.

2.3 Materials

2.3.1 Float Glass: CAN/CGSB-12.3-M, glazing quality, thicknesses shall be:

.1 3 mm for sizes up to 110 United inches.

.2 4 mm for sizes up to 130 United inches.

.3 6 mm for sizes up to 4.20 s.m.

.4 Draw lines shall run horizontally.

2.3.2 Fire-rate, impact Safety Rated Glass: CAN/ULC-S104, CAN/ULC-S106, impact safety rated meets ANSI Z97.1 and CPSC 16 CFR1201 (Cat. I and II), 5mm thick. Select proper products from manufactures

.1 Equivalent product by other listed manufactures.

2.3.3 (SG) Safety Glass: CAN/CGSB-12.1-M, as indicated in specification.

.1 Performance Characteristics (Centre of Glass)

.1 Visible Transmittance: 67%

.2 Visible Reflectance: 8%

.3 Winter U-factor (U-value): 0.24

.4 Shading Coefficient (SC): 0.29

.5 Solar Heat Gain Coefficient (SHGC): 0.27

.2 Tempered glass: clear, 6 mm thick tempered glass to CAN/CGSB 12.1 M79 Glass, Safety, Tempered or Laminated.

.3 Sheet glass: unless otherwise indicated, 6 mm thick minimum clear, sheet glass to CAN/CGSB 12.2 M76 Glass, Sheet, Flat, Clear.

.1 PG/Industrial Control Development Inc, (ICD) Opaci-Coat-300.

.2 Equivalent product by other listed manufacturers.

2.4 ACCESSORIES

2.4.1 Glazing Compound: CAN/CGSB-19.2-M. Non hardening modified oil type. Colour to match adjacent surfaces unless indicated otherwise.

2.4.2 Sealants: in accordance with Section 07920 - Joint Sealants.

.1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.

.1 VOC limit: 5 % maximum by weight to CCD-045.

.2 Ensure sealant does not contain chemical restrictions to CCD-045.

.2 Sealant Compound: 1 component type, elastomeric chemical curing, CAN/CGSB 19.13 M, Class G 2 25 A N. Colour to match adjacent surfaces unless indicated otherwise.

.3 Sealant Compound: CAN/CGSB-19.24-M, multi-component chemical curing, Type 2 Class A. Colour to match adjacent surfaces.

.4 Sealant Compound: CAN/CGSB-19.18-M, 1 component, silicone base solvent curing. Colour to match adjacent surfaces.

.5 Sealing and Bedding Compound, Acoustical: CAN/CGSB-19.21-M

2.4.3 Glazing Tape: 440 polyisobutylene butyl tape manufactured by Tremco Manufacturing Co. (Canada) Ltd., or 3M ribbon sealer butyl tape manufactured by Minnesota Mining and Manufacturing Co. Ltd.

2.4.4 Gaskets: ASTM C509 cellular, elastomeric, preformed, black.

2.4.5 Primer Sealers and Cleaners: To glass and plastic glazing manufacturer's standards.

2.5 Fabrication

2.5.1 Label each light of glass and/or plastic glazing with registered name of product and weight and quality of glass and/or plastic glazing.

2.5.2 Check dimensions on Job Site before cutting materials.

2.5.3 Grind and chamfer edges of unframed glass and mirrors.

2.5.4 Ensure minimum bite or lap of glass and/or plastic glazing on stops and rabbets as recommended by glass and/or plastic glazing manufacturer

3 EXECUTION

3.1 Examination

3.1.1 Site Verification and Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.

.1 Verify that site conditions are acceptable for installation of the glass.

.2 Verify openings for glazing are correctly sized and within tolerance.

.3 Verify that the minimum required face and edge clearances are being followed.

.4 Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 Preparation for Installation

3.2.1 Protection

.1 Handle and store product according to manufacturer's recommendations.

3.2.2 Surface Preparation

.1 Clean and prepare glazing channels and other framing members to receive glass.

.2 Prime surfaces scheduled to receive sealant.

3.3 Installation

3.3.1 Conform to recommendation of Glazing Manual 1990, Flat Glass Marketing Association, except as specified herein.

3.3.2 Comply with manufacturer's and referenced industry recommendations on expansion joints and anchors, accommodating thermal movements, glass openings, use of setting blocks, edge, face and bit clearances, use of glass spacers, edge blocks and installation of weep systems.

3.3.3 Glaze hollow metal doors, screens, borrowed lights, windows and other work, scheduled to be glazed.

3.3.4 Protect glass from edge damage during handling and installation.

3.3.5 Check frames are plumb, within tolerance for size and joints, connectors, screws or bolt heads are effectively sealed.

3.3.6 Check to ensure openings and stops to be painted have been primed before commencing installation.

3.3.7 Install glazing within temperature limits recommended by glazing manufacturer.

3.3.8 Install products using the recommendations of manufacturers of glass, sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those in the "GANA Glazing Manual".

3.3.9 Check compatibility of glazing materials and framing sealants with each other.

3.3.10 Prevent glass from contact with contaminating substances that result from construction operations, such as weld spatter, fireproofing or plaster.

3.3.11 Do not field cut or abrade tempered glass.

3.3.12 Install glass in prepared glazing channels and other framing members.

3.3.13 Install setting blocks in rabbets as recommended by referenced glazing standards in GANA Glazing Manual and IGMA Glazing Guidelines.

3.3.14 Provide bite on glass, minimum edge and face clearances and glazing material tolerances recommended by GANA Glazing Manual.

3.3.15 Set glass lites in each series with uniform pattern, draw, blow and similar characteristics.

3.3.16 Distribute the weight of the glass unit along the edge rather than at the corner.

3.3.17 Remove and replace glass that is broken, chipped, cracked or damaged in any way..

3.4 Workmanship

3.4.1 Ensure openings are free from moisture, frost, rust, dirt and foreign matter.

3.4.2 Remove protective coatings. Clean glass surface to receive sealant with clean cloth dampened with Xylol or 50 50 mixture of Acetone and Xylol. Wipe dry with clean, dry cloth.

3.4.3 Clean plastic glazing with cleaning agents and follow procedures recommended by glazing manufacturer.

3.4.4 Apply primer-sealer to contact surfaces.

3.4.5 Place setting block in accordance with manufacturer's instructions.

3.4.6 Install glass by resting on setting blocks. Ensure full contact and adhesion at perimeter. Do not impact glass against framing during installation.

3.4.7 Install removable stops without displacing tape, sealant or gasket.

3.4.8 Provide edge clearance of 3 mm minimum.

3.4.9 Apply cap bead of sealant at exterior void. Apply sealant to uniform and level line, flush with sightline and tool or wipe with solvent to smooth appearance.

3.4.10 Apply tape to clean dry surface not more than 24 hrs prior to glazing. Do not remove release paper until glass is ready to be installed. Joints shall be squared and tightly and neatly butted. Do not overlap. Do not stretch tape to make it fit. Lightly daubed joints with compatible gunnable sealant to assure positive seal. Only joints in tape shall be at corners.

3.4.11 Lateral shims if not continuous shall be spaced uniformly at 450 mm to 600 mm on centre.

3.4.12 For wet glazing both inside and outside, inside and outside shims shall be exactly same dimensions and exactly opposite each other.

3.5 Interior Glazing

3.5.1 Fire Rated Hollow Metal Doors and Screens:

.1 Set glass in fire rated metals doors and screens on continuous setting block with 3 mm gap between glazing stop glass and embed in glazing compound in accordance with NFPA 80 and OBC requirements. Strike and point exposed

joints between metal and glass or install glass in accordance to ULC tested proprietary methods of installation.

3.5.2 Dry Method-Tape / Tape:

.1 Cut glazing tape to proper length and install against permanent stop projecting 1.5 mm above sightline.

.2 Place glazing tape on free perimeter of glass projecting 1.5 mm above sightline.

.3 Trim off excess tape to sightline.

3.5.3 Combination Method-Tape/Sealant:

.1 Cut glazing tape to proper length and install against permanent stop projecting 1.5 mm above sightline.

.2 Fill gap between glass and applied stop with sealant to depth equal to bite of frame on glass to uniform and level line.

.3 Trim off excess tape to sightline.

3.5.4 Dry Method: Gaskets

.1 Place gasket against permanent stop and position glass, acrylic or polycarbonate sheet.

.2 Apply removable stops. Install gaskets in frame channels.

3.5.5 Combination Method-Tape/Gasket:

.1 Cut glazing tape to proper length and install against permanent stop.

.2 Position glass.

.3 Apply removable stops and install gaskets in frame channel.

3.5.6 Butt - Joint Glazing:

.1 2 side glazing at head and sill use wet, dry, or wet/dry glazing systems.

.2 Position glazing so that vertical edges are spaced slightly apart and seal with silicone sealant.

.3 Grind vertical joint with slight kerf and polish for aesthetics.

3.6 Finishing

3.6.1 Remove sealant and compound droppings from finished surface.

3.6.2 Periodically clean installed glass during construction to avoid permanent etching and staining.

3.6.3 Mark glass lights with temporary, easily removable large safety markings after glass installation. Maintain safety markings until final cleanup. Remove markings at time of final clean-up.

3.6.4 Avoid storing materials adjacent to glass.

3.6.5 Protect glass from other trades.

3.6.6 At completion of Work, replace any damaged or broken glass provided under this Section with similar glass

3.7 Cleaning

3.7.1 Clean in accordance with Section 01740- Cleaning.

3.7.2 Clean excess sealant or compound from glass and framing members immediately after application, using solvents or cleaners recommended by manufacturers.

3.7.3 Glass to be cleaned according to:

.1 GANA Glass Informational Bulletin GANA 01-0300 – Proper Procedures for Cleaning Architectural Glass Products.

.2 GANA Glass Information Bulletin GANA TD-02-0402 – Heat-Treated Glass Surfaces are Different.

3.7.4 Do not use scrapers or other metal tools to clean glass.

3.7.5 Progress Cleaning:

.1 Leave Work area clean at end of each day.

.1 Remove traces of primer, caulking.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

.4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

3.7.6

.1 Leave work area clean at end of each day.

3.7.7

.1

3.8 Protection

3.8.1 Protect installed products and components from damage during construction.

3.8.2 After installation, mark each light with an "X" by using removable plastic tape or paste.

.1 Do not mark heat absorbing or reflective glass units.

3.8.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 This section describes the material and procedures for tile installed by trades including work in relation to horizontal and vertical substrates in which the tile system will be applied to.

1.2 Scope of Work

1.2.1 Work supplied under this section includes the installation of ceramic tiles and all associated accessories and materials to complete a finished tile floor system.

1.3 Related Specification Sections

1.3.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Caulking: Section 07900 – Joint Sealers.

1.4 Code and Regulatory Requirements

1.4.1 All products shall conform to the following standards and regulations:

.1 American National Standards Institute (ANSI)

.1 ANSI A108.1 Specification for the Installation of Ceramic Tile

.2 CTI A118.3 Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive

.3 CTI A118.4 Specification for Latex Cement Mortar (included in ANSI A108.1).

.4 CTI A118.5 Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).

.5 CTI A118.6 Specification for Ceramic Tile Grouts (included in ANSI A108.1).

.6 ANSI A108.8 Specifications for Ceramic Tile Installed with Chemical-Resistant Furan Mortar and Grout.

.7 ANSI A108.9 Specifications for Ceramic Tile Installed with Modified Epoxy Emulsion Mortar/Grout.

.8 ANSI A108.10 Specifications for Installation of Grout in Tilework.

.9 ANSI A118.1 Standard Specification for Dry-Set Portland Cement Mortar.

.10 ANSI A118.3 Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.

.11 ANSI A118.4 Latex-Portland Cement Mortar.

.12 ANSI A118.5 Chemical-Resistant Furan Mortar and Grout.

.13 ANSI A118.6 Standard Ceramic Tile Grouts.

.14 ANSI A118.7 Polymer Modified Cement Grouts

.15 ANSI A118.8 Modified Epoxy Emulsion Mortar/Grout.

.16 ANSI A118.9 Test Methods and Specifications for Cementitious Backer Units

.17 ANSI A118.10 Load bearing, Bonded, Waterproof Membranes for Thinset Ceramic Tile and Dimensional Stone.

.18 ANSI A118.11 Exterior Grade Plywood (EGP) Latex-Portland Cement Mortar.

.19 ANSI A136.1 Organic Adhesives for Installation of Ceramic Tile.

.20 ANSI A137.1 Specifications for Ceramic Tile.

.2 American Society for Testing and Materials (ASTM).

.1 ASTM C 50 Standard Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products.

.2 ASTM C144 Standard Specification for Aggregate for Masonry Mortar.

.3 ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes.

.4 ASTM C 241 Standard Test Method For Abrasion Resistance of Stone Subjected to Foot Traffic.

.5 ASTM C 503 Standard Specification for Marble Dimension Stone.

.6 ASTM C 615 Standard Specification for Granite Dimension Stone.

.7 ASTM C 629 Standard Specification for Slate Dimension Stone.

.8 ASTM C847 Standard Specification for Metal Lath.

.9 ASTM C979/C979M-10 Standard Specification for Pigments for Integrally Coloured Concrete.

.10 ASTM C 1028 Standard Test method for Determining the Static Coefficient of Friction or Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull meter Method.

.11 ASTM D 4397 Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

.3 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-25.20 Surface Sealer for Floors.

.2 CAN/CGSB-51.34 Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 CGSB 71-GP-22M Adhesive, Organic, for Installation of Ceramic Wall Tile.

.4 CGSB 71 GP 30M Adhesive, Epoxy and Modified Mortar Systems for Installation of Quarry Tiles.

.5 CAN/CGSB 75.1 M Tile, Ceramic.

.4 Canadian Standards Association (CSA):

.1 CAN/CSA-A5 M Portland Cement.

.2 CSA A82.56 M Aggregate For Masonry Mortar.

.3 CSA A123.3-05(R2010) Asphalt Saturated Organic Roofing Felt.

.4 CSA A3000-13 Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.5 Terrazo, Tile and Marble Association of Canada (TTMAC):

.1 Tile Specification Guide 09 30 00 2012/2013, Tile Installation Manual.

.2 Tile Maintenance Guide.

1.5 Quality Assurance

1.5.1 In addition to the requirements of 01010 – General Requirements, the following measures are required:

1.5.2 Perform work in accordance with the printed requirements of the manufacturer and this specification. Advise Engineer of any discrepancies prior to commencement of the work.

1.5.3 Maintain one (1) copy of the specification and manufacturer's literature on site throughout the execution of the work.

1.5.4 Unless otherwise specified meet requirements of TTMAC Tile Insulation Manual 09300 – 1997.

1.5.5 Manufacturer's Field Reports: manufacturer's field reports specified.

1.5.6 Contractors Qualifications

.1 Work of this section shall be carried out by a contractor specialized in the type of work specified herein. Use competent installers, experienced, trained and approved by material or system manufacturer for application of materials and systems being used.

.2 Installers shall have a minimum five (5) years of experience in installation and provide documentation of examples minimum of (5) five previous projects completed more than (1) year since construction closeout upon request by engineer.

1.5.7 Mock-up

.1 For each type of tile required, submit sample consisting of a minimum of four (4) tiles bonded to rigid board back-up and joints filled with grout. Select tile to show full range of tile to be used. Resubmit sample if required until the range and grout colour is approved by the Engineer.

1.6 Submittals

1.6.1 Complete submittals in accordance with Specification Section 01010 – General Requirements.

1.6.2 Product Data:

.1 Submit product data for each type of product specified including manufacturer’s technical product data, installation instructions and recommendations for each type of tile product required for the following items;

.1 Include manufacturer's information on:

.1 Ceramic tile, marked to show each type, size, and shape required.

.2 Chemical resistant mortar and grout (Epoxy and Furan).

.3 Cementitious backer unit.

.4 Dry-set cement mortar and grout

.5 Divider strip.

.6 Elastomeric membrane and bond coat.

.7 Reinforcing tape.

.8 Levelling compound.

.9 Latex cement mortar and grout.

.10 Commercial cement grout.

.11 Organic adhesive.

.12 Slip resistant tile.

.13 Waterproofing isolation membrane.

.14 Fasteners.

.2 Submit WHMIS MSDS - Material Safety Data Sheets for all material used in the installation of tile floor system.

1.6.3 Samples:

.1 For each type of tile required, submit sample consisting of a minimum of four (4) tiles bonded to rigid board back-up and joints filled with grout. Select tile to show full range of tile to be used. Resubmit sample if required until the range and grout colour is approved by the Engineer.

.2 Submit list of mortar mixes and grouts to be used. In each case products proposed must be suitable for the purpose intended and they shall be capable to produce top quality work. Upon Engineer's request submit evidence of material manufacturer's endorsement of products proposed.

.3 Upon Engineer's request submit samples of bases, trim and fittings.

.4 Submit manufacturer's recommended maintenance procedures and materials for inclusion into operation and maintenance manual.

1.6.4 Maintenance materials. Provide extra 5 percent of each type and colour tile required. Obtain receipt.

.1 Maintenance material same production run as installed material.

1.7 Delivery Storage and Handling

1.7.1 Refer to Specification Section 01010 – General Requirements.

1.8 Environmental and Site Conditions

1.8.1 Refer to Specification Section 01010 – General Requirements.

1.8.2 Maintain minimum air and structural base temperature as outlined in manufactures technical literature at ceramic tile installation area for 48 hours before, during installation and curing period, and 48 hours after, installation.

1.8.3 Do not install tiles at temperatures below or above ranges as outlined in manufactures technical literature.

1.8.4 Do not apply epoxy mortar and grouts at temperature below or above as outlined in manufactures technical literature.

1.8.5 Exclude construction traffic from areas to receive tile during installation and curing period.

1.8.6 Protect tile flooring subjected to construction traffic with non-staining protective covers.

2 PRODUCTS

2.1 Materials

2.1.1 Floor Tile

.1 Ceramic tile:

.1 Acceptable products:

.1 As indicated on Ceramic Tiles Schedule.

2.1.2 Wall Tile

.1 Ceramic tiles:

.1 Acceptable products:

.1 As indicated on Ceramic Tiles Schedule.

2.1.3 Base Tile

.1 Base: coved; type, size, colour and texture to match adjacent flooring material.

2.1.4 Trim Shapes

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.3 Internal and External Corners: provide trim shapes as follows where indicated.

.1 Bullnose shapes for external corners including edges.

.2 Coved shapes for internal corners.

.3 Special shapes for:

.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.

.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.

.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.

.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

2.1.5 Mortar and Adhesive Materials

2.1.6 Bond Coat:

.1 Acceptable products:

.1 Keralastic as manufactured by Mapei Canada Inc.

.2 Laticrete 4237 with 211 crete filler powder as manufactured by Laticrete International Inc.

2.1.7 Grout:

.1 Floor and base: Portland Cement Based.

.1 Acceptable products:

.1 As indicated on Ceramic Tiles Schedule.

.2 Wall application: Portland Cement Based.

.1 As indicated on Ceramic Tiles Schedule.

.3 Grout Pigments: Colour to later selection

.1 Acceptable products:

.1 As indicated on Ceramic Tiles Schedule.

2.1.8 Accessories

.1 Corner:

.1 As indicated on Ceramic Tiles Schedule.

2.1.9 Mixes

.1 Mortar and grout: mix in accordance with material manufacturer’s directions. Wherever possible use latex additive instead of water.

2.1.10 Patching and Levelling Compound

.1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.

.2 Tensile strength - 7 MPa.

.3 Flexural strength - 7 MPa.

.4 Density - 1.9.

.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.1.11 Cleaning compounds:

.1 As recommended by TTMAC and acceptable to tile manufacturer.

.2 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.

.3 Materials containing acid or caustic material are not acceptable.

2.2 EXECUTION

2.3 General

2.3.1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

2.4 Examination

2.4.1 Examine surfaces to receive tile and report conditions which would adversely affect installation.

2.4.2 Verify that wall surfaces are free of substances which would impair bonding of setting materials, smooth and flat within tolerances specified in ANSI A137.1, and are ready to receive tile.

2.4.3 Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces, and are smooth and flat within tolerances specified in ANSI A137.1.

2.4.4 Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

2.4.5 Finish on structural concrete slab for thin set tile application: Smooth trowel with slab tolerance maximum 3 mm in 3000 mm.

2.4.6 Verify that required floor-mounted utilities are in correct location.

2.5 Preparation

2.5.1 Commence installation only after unacceptable surface conditions are corrected.

2.5.2 Clean substrates to manufactures requirements to produce acceptable surface as directed by manufacturer.

2.5.3 Protect surrounding work from damage.

2.5.4 Remove any curing compounds or other contaminates.

2.5.5 Substrates shall have an ambient and sub straight temperature as outlined in manufactures technical literature.

2.5.6 Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

2.5.7 Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.

2.5.8 Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

2.5.9 Beginning of installation indicates acceptance of site conditions.

2.6 Installation - General

2.6.1 Do tile work in accordance with TTMAC Tile Installation Manual 2016/2017, "Ceramic Tile" and in accordance mortar/adhesive manufacturer’s directions, except where specified otherwise.

2.6.2 Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.

2.6.3 Apply tile to clean and sound surfaces.

2.6.4 Fit tile around corners, fitments, fixtures, drains and other built-in objects, leaving sealant joint space. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

2.6.5 Maximum surface tolerance 1:800.

2.6.6 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

2.6.7 Make joints watertight, without voids, cracks, excess mortar, or excess grout.

2.6.8 Back up tile bases, curb and other vertical application solid with mortar.

2.6.9 Install ceramic accessories rigidly in prepared openings.

2.6.10 Install non-ceramic trim in accordance with manufacturer's instructions.

2.6.11 Install thresholds where indicated.

2.6.12 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

2.6.13 Provide tile manufacturer’s standard trim pieces at changes in direction and at terminations. Unless otherwise indicated provide the following corner and edge conditions:

.1 Make internal angles square, external angles bullnosed.

.2 Use bullnose edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.3 Internal horizontal corners: coved.

.4 Install divider strips at junction of tile flooring and dissimilar materials.

2.6.14 Allow minimum 24 hours after installation of tiles, before grouting.

2.6.15 Clean installed tile surfaces after installation and grouting cured.

2.6.16 Make control joints at 5.0 m in each direction maximum, where tile abuts other hard materials, around periphery walls, columns, bases and directly over concrete slab expansion joints. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07900 – Joint Sealants. Keep building expansion joints free of mortar and grout.

2.6.17 Mix grout with polymer additive. Apply grout in accordance with manufacturer's printed instructions.

2.6.18 Commence grouting no earlier than 24 hours after setting tiles, unless otherwise directed by grout manufacturer.

2.6.19 Force grout into joint so as to fill them flush, leaving no voids.

2.6.20 Promptly as work progresses, remove excess grout from adjacent tile surfaces before grout establishes tight permanent adhesion.

2.6.21 Cure grout in accordance with manufacturer’s directions.

2.7 Installation - Floors - Thin-Set Methods

2.7.1 Install tiles on floors in accordance with TTMAC using thin-set system with minimum of 95% mortar coverage.

2.7.2 Finished work shall be level, plumb or sloped as shown, true, square and free of defective, chipped, broken, discoloured or blemished tiles.

2.7.3 Extend tile full height vertically and across top of equipment bases and curbs as detailed.

2.7.4 Over exterior concrete substrates, install in accordance with TTMAC detail Detail A - 311F-2016-2017, with standard grout.

2.7.5 Over interior concrete substrates, install in accordance with TTMAC detail Detail A - 311F-2016-2017, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.

2.8 Installation - Wall Tile

2.8.1 Over cementitious backer units on studs, install in accordance with TTMAC detail Detail A – 305W-2016-2017, using membrane at toilet rooms.

2.8.2 Over interior concrete and masonry install in accordance with TTMAC detail 303W-2016-2017, thin-set with dry-set or latex-portland cement bond coat.

2.9 Base Tile

2.9.1 Install in accordance with TTMAC detail.

2.10 Floor Sealer and Protective Coating

2.10.1 Apply in accordance with manufacturer's instructions.

2.11 Field Quality Control

2.11.1 Inspection and Acceptance:

.1 At least 60 days after floor tile work has been completed it will be thoroughly inspected to ensure a continuous bond between base concrete and tile system has been achieved.

.2 Initial inspection: A hollow sound, in the opinion of the Contract Administrator , in any area will require verification of bond by testing. Core each such area as requested by the Contract Administrator to determine bonding adequacy.

.3 If delamination of tile has taken place remove tile over entire affected area and replace with thoroughly bonded tile. Pay for remedial work required to replace detective tile.

.4 Bond strength between base concrete and mortar bed including extent of delaminated areas will be determined by tests. Locate calibrated jack over centre of tile.

.5 Tests that meet specified strength requirement: Paid for by the Owner. Pay for tests that do not meet specified strength requirement.

2.11.2 In addition replace at no cost to the Owner defective or delaminated floor tile which is discovered within Guaranteed Maintenance Period.

2.12 Cleaning

2.12.1 Clean in accordance with Section 01740- Cleaning.

2.12.2 Thoroughly clean tile surfaces in accordance with manufacturer's recommendations.

2.12.3 Remove grout haze from tile surfaces; use acid wash method if required.

2.12.4 Polish after cleaning with clean, dry cloth.

2.12.5 Progress Cleaning: Perform cleanup as work progresses

.1 Leave work area clean at end of each day.

2.12.6 Final cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment

2.12.7 Waste Management:

.1 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

.2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

2.13 Protection of Finished Work

2.13.1 Do not permit traffic over finished floor surface for 72 hours after installation.

2.13.2 Cover floors with kraft paper and protect from dirt and residue from other trades.

2.13.3 Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways

END OF SECTION

1 GENERAL

1.1 GENERAL

.1 Labour, Products, equipment and services necessary for portand cement terrazzo (TZ) Work at corridor of proposed Laundry Room 307 in accordance with the Contract Drawings.

1.2 REFERENCES

.1 ASTM B135M, Specification for Seamless Brass Tube.

.2 ASTM C3096, Standard Specification for Liquid Membrane-Forming Compound for Curing Concrete.

.3 CAN/CGSB-25.20-M, Surface Sealer Floors.

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

.5 CAN/CSA A3000, Cementitious Materials Compendium.

.6 TTMAC Portland Cement Terrazzo Digest No. 09400, Terrazzo Tile and Marble Association of Canada.

1.3 SUBMITTALS

.1 Shop drawings: Submit layout of divider strips and screeds in accordance with Section 01010 indicating:

.1 Samples: Submit duplicate 250 x 250 x 25 mm thick samples of each colour terrazzo, labelled with cement colour and percentage of each aggregate.

.2 Close-out submittals: Submit tow copies of TTMAC Maintenance Guide for incorporation into Operations and Maintenance Manual.

1.4 QUALITY ASSURANCE

.1 Qualifications: Execute the Work of this Section by a company that is in good standing of TTMAC and has a minimum of 5 years proven acceptable experience on installations of similar complexity and scope.

1.5 SITE CONDITIONS

.1 Maintain air temperature and structural base temperature at terrazzo installation area above 12^{O}C for 24 h before, during and 24 h after installation.

1.6 EXTENDED WARRANTY

.1 Submit an extended warranty for Work of this Section in accordance with General Conditions, except that warranty period is extended to 5 years.

.1 Against delamination, aggregate loosening, or spalling.
.2 Coverage: Complete replacement including effected

adjacent parts.

2 Products

2.1 MATERIALS

.1 Cement: CAN/CSA A3000, Type 10, grey for underbed, white and grey, as indicated, for topping matrix.

.2 Pigments: Non-fading mineral pigments in selected colours to match stair treads provided by Section 09 66 24.

.3 Sand: CAN/CSA-A23.1-M.

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

.5 Latex additive: Keralastic by Mapei inc. or Full Bond Additive TA867 by TEC Inc.

.6 Marble chips: Graded chips in accordance with TTMAC standards.

.7 Slip-resistant aggregate: White aluminum oxide (AL203) 36 grit.

.8 Divider strips: To be selected.

.9 Curing compound: ASTM C309, Type 1, non-staining. Moisture retention 0.015 grams, maximum.

.10 Terrazzo sealer: CAN/CGSB 25.1-M, acrylic type water based sealer; Solid Concrete & Terrazzo Seal by Jestlyn Products Inc.

2.2 MIXES

.1 Underbed mix: 1 part cement, 4 parts sand by volume, water to produce a mortar of a stiff consistency.

.2 Neat grout mix:

.1 Type 1 (prior to underbed mix): water to saturation, grey cement broadcast, latex additive to slurry consistency for broom installation.

.2 Type 2 (after terrazzo topping matrix): water to saturation, cement (colour to match matrix) broadcast, latex additive to slurry consistency for steel trowel installation.

.3 Terrazzo topping matrix: Match TTMAC colour plates.

.1 Floor: TTMAC Plate No. to match terrazzo tile.
.2 Coved bases: TTMAC Plate No. 747G.

.4 Slip-resistant aggregate: Mix into tipping matrix 2 kg of slip-resistant aggregate per 45 kig of terrazzo chip aggregate.

3 EXECUTION

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Engineer. Commencement of Work means acceptance of existing conditions.

3.2 PREPARATION

.1 Comply with TTMAC 09400 Portland Cement Terrazzo Digest, Specification and Details.
.2 Schedule completion of surfacing stage of Work of this Section before installation of adjacent wall finishes.
.3 Coordinate installation of Work which passes through, beneath, or behind terrazzo.
.4 Protect and block-off drain inlets situated level with, or lower than, highest point of terrazzo Work, until after final cleaning.

3.3 NEAT GROUT TYPE 1, UNDERBED, DIVIDER STRIPS AND TRIM

.1 Saturate the base slab with water over 24 hours and remove excess moisture.

.2 Apply neat grout Type 1 mix and broom thoroughly over underbed floor and base substrates with stiff broom for continuous, void-free contact.

.3 Install underbed mix to 25 mm depth on floors and 13 mm at bases, before neat grout attains its set, and allow 16 mm recess to finished floor grade to accommodate terrazzo topping matrix.

.4 Before underbed has achieved initial set, install divider strips in following typical locations:

.1 Aligned over structural beams.
.2 Aligned over changes in type of substrate.
.3 Aligned over control, construction, and cold joints in base slab.
.4 At the restraining perimeters such as walls and columns.
.5 Platforms: At 600 x 600 mm o.c. maximum, and 1200 x 1200 mm o.c. elsewhere in a grid pattern.
.6 As indicated on Contract Drawings.

.5 Install floor divider strips with 90° intersections, tight butt joints, and flush with finished floor elevation.

.6 Install base dividers and screeds. Set base dividing strips to aling with floor divider strips at 1800 mm o.c. maximum.

.7 Wet cure underbed for 24 hours.

3.4 TERRAZZO TOPPING MIX

.1 Saturate the base slab with water and remove excess moisture.

.2 Apply neat grout Type 1 mix and broom thoroughly over underbed with stiff broom for continuous, void-free contact.

.3 Install blended terrazzo topping matrix to 16 mm depth.

.4 Prior to rolling, broadcast slip-resistant aggregate in two passes at right angle to each other at rate of 1 Kg per 1 m^2.

.5 Prevent uneven distribution of aggregate by removing superfluous water in terrazzo topping matrix with minimum 100 kg weight rollers, add additional marble aggregate as required to obtain compact mass.

.6 Steel trowel terrazzo topping matrix to flat and even surface, flush with top of divider strips.

3.5 CURING

.1 After terrazzo topping matrix has set, saturate surface with water and apply curing compound to retain surface moisture, for curing period of 3 days minimum; adjust curing period to suit site conditions such as ventilation, relative humidity, temperature.

3.6 SURFACING AND NEAT GROUT TYPE 2

.1 After curing period, wet grind terrazzo topping matrix surface in the following two steps, remove slurry and wash terrazzo clean, between steps:

.1 Step 1: #24 or #36 (as necessary) grit abrasive stone, with silica sand, in multiple passes, to final level and profile.

.2 Step 2: #80 grit abrasive stone, in one pass, omit silica sand, to remove rough scratches.

.2 Wash terrazzo thoroughly with clean water, steel trowel neat grout Type 2 over entire surface to fill voids and pinholes. After grout has cured apply curing compound.

.3 Allow terrazzo and neat grout to cure for a minimum of 72 hours before finish polishing.

.4 Prior to finishing, allow neat grout Type 2 to remain on terrazzo surface until after other trades are completed.

3.7 FINISHING AND CLEANING

.1 Wet grind terrazzo surface with #80 grit abrasive stone to smooth finish, free from ridges, scratches, machine marks, and other blemishes, to acceptance of Engineer. Remove slurry immediately from site and wash clean, do not wash slurry into drains.

.2 Clean terrazzo surfaces as follows:

.1 Remove soil with push broom and remove fine dust with heavy duty vacuum cleaner.

.2 Apply neutral cleaning solution in accordance with manufacturer's instructions, allow to loosen soil, machine clean with fibre scrubbing brush or pad; do not use steel wool.

.3 Remove soiled cleaning solution with wet vacuum and rinse with warm water.

.4 Rinse second time with warm water and remove with wet vacuum.

.5 Allow floor to dry completely, minimum 4 hours.

3.8 SEALING

.1 As soon as possible after final cleaning, Apply 2 coats of terrazzo sealer in accordance with manufacturer's directions, including surface preparation and installation methods.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

1.1.1 Design, labour, Products, equipment and services necessary for acoustical ceilings Work in accordance with the Contract Documents.

1.2 Related Specification Sections

1.2.1 In addition to the general project requirements in Division 1, the following sections are referenced in this section:

.1 Section 01010 General Requirements.

.2 Divisions 15 and 16 Mechanical & Electrical

1.3 Code and Regulatory Requirements

1.3.1 All products shall conform to the following standards and regulations:

.1 ASTM International Inc.

.1 ASTM A653/A653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.

.2 ASTM C423, Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.3 ASTM C635, Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.4 ASTM C636, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

.5 ASTM C645, Specification for Non-Load Bearing (Axial) Steel Studs, Runners (Tracks), and Rigid Furring Channels for Screw Application of Gypsum Board.

.2 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-92.1-M, Sound Absorptive Prefabricated Acoustical Units.

1.4 Submittals

1.4.1 Submit in accordance with Section 01010 – General Requirements.

1.4.2 Product Data, and Shop Drawings Package:

.1 Product Data:

.1 Submit manufacturer's Product data for all Products listed in this Section indicating:

.1 Suspension system and acoustic tiles.

.2 Shop Drawings:

.1 Submit Shop Drawings in accordance with Section 01010, indicating:

.1 Suspension system layout including hangers.

.2 Conditions at abutting, intersecting, and penetrating construction.

.3 Dimensioned locations of lighting fixtures, diffusers, sprinkler heads and other items piercing ceiling plane.

1.4.3 Quality Assurance Submittals:

.1 Submit test results for suspension anchor inserts; include data on design loading per anchor and tensile strength of hangers.

1.5 Delivery Storage and Handling

1.5.1 Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

1.6 Products

1.7 Design requirements

1.7.1 Design acoustical ceiling suspension system in accordance with ASTM C636 and manufacturer's printed directions.

1.7.2 Design suspended ceiling system for adequate support of electrical fixtures as required by current bulletin of Electrical Inspection Department of Ontario Hydro.

.1 Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.

.2 Design suspension system to support weight of mechanical and electrical items such as air handling boots and lighting fixtures, and with adequate support to allow rotation / relocation of light fixtures.

1.7.3 Design ceiling system to withstand positive and negative wind loads, uplift of piston effect of up to 1.25 kPa, and train wind load of 44 m/s.

1.7.4 Design sub framing as necessary to accommodate, to avoid conflicts and interferences where ducts or other equipment prevent regular spacing of hangers.

1.8 Approved Manufacturers

1.8.1 Certainteed, 61 Royal Group Crescent, Woodbridge, Ontario, Canada, L4H 1X9, Phone: 800-233-8990, URL: www.certainteed.ca.

1.8.2 CGC Inc, 350 Burnhamthorpe Rd W, Mississauga, Ontario, Canada, L5B 3J1, Phone: (905) 803-5600, e-mail: webmaster@cgcinc.com, URL: www.usg.com.

.1 Armstrong World Industries Canada Ltd., P.O. Box 3001 Lancaster, PA USA, 17603, Phone: 877-276-7876, URL: www.armstrongworldindustries.com.

1.9 Materials

1.9.1 Suspension system: ASTM C635.

.1 As indicated on Ceiling Finishes Schedule.

1.9.2 Suspension system for high humidity areas: ASTM C635.

.1 As indicated on Ceiling Finishes Schedule.

1.9.3 Acoustic tile (ACT): CAN/CGSB-92.1-M.

.1 As indicated on Ceiling Finishes Schedule.

1.9.4 Acoustic tile (V-ACT) at high humidity areas (Washrooms, Locker Room and other areas shown): CAN/CGSB-92.1-M.

.1 As indicated on Ceiling Finishes Schedule.

1.9.5 Wall mouldings: Match acoustical ceiling suspension system.

2 EXECUTION

2.1 Site conditions

2.1.1 Do not install the Work of this Section until:

.1 Wet Work including concrete, masonry, plaster, stucco, and terrazzo finishes complete.

.2 Mechanical and electrical Work above ceiling complete.

.3 Relative humidity below 80%.

.4 Ventilation adequate to remove excess moisture.

2.1.2 Install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements 24 hr before, during, and after installation.

2.2 Suspension system

2.2.1 Coordinate locations and openings of mechanical and electrical services support, and penetration through acoustical ceilings. Coordinate field conditions, clearances, measurements, and mechanical and electrical services testing and commissioning, above acoustical ceilings.

2.2.2 Install hanger wires plumb and securely anchored to building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.

2.2.3 Install acoustical ceiling systems in accordance with manufacturer's written instructions, reviewed Shop Drawings, and ASTM C636, listed in order of precedence.

2.2.4 Install hanger wires at 1200 mm maximum centres along carrying channels, not less than 25 mm, and not more than 150 mm from channel ends.

2.2.5 Install additional hangers at lighting fixture and air distribution ductwork locations. Do not attach hanger wires to mechanical or electrical equipment. Do not support mechanical and electrical fixtures and fitting on ceiling without ceiling manufacturer's written acceptance.

2.2.6 Install acoustical ceiling suspension system to tolerance of 1:1200 of span and 0.4 mm maximum between adjacent metal members. Tolerances not cumulative. Refer to Electrical Contract Drawings for fixture layout.

2.2.7 Do not bend or twist hangers as means of levelling. Form double loops tightly and lock to prevent vertical movement or rotation within loop.

2.2.8 Install edge moulding at intersection of ceiling and vertical surfaces.

2.2.9 Install hangers onto ends of main tee runners at not more than 150 mm from ends of runners, adjacent and perpendicular to walls.

2.2.10 Support suspension system independently of walls, columns, ducts, pipes and conduits.

2.2.11 Install main runners in maximum available lengths. Layout joints in suspension members to avoid perimeters of recessed fixtures. Lock grid members to form rigid assembly. Install additional tee, suspension system framing around recessed fixtures, diffusers, grilles and other items for complete assembly.

2.3 Acoustic tiles

2.3.1 Carefully cut and trim acoustic tiles to accommodate Work of Divisions 15 and 16.

2.3.2 Fit acoustic tiles carefully into place. Remove and replace acoustic tiles with broken edges, or damaged, marked, discoloured, soiled, or stained faces.

2.4 Field quality control

2.4.1 Arrange, pay for, and execute Site load tests at location selected by Engineer, on anchor inserts by independent, certified testing company. Perform ten (10) random anchor tests at commencement of Work. Pay for additional tests, required if pull out strength not acceptable as requested by Engineer.

2.5 Cleaning

2.5.1 Clean in accordance with Section 01740- Cleaning

.1 Leave work area clean at end of each day.

2.5.3

END OF SECTION

1 GENERAL

1.1 Includes

1.1.1 Flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.

1.2 Related Documents

1.2.1 Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 sections) apply to the work of this section.

1.3 Related Sections

1.3.1 Other Division 9 sections for floor finishes related to this section but not the work of this section.

1.3.2 Division 3 - Concrete; not the work of this section.

1.3.3 Division 6 - Wood and Plastics; not the work of this section.

1.3.4 Division 7 - Thermal and Moisture Protection; not the work of this section.

1.4 Quality Assurance and Regulatory Requirements

1.4.1 Select an installer who is competent in the installation of Armstrong resilient tile flooring.

1.4.2 If required, provide types of flooring and accessories supplied by one (1) manufacturer, including levelling and patching compounds and adhesives.

1.4.3 If required, provide flooring material to meet the following fire test performance criteria as tested by a recognized independent testing laboratory:

.1 ASTM E648 - Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I.

.2 ASTM E662 - (Smoke Generation) Maximum Specific Optical Density of 450 or less.

1.5 Submittals

1.5.1 Submit shop drawings, seaming plan, coving details and manufacturer’s technical data, installation and maintenance instructions (latest edition of “Armstrong Guaranteed Installation System”, F-5061) for flooring and accessories.

1.5.2 Submit the manufacturer’s standard samples showing the required colours for flooring and applicable accessories.

1.5.3 If required, submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire test.

1.6 Environmental Conditions

1.6.1 Deliver materials in good condition to the job site in the manufacturer's original unopened containers that bear the name and brand of the manufacturer, project identification and shipping and handling instructions.

1.6.2 Store materials in a clean, dry, enclosed space off the ground and protected from the weather and from extremes of heat and cold. Protect adhesives from freezing. Store flooring, adhesives and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

1.6.3 Maintain a minimum temperature in the spaces to receive the flooring and accessories of 18°C and a maximum temperature of 38°C for at least 48 hours before, during and not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 13°C in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators or other heating fixtures and appliances.

1.6.4 Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond and moisture test.

1.7 PRODUCTS

1.8 Resilient Sheet Flooring Material

1.8.1 (VCT) as indicated on Flooring Finishes Schedule.

1.9 Wall Base Materials

1.9.1 (B-1) as indicated on Flooring Finishes Schedule.

1.10 Adhesives

1.10.1 For Tile Installation System, Full Spread: Provide Armstrong Resilient Tile Adhesive under the tile and Johnsonite Wall Base Adhesive at the wall base as recommended by the respective manufacturer.

1.10.2 For Tile Installation System, Tile On: Provide Armstrong Resilient Tile Adhesive under the tile over smooth, completely bonded existing resilient flooring and Johnsonite Wall Base Adhesive at the wall base as recommended by the respective manufacturer.

1.11 Accessories

1.11.1 For patching, smoothing and levelling monolithic sub-floors (concrete, terrazzo, quarry tile, ceramic tile and certain metals), provide Armstrong S-194 Fast-Setting Cement-Based Patch and Underlayment.

1.11.2 For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.

1.11.3 Provide transition/reducing strips tapered to meet abutting materials.

1.11.4 Provide threshold of thickness and width as shown on the drawings.

1.11.5 Provide resilient edge strips of width shown on the drawings, of equal gauge to the flooring, homogeneous vinyl or rubber composition, tapered or bullnose edge, with colour to match or contrast with the flooring, or as selected by the Architect from standard colours available.

1.11.6 Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

2 EXECUTION

2.1 Inspection

2.1.1 Examine sub-floors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

2.1.2 Inspect sub-floors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mould or mildew.

2.1.3 Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.

2.1.4 Failure to call attention to defects or imperfections will be construed as acceptance and approval of the sub-floor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

2.2 Preparation

2.2.1 Smooth concrete surfaces, removing rough areas, projections, ridges and bumps and filling low spots, control or construction joints and other defects with Armstrong S-194 Fast-Setting Cement-Based patch and Underlayment as recommended by the flooring manufacturer.

2.2.2 Remove paint, varnish, oils, release agents, sealers and waxes. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with the adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents.

2.2.3 Perform sub-floor Calcium Chloride Tests (and Bond Tests) as described in publication F-5061, "Armstrong Guaranteed Installation System", to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings; and ready to receive flooring.

2.2.4 Vacuum or broom-clean surfaces to be covered immediately before the application of flooring. Make sub-floor free from dust, dirt, grease and all foreign materials.

2.3 Installation of Tile Flooring

2.3.1 Install flooring in strict accordance with latest edition of "Armstrong Guaranteed Installation System", F-5061.

2.3.2 Install flooring wall-to-wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets and similar openings as shown on the drawings.

2.3.3 If required, install flooring on pan-type floor access covers. Maintain continuity of colour and pattern within pieces of flooring installed on these covers. Adhere flooring to the sub-floor around covers and to covers.

2.3.4 Scribe, cut and fit to permanent fixtures, columns, walls, partitions, pipes, outlets and built-in furniture and cabinets.

2.3.5 Install flooring with adhesives, tools and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times and working times.

2.4 Installation of Accessories

2.4.1 Apply top set wall base to walls, columns, casework and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitred or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

2.4.2 Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.

2.4.3 Place resilient edge strips tightly butted to flooring and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.

2.4.4 Apply overlap metal edge strips where shown on the drawings after flooring installation. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

2.5 Cleaning and Protection

2.5.1 Perform initial maintenance according to the latest edition of "Armstrong Guaranteed Installation System", F-5061.

2.5.2 Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades or the placement of fixtures and furnishings. (See Finishing The Job in "Armstrong Guaranteed Installation System", F-5061.)

END OF SECTION

1 GENERAL

1.1 Section Includes

1.1.1 Flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.

1.2 Related Documents

1.2.1 Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 sections) apply to the work of this section.

1.3 Related Sections

1.3.1 Other Division 9 sections for floor finishes related to this section but not the work of this section.

1.3.2 Division 3 - Concrete; not the work of this section.

1.3.3 Division 6 - Wood and Plastics; not the work of this section.

1.3.4 Division 7 - Thermal and Moisture Protection; not the work of this section.

1.4 Quality Assurance and Regulatory Requirements

1.4.1 Select an installer who is competent in the installation of Armstrong resilient sheet flooring using the Securabond installation technique with epoxy adhesive at the seams or using heat-welded seams.

1.4.2 If required, provide types of flooring and accessories supplied by one (1) manufacturer, including levelling and patching compounds and adhesives.

1.4.3 If required, provide flooring material to meet the following fire test performance criteria as tested by a recognized independent testing laboratory:

.1 ASTM E648 - Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I.

.2 ASTM E662 - (Smoke Generation) Maximum Specific Optical Density of 450 or less

1.5 Submittals

1.5.1 Submit shop drawings, seaming plan, covering details and manufacturer’s technical data, installation and maintenance instructions (latest edition of “Armstrong Guaranteed Installation System”, F-5061) for flooring and accessories.

1.5.2 Submit the manufacturer’s standard samples showing the required colours for flooring and applicable accessories.

1.5.3 If required, submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire test.

1.6 Environmental Conditions

1.6.1 Deliver materials in good condition to the job site in the manufacturer's original unopened containers that bear the name and brand of the manufacturer, project identification, and shipping and handling instructions.

1.6.2 Store materials in a clean, dry, enclosed space off the ground and protected from the weather and from extremes of heat and cold. Protect adhesives from freezing. Store flooring, adhesives and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

1.6.3 Maintain a minimum temperature in the spaces to receive the flooring and accessories of 18°C and a maximum temperature of 38°C for at least 48 hours before, during and not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 13°C in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators or other heating fixtures and appliances.

1.6.4 Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond and moisture test.

1.7 PRODUCTS

1.8 Resilient Sheet Flooring Material

1.8.1 (Rolled) as indicated on Flooring Finishes Schedule.

1.9 Wall Base Materials

1.9.1 (B-1) as indicated on Flooring Finishes Schedule.

1.10 Adhesives

1.10.1 Provide Armstrong S-235 Premium Sheet Flooring Adhesive for field areas and Armstrong S-200 Securabond Epoxy Seam Adhesive at the seams, field cuts and doorways and Johnsonite Wall Base Adhesive at the wall base as recommended by the respective manufacturer.

1.11 Accessories

1.11.1 For patching, smoothing and levelling monolithic sub-floors (concrete, terrazzo, quarry tile, ceramic tile, and certain metals), provide Armstrong S-183 Fast-Setting Cement Based Underlayment or S-184 Fast-Setting Cement-Based Patch and Skim Coat or S 194 Fast-Setting Cement-Based Patch and Underlayment.

1.11.2 For sealing joints between the top of wall base or integral cove cap and irregular wall surfaces such as masonry, provide plastic filler applied according to the manufacturer's recommendations.

1.11.3 Provide transition/reducing strips tapered to meet abutting materials.

1.11.4 Provide threshold of thickness and width as shown on the drawings.

1.11.5 Provide metal edge strips of width shown on the drawings and of required thickness to protect exposed edges of the flooring. Provide units of maximum available length to minimize the number of joints. Use butt-type metal edge strips for concealed anchorage or overlap-type metal edge strips for exposed anchorage. Unless otherwise shown, provide strips made of extruded aluminum with a mill finish.

2 EXECUTION

2.1 Inspection

2.1.1 Examine sub-floors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.

2.1.2 Inspect sub-floors prior to installation to determine that surfaces are free from curing, sealing, parting and hardening compounds; residual adhesives; adhesive removers and other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mould or mildew.

2.1.3 Report conditions contrary to contract requirements that would prevent a proper installation. Do not proceed with the installation until satisfactory conditions have been corrected.

2.1.4 Failure to call attention to defects or imperfections will be construed as acceptance and approval of the sub-floor. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.

2.2 Preparation

2.2.1 Smooth concrete surfaces, removing rough areas, projections, ridges and bumps and filling low spots, control or construction joints and other defects with Armstrong S-183 Fast-Setting Cement-Based Underlayment or S-184 Fast-Setting Cement-Based Patch and Skim Coat or S-194 Fast-Setting Cement-Based patch and Underlayment as recommended by the flooring manufacturer.

2.2.2 Remove paint, varnish, oils, release agents, sealers and waxes. Remove residual adhesives as recommended by the flooring manufacturer. Remove curing and hardening compounds not compatible with adhesives used, as indicated by a bond test or by the compound manufacturer's recommendations for flooring. Avoid organic solvents.

2.2.3 Perform sub-floor Calcium Chloride Tests (and Bond Tests) as described in publication F-5061, “Armstrong Guaranteed Installation System”, to determine if surfaces are dry; free of curing and hardening compounds, old adhesive, and other coatings and ready to receive flooring.

2.2.4 Vacuum or broom-clean surfaces to be covered immediately before the application of flooring. Make sub-floor free from dust, dirt, grease and all foreign materials.

2.3 Installation of Sheet Flooring

2.3.1 Install flooring in strict accordance with latest edition of “Armstrong Guaranteed Installation System”, F-5061.

2.3.2 Install flooring wall-to-wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets and similar openings as shown on the drawings.

2.3.3 If required, install flooring on pan-type floor access covers. Maintain continuity of colour and pattern within pieces of flooring installed on these covers. Adhere flooring to the sub-floor around coves and to covers.

2.3.4 Scribe, cut and fit or flash cover to permanent fixtures, columns, walls, partitions, pipes, outlets and built-in furniture and cabinets.

2.3.5 Adhere flooring to the sub-floor without cracks, voids, raising and puckering at the seams. Roll with a 45.36 kilogram roller in the filed areas. Hand-roll flooring at the perimeter and the seams to assure adhesion. Refer to specific rolling instructions of the flooring manufacturer.

2.3.6 Lay flooring to provide a minimum number of seams. Avoid cross seams, filler pieces and strips. Match edges for colour shading and pattern at the seams in compliance with the manufacturer’s recommendations.

2.3.7 Install flooring with adhesives, tools and procedures in strict accordance with the manufacturer’s written instructions. Observe the recommended adhesive trowel notching, open times and working times.

2.3.8 Use methods and sequence of work in conformance with written instructions of the flooring manufacturer. Finish all seams flush and free from voids, recesses and raised area.

2.4 Installation of Accessories

2.4.1 Apply top set wall base to walls, columns, casework and other permanent fixtures in areas where top-set base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitred or coped. Tightly bond base to vertical substrate with continuous contact at horizontal and vertical surfaces.

2.4.2 Fill voids with plastic filler along the top edge of the resilient wall base or integral cove cap on masonry surfaces or other similar irregular substrates.

2.4.3 Place resilient edge strips tightly butted to flooring and secure with adhesive recommended by the edge strip manufacturer. Install edge strips at edges of flooring that would otherwise be exposed.

2.4.4 Apply metal edge strips where shown on the drawings after flooring installation. Secure units to the substrate, complying with the edge strip manufacturer's recommendations.

2.5 Cleaning and Protection

2.5.1 Perform initial maintenance according to the latest edition of "Armstrong Guaranteed Installation System", F-5061.

2.5.2 Protect installed flooring as recommended by the flooring manufacturer against damage from rolling loads, other trades or the placement of fixtures and furnishings. (See Finishing The Job in "Armstrong Guaranteed Installation System", F-5061).

END OF SECTION

1 GENERAL

1.1 Intent

1.1.1 This section describes the materials and procedures for painting and coatings.

1.2 Scope of Work

1.2.1 Work under this section includes providing paint or coatings but not limited to:

.1 Surface preparation of substrate

.2 Provision of materials, labour, and equipment required to complete painting or coatings works

.3 Waste management and disposal of materials

1.3 Related Sections

1.3.1 Section 04220 – Concrete Masonry Unit

1.3.2 Section 05500 – Metal Fabrications

1.3.3 Section 08110 – Steel Doors and Frames

1.3.4 DIVISION 15 – MECHANICAL

1.3.5 DIVISION 16 – ELECTRICAL

1.4 References

1.4.1 The Master Painters Institute (MPI):

.1 MPI Architectural Painting Specification Manual 2005

.2 MPI Approved Products List, 2012

1.4.2 American Society for Testing and Materials (ASTM):

.1 ASTM D3960-05 (201) - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

.2 ASTM D523-14 (2018) - Standard Test Method for Specular Gloss

1.4.3 Underwriters Laboratories of Canada (ULC):

.1 UL 2760 - Surface Coatings: Recycled Water-borne

.2 UL 2768 - Standard for Sustainability for Architectural Surface Coatings

1.4.4 Environmental Protection Agency (EPA):

.1 EPA SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods

1.4.5 Society of Protective Coatings

.1 SSPC-SP 1 - Solvent Cleaning

.2 SSPC-SP 2 - Hand Tool Cleaning

.3 SSPC-SP 3 - Power Tool Cleaning

.4 SSPC-SP 6/NACE No. 3 - Commercial Blast Cleaning

.5 SSPC-SP 7/NACE No. 4 - Brush-off Blast Cleaning

1.4.6 National Fire Code of Canada 2015

1.5 Submittals

1.5.1 Make submittals in accordance with Section 01010 – General Requirements.

1.5.2 All paint systems to be submitted at same time for coordination and colour selection.

1.5.3 Provide on cover letter, listing all submitted products with MPI products numbers and categorized by MPI formula systems as outlined in this specification.

1.5.4 Submit full records of all products used. List each product in relation to finish formula and include the following:

.1 Finish formula designation

.2 Product type and use

.3 Manufacturer’s product number

.4 Colour number

.5 Manufacturer’s Material Safety Data Sheets (MSDS)

.6 Maximum VOC classification

.7 Eco-Logo certification.

.8 Submit manufacturer’s application instructions for each product specified.

1.5.5 Product Data:

.1 Subcontractor to receive well written confirmation of specific surface preparation procedures and primers used for fabricated steel items from fabricator/supplier to ensure appropriate and manufacturer compatible finish coat materials prior to commencement of painting.

.2 Subcontractor to receive written Product Data regarding chemical composition of coatings or treatments applied by others (pressure preservatives, admixtures and sealers, etc.) and their paintability.

.3 Submit Product Data for concrete and concrete block primers.

1.5.6 SamplesSubmit physical samples of the standard colour range showing full range of available colours where colour availability is restricted.

.2 Submit samples 30 days before materials are required. Submit the following samples in sizes indicated:

.1 Three (3) copies of brushouts minimum 200mm x 250mm of each finish including colour, sheen and texture required 30 days prior to commencement of application. Identify each sample with job, finish, colour name, number, sheen and gloss values, substrate to be applied to, date and name of Subcontractor.

1.5.7 Scheduling

.1 Submit work schedule for various stages of painting to Engineer for approval. Submit schedule minimum of two (2) working days in advance of proposed operations.

.2 Obtain written authorization from Engineer for any changes in work schedule.

1.5.8 Closeout Submittals

.1 Submit list of materials used, together with MSDS for each Product for incorporation into the Operations and Maintenance Manuals. Include maintenance information such as cleaning and full pigment information for future touch up.

1.5.9 Extra Materials

.1 Submit one (1) unopened four-litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.Deliver to Engineer and store where directed.

1.6 **Quality Assurance**

1.6.1 Execute work of this Section by a firm which has adequate plant, equipment and skilled workers to perform work expeditiously and which is known to have been responsible, during immediate past 5 years, for installations similar to the scope of work contained herein. Ensure firm is fully conversant with applicable laws, bylaws, codes, fire, health and safety regulations and other regulations which govern.

1.6.2 Provide work of this Section executed by competent applicators with membership in good standing in OPCA and/or PDCA and have a minimum of 5 years experience in application of Products, systems, coatings and assemblies specified and with approval and training of Product manufacturers.

1.6.3 Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet requirements of the specifications. Produce documents when requested by engineer.

1.6.4 Retain the batch or lot number for each product.

1.6.5 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: No defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.7 **Delivery, Storage and Handling**

1.7.1 Deliver and store materials in original containers, sealed, with labels intact.

1.7.2 Indicate on containers or wrappings:

.1 Manufacturer's name and address.

.2 Type of paint.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

1.7.3 Remove damaged, opened and rejected materials from site.

1.7.4 Provide and maintain dry, temperature controlled, secure storage. Store materials and supplies away from heat generating devices.

1.7.5 Store materials and equipment in a well-ventilated area with temperature range to meet the manufacturer's specifications.

1.7.6 Provide minimum one (1) 9 kg dry chemical fire extinguisher adjacent to storage area.

1.7.7 Remove only in quantities required for same day use.

1.7.8 Fire Safety Requirements:

.1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable combustible materials in accordance with the National Fire Code of Canada.

1.8 **Environmental Requirements**

1.8.1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials.

1.8.2 Ventilation:

.1 Contractor to provide continuous ventilation during and after application of paint. Run ventilation system 24 hours per day during installation and for seven (7) days after completion of application of paint.

.2 Substrate and ambient temperature must be within limits prescribed by manufacturer to approval of Engineer. Substrate and ambient temperature must be within limits prescribed by manufacturer to approval of Engineer.

1.8.3 Maintain minimum substrate and ambient air temperature of 10ºC. Maximum relative humidity 85 percent. Maintain supplemental heating until paint has cured sufficiently. Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.

1.8.4 Apply paint finish only in areas where dust is no longer being generated by related construction operations, such that airborne particles will not affect the quality of the finished surface.

1.8.5 Apply paint only when surface to be painted is dry, properly cured and adequately prepared.

1.9 **Warranty**

1.9.1 Warrant work of this Section for a period of 2 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which became apparent within warranty period, to satisfaction of the Engineer and at no expense to the Owner. Defects include but are not limited to material and workmanship defects such as:

.1 Improper cleaning and preparation of surfaces.

.2 Entrapped dust and dirt.

.3 Material shrinkage, cracking, splitting and defective workmanship.

2 PRODUCTS

2.1 **Materials**

2.1.1 Paint materials for each coating formula to be products of a single manufacturer.

2.1.2 Regulatory Requirements:

.1 Conform to latest edition of Industrial Health and Safety Regulations issued by applicable authorities having jurisdiction in regard to site safe.

.2 Comply with more stringent of applicable laws, bylaws, codes, fire regulations, health and safety regulations of authorities having jurisdiction or requirements. Ensure standards used for work of this Section are considered a minimum.

.3 Where required, ensure paints and coatings meet flame spread and smoke developed ratings designated by local code requirements and/or authorities having jurisdiction.

.4 Conform to requirements of local authorities having jurisdiction in regard to storage mixing application and disposal of paint and related waste materials.

2.1.3 Low odour products: whenever possible, select products exhibiting low odour characteristics. If two (2) products are otherwise equivalent, select the product with the lowest odour.

2.1.4 Water based paints and coatings must maintain a minimum surface and ambient air temperature of between 18°C and 32°C during application and drying of paint and maintain until building occupancy occurs.

2.1.5 Solvent based paints and contains must maintain a minimum interior surface and ambient air temperature of between 7°C and 35°C during application and drying of paint and maintain until building occupancy occurs.

2.1.6 Where required, use only materials having minimum MPI “Environmental Friendly” E3 rating based on VIC (10 CFR 59)

2.1.7 Where indoor air quality (odour) is an issue, use only MPI listed materials having a minimum E3 rating.

2.1.8 Water-borne surface coatings must:

.1 Meet or exceed all applicable governmental and/or industrial safety and performance standards.

.2 Manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, bylaws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).

2.1.9 Water-borne surface coatings must not be formulated or manufactured with: aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

2.1.10 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61ºC or greater.

2.1.11 Water-borne surface coatings and recycled water-borne surface coatings must contain information describing proper disposal methods within their packaging.

2.1.12 Recycled water-borne surface coatings must not contain:

.1 Lead in excess of 600.0 ppm weight/weight total solids.

.2 Mercury in excess of 50.0 ppm weight/weight total product.

.3 Cadmium in excess of 1.0 ppm weight/weight total product.

.4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.

.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

2.1.13 Substitution Limitations:

.1 Comparable Products from other manufacturer not listed herein will be accepted provided they meet requirements of MPI Approved paints and this Specification after full review by the Engineer.

2.2 Colours

2.2.1 Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials allowed only with Engineer's written permission.

2.2.2 Second coat in a three-coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 Interior Paint Finishes / Coatings

2.3.1 Concrete Masonry Units (CMU's):

.1 (PT 2) as indicated in Paint Finishes Schedule.

.1 Benjamin Moore

2.3.2 Metal Doors and Frames:

.1 (PT 1) as indicated in Paint Finishes Schedule.

.1 Dulux

.2 (FRAME) as indicated in Paint Finishes Schedule.

.1 Benjamin Moore

2.3.3 Plaster and Gypsum Board:

.1 (PT 2) as indicated in Paint Finishes Schedule.

.1 Benjamin Moore

2.4 EXECUTION

2.5 General

2.5.1 Perform all painting operations in accordance with MPI Architectural Painting Specification Manual, except where specified otherwise.

2.5.2 Apply all paint materials in accordance with paint manufacturer's written application instructions.

2.5.3 Commencement of work does not imply acceptance of surfaces except as qualified herein. Surfaces such as concrete, masonry, structural steel and miscellaneous metal, wood, gypsum board and plaster, is not responsibility of this Subcontractor. Commencement of work implies acceptance of previously completed work.

2.6 Preparation

2.6.1 Provide scaffolding, staging, platforms and ladders, as required for execution of work. Erect scaffolding to avoid interference with work of other trades. Comply with the Occupational Health and Safety Act.

2.6.2 Remove electrical cover plates, light fixtures, surface hardware on doors, door stops, bath accessories and all other surface mounted fittings and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.

2.6.3 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

2.6.4 Prohibit traffic, where possible, from areas where painting is being carried out and until paint is cured.

2.6.5 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Engineer.

2.7 Protection

2.7.1 Protect existing building surfaces not to be painted from paint splatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Engineer.

2.7.2 Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

2.7.3 Protect items that are permanently attached such as Fire Labels on doors and frames.

2.7.4 Protect factory-finished products and equipment.

2.8 Existing Conditions

2.8.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Engineer all damage, defects, unsatisfactory or unfavourable conditions before proceeding with work.

2.8.2 Investigate moisture content of surface to be painted, and report findings to Engineer. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

2.8.3 If substrate is steel, do not apply coatings over or when surface temperature is within 3°C of the dew point.

2.8.4 If the substrate is wood, do not stain or paint if moisture reading is higher than 15%. Inspect work to assure surfaces are smooth, free from machine marks and nail heads have been countersunk.

2.8.5 If substrate is new plaster or masonry, allow to cure for 30 to 90 days. Ensure moisture content is between 12% to 14% and test for alkalinity and neutralize (pH 6.5 – 7.5) before proceeding with priming.

2.8.6 If substrate is gypsum board, inspect to ensure joints are completely filled and sanded smooth. Inspect surfaces for “nail popping”, screw heads not recessed and taped, breaks in surface or other imperfections.

2.8.7 Where Room Finish Schedule indicates existing and/or new wall finishes to be painted, existing surfaces such as existing door and frames, mechanical supply and return air grilles (walls and ceilings), access doors and electrical panels which have been previously painted to be painted for a complete finish room. If Room Finish Schedule indicates “-“ it denotes entire room need not be painted, paint only patched areas.

2.9 Cleaning

2.9.1 Clean all surfaces to be painted as follows.

.1 Remove all dust, dirt and other surface debris by vacuuming and wiping with dry, clean cloths.

.2 Wash surfaces with solution of T.S.P. bleach and clean, warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 To prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger-operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean-up water-based paints.

2.9.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint or pre-treatment as soon as possible after cleaning and before deterioration occurs.

2.9.3 Sand existing surfaces with intact, smooth, high gloss coatings to provide adequate adhesion for new finishes.

2.10 Surface Preparation

2.10.1 Prepare substrate in accordance with the MPI Architectural Painting Specification Manual

2.10.2 Remove doors before painting to paint bottom and top edges and re-hang once dry. Do not paint stainless steel or bronze door butts. Paint or finish top and bottom edges of doors. Touch-up or refinish tops and edges after fitting.

2.10.3 Previously Finished Surfaces:

Clean existing interior surfaces to be repainted or varnished to provide bond. Remove rust, scale, oil, grease, mildew, chemicals and other foreign matter. Remove loose paint and fill flush with suitable patching material. Clean off bubbled, cracked, peeling or otherwise defective paint by stripping with suitable environmental strippers or by burning. Do not burn off paints suspected of having lead content. Treat residue from stripping as Hazardous Waste. Flatten gloss paint and varnish with sandpaper and wipe off dust. If previous coatings have failed so as to affect proper performance or appearance of coatings to be applied, remove previous coatings completely and prepare substrates properly and refinish as specified for new work. Leave entire surface suitable to receive designated finishes and in accordance with manufacturer’s instructions.

2.10.4 Gypsum Board:

.1 Examine and ensure gypsum board surfaces are without defects or deficiencies and suitable to receive painting applications. Commencement implies acceptance of gypsum board work. Examine surfaces after for imperfections showing through and fill small nicks or holes with patching compound and sand smooth. Examine surfaces after priming for imperfections showing through.

.2 Clean surfaces dry, free of dust, dirt, powdery residue, grease, oil, was or any other contaminants. Sand and dust as necessary prior to painting and between coats to provide an anchor for next coat and to remove defects visible from a distance up to 1m.

2.10.5 Fire Resistant Coatings:

.1 Coordinate with coating manufacturer for surface preparation requirements to ensure proper adhesion of finish.

2.11 Surface Preparation – Metal

2.11.1 Prepare aluminum and galvanized steel by acid etching using MPI Product #25. Rinse with clean water and thoroughly dry.

2.11.2 Clean new metal surfaces to be painted by: removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with the following, as described in each of the painting systems in the MPI Architectural Painting Specification Manual:

.1 Solvent cleaning: SSPC-SP-1.

.2 Hand tool cleaning: SSPC-SP-2.

.3 Power tool cleaning: SSPC-SP-3.

.4 Commercial blast cleaning: SSPC-SP-6.

.5 Brush-off blast cleaning: SSPC-SP-7.

2.11.3 Clean existing metal surfaces to be repainted by removing loose, cracked, brittle or non-adherent paint, rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with following, as described in each of the painting systems in the MPI Architectural Painting Specification Manual:

.1 Scrape edges of old paint back to sound material. Where remaining paint is thick and sound, feather exposed edges.

.2 Commercial blast clean rusted and bare metal surfaces where existing paint system has failed.

.3 Solvent cleaning: SSPC-SP-1.

.4 Hand tool cleaning: SSPC-SP-2.

.5 Power tool cleaning: SSPC-SP-3.

.6 Commercial blast cleaning: SSPC-SP-6.

.7 Brush-off blast cleaning: SSPC-SP-7.

2.11.4 Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes and vacuum cleaning.

2.11.5 Do not apply paint until prepared surfaces have been accepted by Engineer.

2.12 **Mixing Paint**

2.12.1 Unless otherwise specified herein or pre-approved, paint to be ready and factory tinted.

2.12.2 Mix ingredients in container before and during use and ensure breaking-up of lumps, complete dispersion of settled pigment and uniform composition.

2.12.3 Thin paint for spraying according to manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Engineer.

2.12.4 Do not use kerosene or any such organic solvents to thin water-based paints.

2.13 **Application**

2.13.1 Method of application to be as approved by Engineer. Apply paint by brush, roller, air sprayer or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.

2.13.2 Safety Precautions:

.1 When handling solvent coating materials, wear approved vapour/particulate respirator as protection from vapours. Dust respirators do no provide protection from vapours

2.13.3 Brush application:

.1 Work paint into cracks, crevices and corners. Paint surfaces not accessible to brushes by spray, daubers or sheepskins.

.2 Brush out runs and sags.

.3 Remove runs, sags and brush marks from finished work and repaint.

2.13.4 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes to work paint into cracks, crevices and places that are not adequately painted by spray.

2.13.5 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Engineer.

2.13.6 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

2.13.7 Allow surfaces to dry and properly cure, after cleaning and between subsequent coats, for minimum time period, as recommended by manufacturer.

2.13.8 Sand and dust between each coat to remove visible defects.

2.13.9 Finish tops of cupboards, cabinets and projecting ledges, both above and below sight lines as specified for surrounding surfaces.

2.13.10 Finish inside of cupboards and cabinets as specified for outside surfaces.

2.13.11 Finish closets and alcoves as specified for adjoining rooms.

2.13.12 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

2.13.13 Finish behind wall-mounted items.

2.13.14 Finish listed surfaces indicated on the Room Finish Schedule and/or noted on Drawings and as specified. Refer to Room Finish Schedule for type, location and extent of finishes required and include touch-ups and field painting necessary to complete work shown, scheduled or specified.

2.13.15 Finishes and number of coats specified in Room Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimal coverage and appearance.

2.13.16 Do not paint baked paint surface, chrome plated, stainless steel, aluminum or other surfaces finished with final finish in factory. Finish paint primed surfaces.

2.13.17 Apply additional paint coats, beyond number of coats specified for any surface, to completely cover and hide substrate and to produce a solid, uniform appearance.

2.13.18 Apply primer coat soon after surface preparation is completed to prevent contamination of substrate

2.13.19 Provide paint coating thicknesses indicated, measured as minimum DFT.

2.14 Mechanical Electrical Equipment

2.14.1 In finished areas paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment. Colour and texture to match adjacent surfaces, except as noted otherwise.

2.14.2 In boiler room, mechanical and electrical rooms paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

2.14.3 In other unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch-up scratches and marks.

2.14.4 Touch-up scratches and marks on factory-painted finishes and equipment with paint as supplied by manufacturer of equipment.

2.14.5 Do not paint over nameplates.

2.14.6 Keep sprinkler heads free of paint.

2.14.7 Paint disconnect switches for fire alarm system and exit light systems in Red enamel.

2.14.8 Paint all fire protection piping Red.

2.14.9 Paint all natural gas piping Yellow.

2.14.10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish, except for touch-up, as required and paint conduits, mounting accessories and other unfinished items.

2.15 **Field Quality Control**

2.15.1 Field inspection of painting operations to be carried out by independent inspection firm as designated by Engineer.

2.15.2 As work progresses and upon completion of work, submit written reports and manufacturers' confirmation that materials and application methods conform to manufacturers' requirements.

2.15.3 Advise Engineer when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

2.15.4 Cooperate with inspection firm and provide access to all areas of the work.

2.15.5 Non-Conforming Work:

.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction to Consultant at no cost to the Owner. Touch-up small affected areas, repaint large affected areas or areas without sufficient DFT of paint. Remove runs, sags, of damaged paint by scraper or by sanding prior to application of paint.

.2 Lack of uniformity – the following are considered non-conforming qualities:

.1 Brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas and foreign materials in paint coatings.

.2 Evidence of poor coverage at rivet heads, plated edges, lap joints, crevices, pockets, corners and re-entrant angles.

.3 Damage due to touching before paint is sufficiently dry or any other contributory cause.

.4 Damage due to application on moist surfaces or caused by inadequate protection from weather.

.5 Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.)

2.16 **Restoration**

2.16.1 Clean and re-install all hardware items that were removed before undertaking painting operations.

2.16.2 Remove protective coverings and warning signs as soon as practical after operations cease.

2.16.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and splatter immediately as operations progress, using compatible solvent.

2.16.4 Protect freshly completed surfaces from paint droppings and dust to approval of Engineer. Avoid scuffing newly applied paint.

2.16.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Engineer.

2.17 **Waste Management**

2.17.1 Disposal of paint waste:

2.17.2 Be responsible for removal and disposal of material and waste generated.

2.17.3 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are hazardous Products and are subject to regulations for disposal. Obtain information on these controls from applicable authorities having jurisdiction.

2.17.4 Separate and recycle waste materials. Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility. Treat materials that cannot be reused as hazardous waste and dispose of in an appropriate manner.

2.17.5 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

2.17.6 To reduce amount of contaminants entering waterways, sanitary/storm drain systems or into ground adhere to the following procedures:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case clean equipment using free draining water.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Dry empty paint cans prior to disposal or recycling (where available).

.6 Close and seal tightly partly used cans of materials including sealants and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

.7 Set aside and protect surplus and uncontaminated finish materials not required by Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

2.18 **Cleaning**

.1 Clean all surfaces to be painted as follows.

.2 Remove all dust, dirt and other surface debris by vacuuming and wiping with dry, clean cloths.

.3 Wash surfaces with solution of T.S.P. bleach and clean, warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.4 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.5 Allow surfaces to drain completely and allow to dry thoroughly.

.6 To prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.7 Use trigger-operated spray nozzles for water hoses.

.8 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean-up water based paints.

.9 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint or pre-treatment as soon as possible after cleaning and before deterioration occurs.

.10 Sand existing surfaces with intact, smooth, high gloss coatings to provide adequate adhesion for new finishes.

END OF SECTION

1 GENERAL

1.1 Intent of Section

1.1.1 This section of the contract includes the supply and installation of all washroom accessories called for or shown by the drawings and specifications, together with all necessary incidentals whether referred to or not, as will be required to complete the work to the full intent and meaning of the drawings and specifications. The work includes but is not limited to washroom accessories.

1.2 Related Sections

1.2.1 DIVISION 1 - GENERAL REQUIREMENTS.

1.3 Submittals

1.3.1 Submit shop drawings or catalogue illustrations in accordance with Section 01010 – General Requirements.

1.3.2 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars. Also includes setting heights.

2 PRODUCTS

2.1 Manufacturer

2.1.1 Products listed are manufactured by Bobrick Washroom Equipment of Canada Ltd.

2.1.2 Stainless steel products as manufactured by Bobrick Washroom Equipment of Canada are used for the purpose of establishing quality. Equal stainless steel products of the following manufacturers will be accepted:

.1 Bradley Washroom Accessories

2.1.3 Fasteners: Screws and bolts hot dip galvanized. Expansion shields fibre, lead or rubber as recommended by fixture manufacturer for component and its intended use.

2.2 Finishes

2.2.1 Stainless Steel: to AINSI No. 4 satin luster finish unless noted otherwise.

2.3 List of Materials

2.3.1 All washroom accessories listed below are supplied by Bobrick Washroom Equipment of Canada Ltd.

2.3.2 (TPD) Surface mounted roll toilet tissue dispenser. Double roll heavy duty aluminum casting, B-2740.

2.3.3 (PTD) Paper towel dispenser and waste receptacles [B-369 satin stainless steel finish.

2.3.4 (SD) Soap dispenser for wall mount B-2111.

2.3.5 (CH) Coat hooks B-2116.

2.3.6 (MIR) Mirrors: No. 1 quality, 6 mm thick glass mirror, heavy galvanized steel back; stainless steel frame with mitred corners, tamperproof mounting.

.1 Barrier-free tilt mirror – B-293 2463 (610 mm x 915 mm).

2.3.7 Grab Bars: 32 mm diameter, stainless steel, peened finish, concealed mounting: Bobrick B-5806 Series: anchors to have pull capacity of 250 kg minimum. Grab bars at WC for handicapped: two (2) required at each WC: one (1) 600 mm long (GB1) mounted horizontally behind and one (1) 'L' shaped 712 mm long 712 mm high (GB2) mounted at 450 at side.

2.4 Fabrication

2.4.1 Back paint components where contact is made with building finishes to prevent electrolysis.

2.4.2 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates for rough-in measurements as required.

2.4.3 Provide steel anchor plates and components for installation on studding and building framing.

3 EXECUTION

3.1 Installation

3.1.1 Install and secure fixtures rigidly in place as follows:

.1 Stud Walls: Install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.

.2 Hollow Masonry Units or Existing Plaster/Drywall: Use toggle bolts drilled into cell/wall cavity.

.3 Solid Masonry, Marble, Stone or Concrete: Use bolt with lead expansion sleeve set into drilled hole.

.4 Use tamper proof screws/bolts for fasteners.

.5 Fill units with necessary supplies shortly before final acceptance of building.

END OF SECTION

15.0 DRAWINGS

CLASSROOM ALTERATION

DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL

PROJECT No. (CIMA): Z0013706
2024-06-28 ISSUED FOR PERMIT / TENDER

C2Architecture
CIMA+

ARCHITECTURAL SHEET LIST

SHEET #	SHEET NAME
A001	COVER PAGE AND SHEET LIST
A001	GENERAL NOTES
A002	GENERAL INFORMATION / ASSEMBLIES
A003	EXISTING KEY PLANS / OBC MATRIX
A004	TYPICAL MOUNTING HEIGHTS
A005	EXISTING CONDITIONS: SITE IMAGES
A006	EXISTING CONDITIONS: SITE IMAGES
A101	PLP CLASSROOM DEMO / PROPOSED PLANS
A102	PLP CLASSROOM DEMO / PROPOSED RCP
A103	ENLARGED B.F. DEMO / PROPOSED PLANS
A104	NEW LAUNDRY DEMO / PROPOSED PLANS
A105	NEW LAUNDRY DEMO / PROPOSED RCP
A601	INTERIOR ELEVATIONS
A601	DOOR SCHEDULE
A602	ROOM FINISH SCHEDULE
A603	MILLWORK SCHEDULE AND DETAILS
A604	EXTERIOR DETAILS

MECHANICAL SHEET LIST

SHEET #	SHEET NAME
M101	PLP CLASSROOM DEMOLITION HVAC LAYOUT
M201	PLP CLASSROOM NEW PLUMBING LAYOUT
M301	PLP CLASSROOM NEW HVAC LAYOUT
M801	LEGENDS AND NOTES
M802	SCHEDULES AND CONTROLS
M901	DETAILS

ELECTRICAL SHEET LIST

SHEET #	SHEET NAME
E101	PLP CLASSROOM DEMOLITION ELECTRICAL LAYOUT
E201	PLP CLASSROOM NEW POWER LAYOUT
E301	PLP CLASSROOM NEW LIGHTING LAYOUT
E801	PLP CLASSROOM LEGENDS AND NOTES
E901	PANEL SCHEDULE & DETAILS

STRUCTURAL SHEET LIST

SHEET #	SHEET NAME
S101	PLP CLASSROOM STRUCTURAL DETAILS

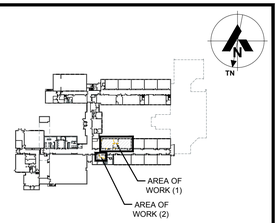
TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL NOTES 1:

1. ALL WORK TO COMPLY WITH ALL APPLICABLE BUILDING CODES AND BY-LAWS,
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON SITE, AND BRING ANY DISCREPANCIES FORWARD BEFORE TENDER OR SUBMITTING A QUOTE,
3. THE CONTRACTOR IS TO BE RESPONSIBLE FOR REFINISHING ALL DAMAGED SURFACES TO ADJACENT AREAS AND NEW AREAS,
4. THESE DRAWINGS SHALL NOT BE SCALED UNLESS OTHERWISE AND SPECIFICALLY NOTED. ACCURACY OF ANY SCALES PROVIDED ARE NOT GUARANTEED,
5. INSTALL ALL PRODUCTS IN CONFORMANCE WITH MANUFACTURER'S SPECIFICATIONS,
6. REMOVE ALL REDUNDANT EQUIPMENT AND MATERIALS FROM SITE AND DISPOSE OF IN AN APPROVED MANNER. REDUNDANT EQUIPMENT AND MATERIALS SHALL NOT BE ABANDONED IN PLACE,
7. THE CONTRACTOR SHALL PRICE, SUPPLY, & INSTALL ALL PRODUCTS NOTED THROUGHOUT THIS DRAWING SET UNLESS OTHERWISE STATED AS: "*SUPPLIED BY*" AND/OR "*INSTALLED BY*," THE "*OWNER*," AND/OR "*DDSB*",
8. ITEMS TO BE TURNED OVER TO OWNER (*DDSB*) ARE TO BE DELIVERED TO THE MAINTENANCE SHOP (710 BAYLY STREET, AJAX) IF TURN OVER AT THE EDUCATION CENTRE IS NOT ACCEPTABLE OR APPROPRIATE,
9. AT NO TIME SHALL MASONRY DRY CUTTING TAKE PLACE, ALL MASONRY TO BE WET-CUT ONLY,
10. UNLESS OTHERWISE PROVIDED BY THE MANUFACTURER, A MINIMUM OF 1 YEAR WARRANTY SHALL BE PROVIDED FOR ALL NEW INSTALLATIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY REMOVAL OF DOOR COMPONENTS IN ANY UNFORESEEN SITUATION(S) WHICH ARISE FROM MATERIAL / PRODUCT SIZE BEING INCOMPATIBLE WITH THE EXISTING, UNALTERED OPENING(S).
12. THE CONTRACTOR SHALL CARRY A CASH ALLOWANCE TO COVER WORK INVOLVING THE BUILDING AUTOMATION CONTROLS INSTALLATION AND ABATEMENT AND PA/DATA. REFER TO TENDER FRONT END AND SPECIFICATIONS FOR DETAILS.

GENERAL NOTES 2:

1. **GRIDLINES:** ALL GRIDLINES ILLUSTRATED ARE EXISTING AND NOT PROPOSED.
2. **VERIFY IN FIELD:** CONTRACTOR TO SITE VERIFY ALL DIMENSIONS, CONDITIONS AND LEVELS ON SITE PRIOR TO FABRICATION / INSTALLATIONS.
3. **VERIFY IN FIELD:** PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE THE FOLLOWING:
   A. VERIFY EXISTING AREAS WITHIN THE SCOPE OF WORK WITH RESPECT TO THE PROPOSED PROBLEMS AND ANY LIMITATIONS.
   B. VERIFY EXISTING ARCHITECTURE, STRUCTURE, AND ALL ADJACENT FINISHES IMPACTED BY THE WORK.
   C. UPON EXAMINING ALL OF THE ABOVE AGAINST THE DRAWINGS AND SPECIFICATIONS AND TERMS OF THE CONTRACT, THE CONTRACTOR MUST BE SATISFIED THAT THE PROPOSED WORK CAN BE CARRIED OUT AS INTENDED, TO THE SATISFACTION OF THE AGENCY, AT NO ADDITIONAL COST TO THE CONTRACT.
4. **EXISTING CONDITIONS SHOWN IN THESE CONTRACT DOCUMENTS:** THE EXISTING CONDITIONS SHOWN IN THIS DRAWING SET ARE BASED ON DRAWINGS PROVIDED BY DURHAM DISTRICT SCHOOL BOARD PREPARED BY DURHAM DISTRICT SCHOOL BOARD DATED MAY 2024; WITH MINOR ADJUSTMENTS BASED ON INFORMATION COLLECTED THROUGH SITE VISITS CONDUCTED BY CIMA+ STAFF. CONTRACTOR TO REPORT TO CONSULTANTS IMMEDIATELY UPON UNCOVERING ANY UNKNOWN SERVICES AND / OR ANY DISCREPANCY BETWEEN SITE CONDITIONS AND DRAWINGS SHOWN WHICH MAY AFFECT SCOPE OF WORK.
5. **SUBSTRATES TO BE MADE GOOD:** MAKE SUBSTRATES GOOD AND LEVEL TO RECEIVE NEW FINISHES.
6. **PROTECT EXISTING FINISHES:** PROTECT EXISTING FINISHES TO REMAIN AS INDICATED ON DRAWINGS.
7. **EXISTING FINISHES:** REPAIR, PATCH AND MAKE GOOD ALL EXISTING FINISHES AFFECTED BY CONSTRUCTION.
8. **NEW TO MATCH EXISTING:** ALL NEW WORK TO MAKE GOOD EXISTING, SHALL MATCH EXISTING IN MATERIAL CONSTRUCTION AND FINISH UNLESS OTHERWISE NOTED.
9. **PENETRATIONS IN EXISTING:** IN CASE OF NEW PENETRATIONS IN FLOORS AND / OR WALLS, MAKE GOOD AND REPAIR AS REQUIRED. CO-ORDINATE WORK WITH ALL DISCIPLINES.
10. **OPENINGS / PENETRATIONS:** ANY OPENINGS IN FIRE RATED WALLS, CEILINGS AND FLOORS TO BE RETURNED TO EQUIVALENT CONDITION PRIOR TO COMPLETION OF THE CONTRACT. ALL ELECTRICAL AND MECHANICAL PENETRATIONS TO BE SEALED WITH FIRE STOP MATERIAL AS PER SPECIFICATION.
11. **SCANNING:** DETERMINE AREAS WHERE CUTTING, DRILLING, OR SLEEVING THROUGH EXISTING STRUCTURE OR UNDERGROUND PIPING INSTALLATION IS REQUIRED AND PERFORM SCANNING / X-RAYS / TESTING / INVESTIGATION / INSPECTIONS PRIOR TO COMMENCEMENT OF WORK. REPAIR AND RE-INSTATE EXISTING SERVICES IMMEDIATELY IF DAMAGED.
12. **CUTTING AND FITTING:** ALL REQUIRED CUTTING AND FITTING INCLUDING ELECTRICAL AND MECHANICAL TO CONNECT THE EXISTING WORK WITH THE NEW WORK SHALL BE PERFORMED AS PART OF THIS CONTRACT AS AN ENTIRE OR COMPLETE WORK IN A PROFESSIONAL AND WHOLE MANNER.
13. **COORDINATION ITEMS:** ALL ITEMS INDICATED IN THE CONTRACT DOCUMENTS AS "CO-ORDINATION ITEM" ARE TO BE SUPPLIED BY EITHER AGENCY OR GENERAL CONTRACTOR BUT WILL REQUIRE THE COMMON ACTION OR EFFORT OF THE GENERAL CONTRACTOR IN RELATION TO THE OVERALL PROJECT WITH RESPECT TO ALL CO-ORDINATION ITEMS IDENTIFIED. THE GENERAL CONTRACTOR IS EXPECTED TO:
   A. REVIEW ALL ITEMS IDENTIFIED AS "CO-ORDINATION ITEM" AND COMMUNICATE WITH THE REQUIRED RESPONSIBLE PARTIES OF THE DEVICES AND DETAILED REQUIREMENTS OF EACH DEVICE AS IT IMPACTS THE WORK OF THE GENERAL CONTRACTOR AS IT RELATES TO THE OVERALL COMPLETION OF THE PROJECT.
   B. VERIFY THE EXISTING CONDITION AND ANY LIMITATIONS OF THE DEVICE AS INSTALLED IN THE PROPER LOCATION.
   C. PROVIDE ALL REQUIRED ROUGH-INS, RELATED CONSTRUCTION AND CONNECTIONS REQUIRED BY THE DEVICES OF OTHERS TO SUIT THE CO-ORDINATION ITEM AND AS INDICATED IN THE CONTRACT DOCUMENTS.
   D. SCHEDULE AND CO-ORDINATE THE WORK OF OTHERS INTO THE OVERALL CONSTRUCTION SEQUENCE TO AVOID UNNECESSARY DELAYS TO THE COMPLETION OF THE PROJECT.
   E. PROVIDE AND VERIFY DIMENSIONS TO ENSURE DEVICE IS COORDINATED FOR INSTALLATION PER DOCUMENTS.
   F. CO-ORDINATION ITEMS:
      a. SOAP DISPENSERS TO BE PROVIDED BY OWNER HOWEVER GC INSTALLED
      b. PAPER TOWEL DISPENSERS TO BE PROVIDED BY OWNER HOWEVER GC INSTALLED
      c. TOILET PAPER DISPENSERS TO BE PROVIDED BY OWNER HOWEVER GC INSTALLED
14. **EXPOSED CONDUIT:** ALL EXPOSED CONDUIT TO BE PAINT FINISH. PAINT COLOUR TO BE CONFIRMED BY CONSULTANT. GENERAL CONTRACTOR TO CONFIRM PROPOSED ROUTING OF EXPOSED CONDUIT TO ARCHITECT AND AGENCY FOR APPROVAL BEFORE ENGAGING IN ANY WORK.
15. **EXISTING FIRE RATED SEPARATIONS:** MAINTAIN THE INTEGRITY OF EXISTING FIRE RATED FIRE SEPARATIONS AT ALL LOCATIONS. CONSTRUCT TEMPORARY FIRE SEPARATIONS OF THE REQUIRED RATING AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
16. **EXISTING FIRE PROTECTION SYSTEMS:** FIRE ALARM SYSTEM IS TO BE MAINTAINED IN FULL OPERATION. CO-ORDINATE ALL WORK TO FIRE PROTECTION SYSTEMS WITH MECHANICAL / ELECTRICAL DRAWINGS AND SPECIFICATIONS. NOTIFY AGENCY MINIMUM 48 HOURS IN ADVANCE OF ANY REQUIRED SHUT DOWNS.
17. **TEMPORARY HOARDING:** GENERAL CONTRACTOR TO BUILD CONSTRUCTION HOARDING COMPLETE WITH LOCKABLE DOOR AT EACH RENOVATION LOCATION AS PER SPECIFICATION.
18. **REMOVE FROM SITE:** ALL REMOVED AND DEMOLISHED MATERIALS TO BE REMOVED FROM SITE.
19. **HAZARDOUS MATERIALS:** REMOVE AND DISPOSE OF HAZARDOUS MATERIALS AS PER GUIDELINES OF AUTHORITIES HAVING JURISDICTION (AHJ) AND RECOMMENDATIONS MADE IN THE ENVIRONMENTAL REPORTS (I.E. DSS REPORTS AND ABATEMENT SPECIFICATIONS. REFER TO ENVIRONMENTAL REPORTS AND SPECIFICATIONS.
20. **DUST CONTROL:** THE CONTRACTOR IS TO PROVIDE THE CLIENT & AUTHORITIES HAVING JURISDICTION A COPY OF OF THE DEMOLITION DUST CONTROL PLAN. DEMOLITION DUST CONTROL PLAN TO CONFORM WITH PEEL REGION PUBLIC HEALTH DEPARTMENT REQUIREMENTS.
21. **N/A**
22. **PERFORM COMPLETE JOB:** CONTRACTOR SHALL PERFORM ALL NECESSARY DEMOLITION, ALTERATIONS, AND NEW CONSTRUCTION AS REQUIRED TO MAKE THE WORK A COMPLETE JOB, INCLUDING BUT NOT LIMITED TO WORK SHOWN ON THE DRAWINGS AND SPECIFICATIONS.
23. **CLEAN WORK AREA:** THE CONTRACTOR SHALL CLEAN THE WORK AREA AT THE END OF EACH WORKING DAY. PROVIDE ADEQUATE DUST PROTECTION AS REQUIRED TO MINIMIZE DUST EXPOSURE TO THE IMMEDIATE WORK AREAS.
24. **EGRESS / EXITING:** MAINTAIN FULL ACCESS TO EXITING AND EGRESS AT ALL TIMES THROUGHOUT CONSTRUCTION. THIS INCLUDES MAINTAINING THE EXIT STAIRS DURING THE RENOVATIONS.
25. **CONFLICTS IN DRAWINGS AND SPECIFICATIONS:** THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL DRAWINGS AND SPECIFICATIONS FROM ALL DISCIPLINES. WHERE A CONFLICT OCCURS BETWEEN DRAWINGS CONTACT THE CONSULTANT IMMEDIATELY PRIOR TO PROCEEDING WITH THE WORK.
26. **DEMO WORK OF OTHERS:** FOR MECHANICAL AND ELECTRICAL DEMOLITION WORK, REFER TO AND COORDINATE WITH MECHANICAL AND ELECTRICAL DOCUMENTATION.
27. **N/A**
28. **WASHROOM ACCESSORIES:** PROVIDE 19mm PLYWOOD BACKING SUPPORT BETWEEN WALL STUDS FOR ALL WALL HUNG ACCESSORIES IN WASHROOMS AND BEHIND ALL GRAB BAR MOUNTING BRACKETS.
29. **PRE-CONSTRUCTION PHOTOS:** THE CONTRACTOR SHALL TAKE PHOTOS OF THE SITE, BUILDING, SERVICES AND FINISHES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH PHOTOS SHALL INCLUDE ALL AREAS THAT FORM A PART OF THE CONSTRUCTION, BOTH INTERIOR AND EXTERIOR, AND WILL PROVIDE RECORD OF THE GENERAL CONDITION OF THE SITE PRIOR TO CONSTRUCTION. PHOTOS SHALL BE SHARED WITH THE AGENCY AND CONSULTANT PRIOR TO ANY CONSTRUCTION STARTING.
30. **N/A**
31. **N/A**



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
LICENCE 4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

ENGINEER:

C2Architecture
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:

DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL

DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

SHEET TITLE:

GENERAL NOTES

DISCIPLINE:

ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A001
SHEET No: 2 of 17	

INTERIOR ASSEMBLIES GENERAL NOTES:

1. ALL PARTITIONS EXTEND FROM TOP OF SLAB TO UNDERSIDE OF SLAB ABOVE UNLESS NOTED OTHERWISE.
2. COORDINATE AND PROVIDE OPENINGS FOR ARCHITECTURAL, MECHANICAL, ELECTRICAL AND STRUCTURAL PENETRATIONS. ENSURE THE INTEGRITY OF FRAMED PARTITIONS. PROVIDE LOOSE LINTELS AS REQUIRED IN MASONRY PARTITIONS.
3. PROVIDE CONCEALED CONTINUOUS REINFORCEMENT AT PARTITIONS AS REQUIRED. REFER TO PLANS FOR LOCATIONS OF MILLWORK, VANITIES, SINKS, HANDRAILS, AND ANY OTHER ITEMS REQUIRING REINFORCEMENT. REFER TO OVERALL GENERAL NOTES ON A103 FOR ADDITIONAL REQUIREMENTS.
4. SUBSTITUTE GYPSUM BOARD WITH CEMENTITIOUS BACKER BOARD OR OTHER APPROVED MATERIALS WHERE WALL TILES ARE SPECIFIED. ENSURE ALL FIRE RATINGS ARE MAINTAINED.
5. PROVIDE MOISTURE RESISTANT GYPSUM BOARD IN PLACE OF GYPSUM BOARD AT ALL LOCATIONS WHERE MOISTURE IS A FACTOR AND CERAMIC TILE IS NOT SPECIFIED.
6. STAGGER RECESSED FIXTURES IN SOUND RATED PARTITIONS BY 600mm MINIMUM.
7. AT NON-RATED FIRE SEPARATIONS, SOUND AND FIRE PARTITIONS, PROVIDE CONTINUOUS CAULKING ALONG PERIMETER OF GYPSUM BOARD AND AT ALL PENETRATIONS.
8. AT CONCRETE BLOCK PARTITIONS PROVIDE CONTINUOUS COMPRESSIBLE JOINT FILLER BETWEEN THE BLOCK AND UNDERSIDE OF SLAB. CAULK EXPOSED JOINTS. (REFER TO STRUCTURAL FOR ALL CONCRETE BLOCK DETAILS
9. ASSEMBLY CONSTRUCTIONS ARE PROVIDED FOR DESCRIPTIVE PURPOSES ONLY. ALL FIRE RESISTANT ASSEMBLIES MUST COMPLY FULLY WITH REQUIREMENTS UNDER THE SPECIFIC ULC DESIGN IN THE UNDERWRITERS LABORATORIES OF CANADA LIST OF EQUIPMENT AND MATERIALS, FIRE RESISTANCE LATEST EDITION (U.L.C.) OR THE SPECIFIC DESIGN IN THE SUPPLEMENTARY GUIDELINES TO THE ONTARIO BUILDING CODE 2006 OR THE SPECIFIC DESIGN IN THE SUPPLEMENT TO THE NATIONAL BUILDING CODE LATEST EDITION (N.B.C.)
10. FIRESTOP ALL PENETRATIONS AT FIRE RATED SEPARATIONS.
11. SEAL ALL FIRE RATED PARTITIONS TO FLOOR SLAB AND UNDERSIDE OF STRUCTURE ABOVE WITH FIRE STOP AND FIRE-PROOFING SEALANT.
12. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE LOCATION OF ALL FIRE SEPARATIONS WITH THE CONTRACT DOCUMENTS. ENSURE THAT ALL RATINGS ARE CONTINUOUS AND MAINTAINED FOR THE ENTIRE SEPARATION AND AT ALL PENETRATIONS.
13. ALL GYPSUM BOARD FINISH, FURRING MATERIALS, AND INTERIOR VENEER MATERIALS SHALL EXTEND A MINIMUM OF 150mm ABOVE THE HIGHTEST ADJACENT FINISHED CEILING UNLESS OTHERWISE NOTED ON THE DRAWINGS.

SYMBOLS LEGEND

DRAWING TAG: DRAWING NUMBER, PAGE NUMBER, DRAWING NAME, DWG. DESCRIPTION, SCALE

ELEVATION TAG: PAGE NUMBER, DRAWING NUMBER

SECTION TAG: DRAWING NUMBER, PAGE NUMBER

INTERIOR ELEV. TAG: DRAWING NUMBER, PAGE NUMBER

EXISTING DOOR & FRAME TO REMAIN:

EXISTING DOOR & HM FRAME TO BE REMOVED:

NEW DOOR & FRAME:

REVISION BUBBLE:

DEMOLITION TAG: NOTE NUMBER

PROPOSED WORK TAG: NOTE NUMBER

TYPE TAG: REFERENCE NUMBER

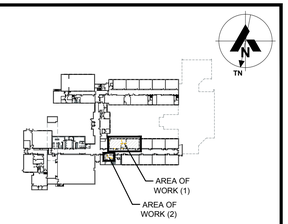
W = WINDOWS & SCREENS
MW = MILLWORK
D = DOOR
P = PARTITION / WALL TYPE
PT = PAINT FINISH
B = BASEBOARD

WALL TYPES

LABEL	DESCRIPTION
P-1	NEW INTERIOR CMU PARTITION: • 5 ¾" LIGHTWEIGHT CMU BLOCK INTERIOR / INTERIOR
P-2	NEW INTERIOR METAL STUD WALL: • ⅝" GYPSUM WALL BOARD • 3 ⅝" METAL STUDS @ 16 O.C. • ½" CEMENTITIOUS BACKER BOARD INTERIOR / INTERIOR
F-1	NEW INTERIOR FURRING: • EXISTING CMU WALL • 3 ⅝" METAL STUDS @ 16 O.C. • ½" CEMENTITIOUS BACKER BOARD INTERIOR / INTERIOR, EX.
F-2	NEW INTERIOR FURRING: • EXISTING CMU WALL • 3 ⅝" METAL STUDS @ 16 O.C. • ½" GYPSUM WALL BOARD INTERIOR / INTERIOR, EX.
F-3	NEW INTERIOR FURRING: • EXISTING CMU WALL • 6" METAL STUDS @ 16 O.C. • ½" GYPSUM WALL BOARD INTERIOR / INTERIOR, EX.
EX-1	EXISTING INTERIOR METAL STUD WALL: • GYPSUM WALL BOARD • PLYWOOD • 6" METAL STUDS • GYPSUM WALL BOARD INTERIOR / INTERIOR, EX.
EX-2	EXISTING INTERIOR CMU PARTITION: • CMU BLOCK INTERIOR / INTERIOR, EX.

CEILING TYPES

LABEL	DESCRIPTION
ACT	NEW SUSPENDED ACOUSTIC TILE CEILING: • 2'-0" X 4'-0" ACOUSTIC TILE CEILING • SUSPENDED ACOUSTIC CEILING GRID
VINYL ACT	NEW SUSPENDED ACOUSTIC TILE CEILING: • 2'-0" X 4'-0" ACOUSTIC TILE CEILING • SUSPENDED ACOUSTIC CEILING GRID
GWB	NEW SUSPENDED GWB CEILING: • 1 LAYER OF ⅝" TYPE "X" GYPSUM BOARD • 22mm METAL FURRING CHANNELS @ 400MM O.C. • 38mm METAL STUD CARRYING CHANNELS @ 400MM 0.C.



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE
4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

ENGINEER:
C2Architecture
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
GENERAL INFORMATION / ASSEMBLIES

DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A002
SHEET No: 3 of 17	

NAME OF PRACTICE: C2 Architecture Inc.
415 Baseline Road West
Bowmanville, ON L1C 5M2

PROJECT NAME: BROCK HIGHSCHOOL RENOVATION

PROJECT ADDRESS: Durham Regional Rd 12,
Cannington, Ontario
L0E 1E0

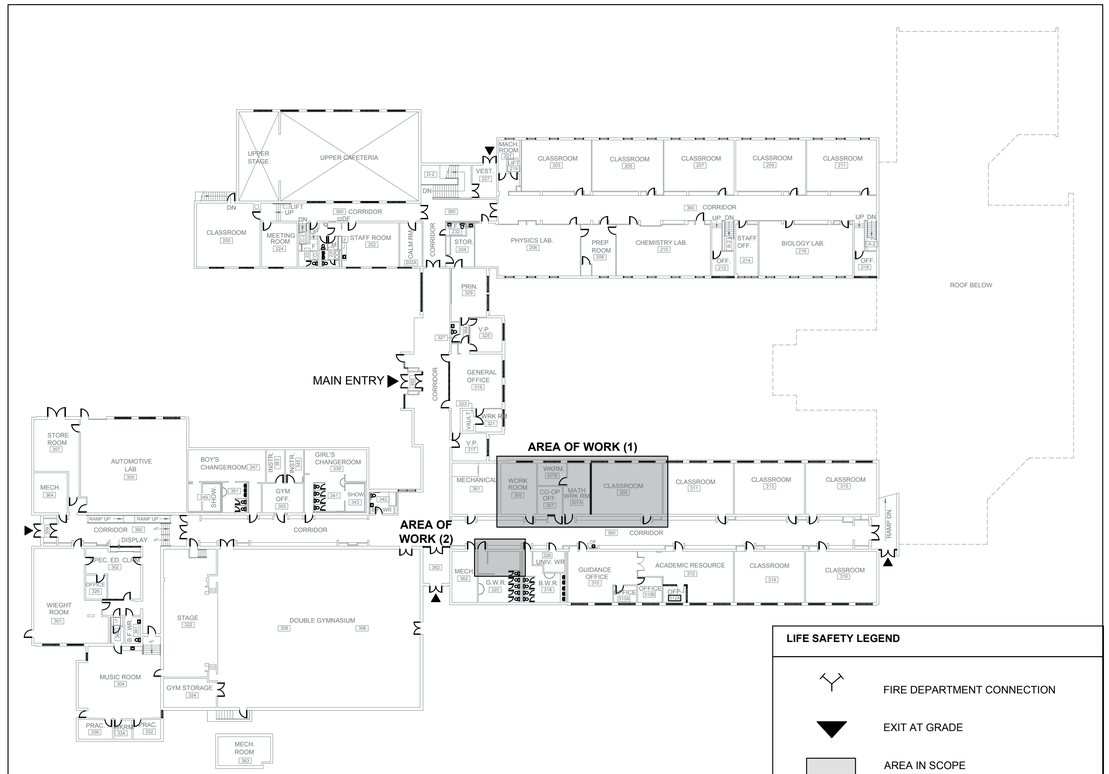
ITEM	ONTARIO BUILDING CODE DATA MATRIX PART 11 - RENOVATION OF EXISTING BUILDING	BUILDING CODE REFERENCE REFERENCES ARE TO DIVISION B UNLESS NOTED [A] FOR DIVISION A OR [C] FOR DIVISION C	COMMENTS
1	PROJECT TYPE: ☐ ADDITION ☒ RENOVATION ☐ CHANGE OF USE ☐ ADDITION AND RENOVATION	1.1.2. [A]	-
2	MAJOR OCCUPANCY(S) : A2 USE: ASSEMBLY (SCHOOL) SUBSIDIARY OCCUPANCY(S) : -- USE: --	3.1.2.1.(1)	-
3	BUILDING AREA (m²) EXISTING: +/- 3,700 m² NEW: -- m² TOTAL: +/- 3700 m²	1.4.1.2. [A]	Building area means the greatest horizontal area of a building above grade, (a) within the outside surface of exterior walls, or (b) within the outside surface of exterior walls and the centre line of firewalls.
5	BUILDING HEIGHT STOREYS ABOVE GRADE: 2 STOREYS BELOW GRADE: 1 (m) ABOVE GRADE: N/A	1.4.1.2. [A] & 3.2.1.1.	3.2.1.1: Exceptions in Determining Building Height A rooftop enclosure provided for elevator machinery, a stairway or a service room for no purpose other than for service to a building, shall not be considered as a storey in calculating the building height
6	NUMBER OF STREETS/FIRE FIGHTER ACCESS: 1	3.2.2.10. & 3.2.5	-
7	EXISTING BUILDING CLASSIFICATION: 3.2.2.24 GROUP/DIV: Group A, Division 2, Up to 6 Storeys, Any Area, Sprinklered IMPORTANCE CATEGORY: ☐ Low ☐ Normal ☐ High ☐ Post-disaster CHANGE IN MAJOR OCCUPANCY: ☐ YES ☒ NO CONSTRUCTION INDEX: -- HAZARD INDEX: --	3.2.2.20.-.83 11.2.1.1. & 4.2.1.(3)	-
8	BUILDING SIZE: ☐ SMALL ☐ MEDIUM ☒ LARGE ☐ >LARGE	T.11.2.1.1.B.-N.	-
9	RENOVATION TYPE: ☒ BASIC RENOVATION ☐ EXTENSIVE RENOVATION	11.3.3.1. & 11.3.3.2.	-
10	OCCUPANT LOAD BASED ON: ☐ m² / PERSON ☒ DESIGN OF BUILDING 1ST FLOOR: OCCUPANCY - LOAD NO CHANGE PERSONS 2ND FLOOR: OCCUPANCY A2 LOAD NO CHANGE PERSONS **TOTAL OCCUPANT LOAD:** NO CHANGE PERSONS	3.1.17.1	-
11	BARRIER-FREE DESIGN: ☒ YES ☐ NO (EXPLAIN) --	11.3.3.2.(2)	-
12	PLUMBING FIXTURE REQUIREMENTS:	3.7.4.	-

LEVEL	OCCUPANCY	OCCUPANT LOAD	BC TABLE NUMBER	FIXTURES REQUIRED			FIXTURES PROVIDED		
				MALE	FEMALE	UNISEX	MALE	FEMALE	UNISEX
BASEMENT:	-	--	--	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.
1ST FLOOR:	-	--	--	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.
2ND FLOOR:	-	--	--	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.
3RD FLOOR:	-	--	--	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.
4TH FLOOR:	-	--	--	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.	--W/C --LAV.

NO CHANGE

13	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-SYSTEMS: ☒ NO ☐ YES EXTENSION OF COMBUSTIBLE CONSTRUCTION: ☒ NO ☐ YES	11.4.2.	-
14	COMPENSATING CONSTRUCTION: ☒ NO ☐ YES (EXPLAIN) -- STRUCTURAL: ☒ NO ☐ YES (EXPLAIN) -- BY INCREASE IN OCCUPANT LOAD: ☒ NO ☐ YES (EXPLAIN) -- BY CHANGE OF MAJOR OCCUPANCY: ☒ NO ☐ YES (EXPLAIN) -- PLUMBING: ☒ NO ☐ YES (EXPLAIN) -- SEWAGE-SYSTEMS: ☒ NO ☐ YES (EXPLAIN) -- EXTENSION OF COMBUSTIBLE CONSTRUCTION: ☒ NO ☐ YES (EXPLAIN) --	11.4.3.	-
14	COMPLIANCE ALTERNATIVES PROPOSED: ☒ NO ☐ YES (EXPLAIN) --	11.5.1.	-
23	NOTES: --		

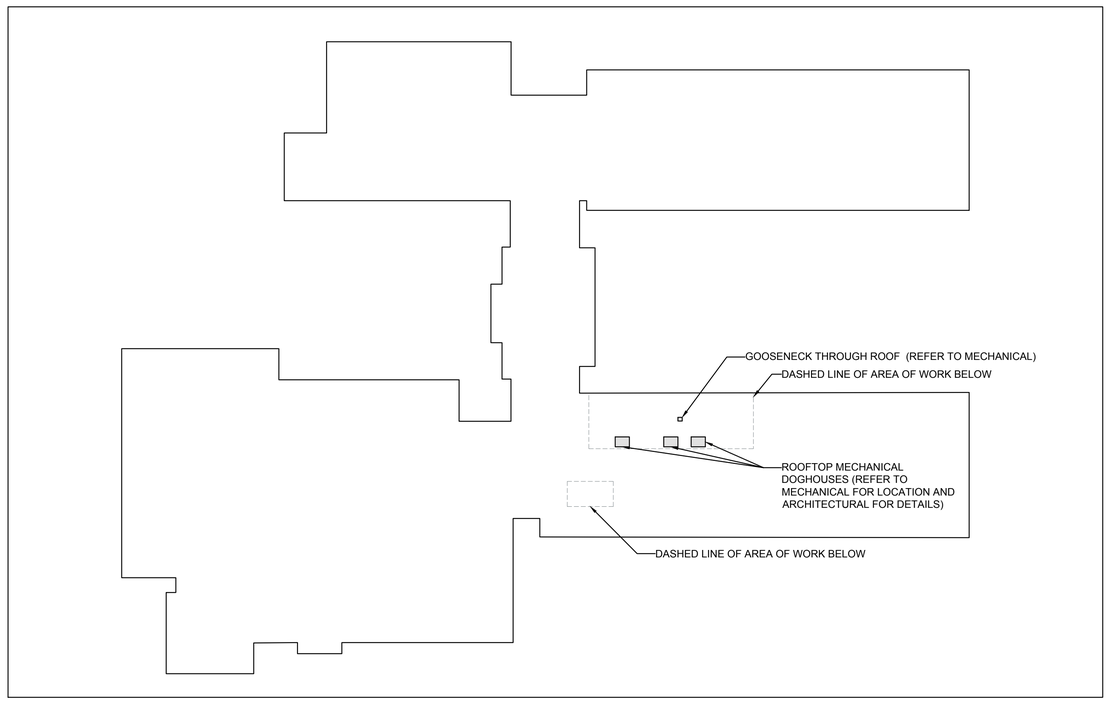
2 A001 CONTEXT PLAN
BROCK HS



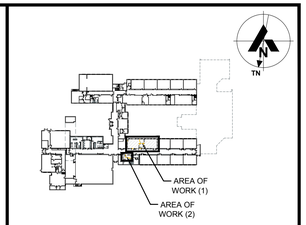
LIFE SAFETY LEGEND

- FIRE DEPARTMENT CONNECTION
- EXIT AT GRADE
- AREA IN SCOPE

1 A001 EXISTING LIFE SAFETY PLAN - BROCK HS - SECOND FLOOR
NTS



1 A001 BROCK HS - ROOF PLAN
NTS



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
LICENCE
4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

ENGINEER:
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ON L1C 5M2 CANADA

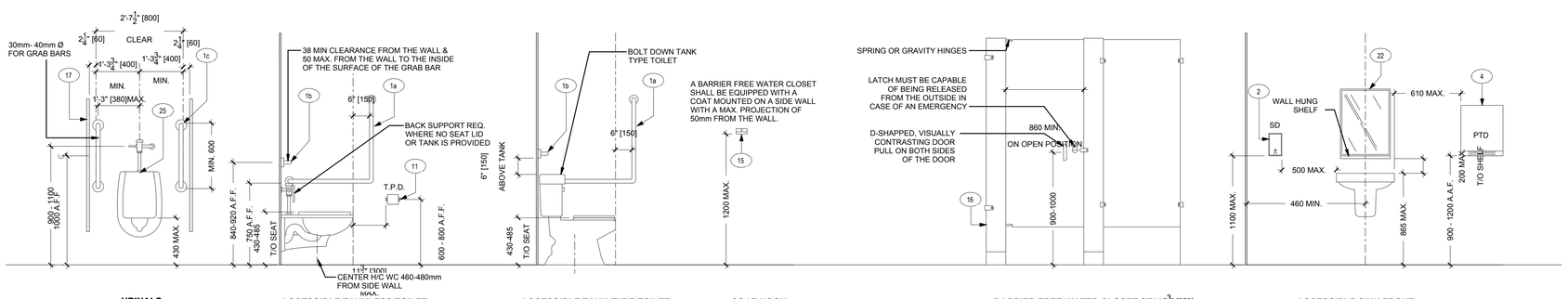
CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

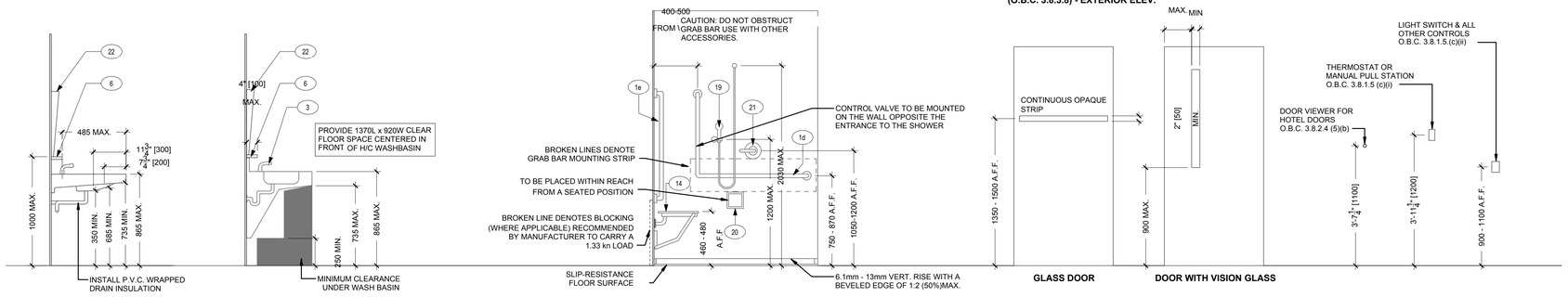
SHEET TITLE:
EXISTING KEY PLANS / OBC MATRIX

DISCIPLINE:
ARCHITECTURAL

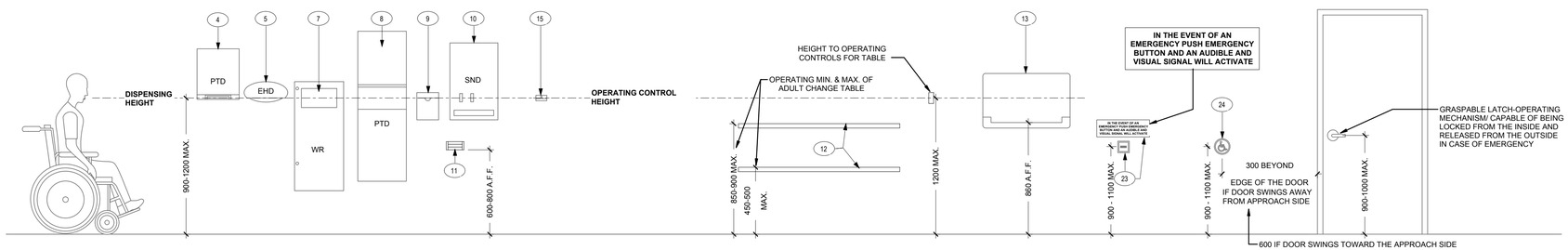
DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: 20013706	DRAWING No: A003
SHEET No: 4 of 17	



URINALS | ACCESSIBLE TANKLESS TOILET | ACCESSIBLE TANK-TYPE TOILET | COAT HOOK | BARRIER FREE WATER CLOSET STALL (O.B.C. 3.8.3.8) - EXTERIOR ELEV. | ACCESSIBLE SINK FRONT



ACCESSIBLE SINK SIDE | ACCESSIBLE VANITY SIDE | ACCESSIBLE SHOWER STALL | GLASS DOOR | DOOR WITH VISION GLASS | DOOR VIEWER & CONTROLS



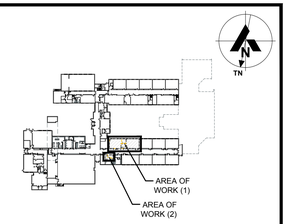
TYPICAL WASHROOM ACCESSORY MOUNTING HEIGHTS | UNIVERSAL WASHROOM

ACCESSORY LEGEND:

1a L-SHAPED GRAB BAR - MIN.750mm LONG ON EACH VERT. & HORIZ. COMPONENT.
1b HORIZONTAL GRAB BAR- MIN.600mm LONG
1c VERTICAL GRAB BAR - MIN.600mm LONG
1d L-SHAPED GRAB BAR - MIN.750mm LONG ON VERT. & MIN.1000mm ON HORIZ. COMPONENT.
1e VERTICAL GRAB BAR - MIN.1000mm LONG
2 SOAP DISPENSER - AUTOMATICALLY OPERATED OR THAT CAN BE OPERATED USING A CLOSED FIST WITH A FORCE NOT MORE THAN 22.2N.
3 LEVER-TYPE HANDLES OR AUTOMATIC OPERATION ONLY
4 PAPER TOWEL DISPENSER - OPERABLE WITH ONE HAND
5 ELECTRIC HAND DRYER - OPERABLE WITH ONE HAND
6 FLOATING SHELF
7 WASTE RECEPTACLE
8 PAPER TOWEL DISPENSER - OPERABLE W/ ONE HAND
9 SANITARY NAPKIN DISPOSAL
10 SANITARY NAPKIN DISPENSER
TOILET PAPER DISPENSER
12 ADULT CHANGE TABLE - MIN. LOAD OF 1.33kN. CONFORMS TO 3.8.3.12 (5)
13 FOLD DOWN INFANT CHANGE TABLE
14 FOLD DOWN SHOWER SEAT 450mm WIDE & 400mm DEEP W/ A SMOOTH & SLIP-RESISTANCE SURFACE & NO ROUGH EDGES
15 COAT HOOK
16 TOILET PARTITION
17 URINAL PARTITION
18 SHOWER PARTITION
19 HAND-HELD SHOWER HEAD WITH 1800 MIN. LENGTH OF FLEXIBLE HOSE.
20 SOAP DISH
21 PRESSURE-EQUALIZING OR THERMOSTATIC MIXING VALVE - OPERABLE USING A CLOSED FIST AND A FORCE OF 22.2N MAX.
22 TILTED MIRROR
23 EMERGENCY BUTTON - SWITCH AND SIGN AS PER OBC 3.8.3.12 (2)
24 DOOR OPENING BUTTON - DOOR OPERATOR CONFORMING 3.8.3.3 - CIRCULAR - Ø150mm MIN. / RECTANGULAR - 50mmx100mm
25 ACCESSIBLE URINAL

GENERAL NOTES:

- DISPENSING OR HAND-OPERATED ACCESSORIES, OTHER THAN THOSE LOCATED IN WATER CLOSETS STALLS SHALL HAVE A MIN. 1370mm DEEP FLOOR SPACE IN FRONT OF THE CONTROLS OR OPERATING MECHANISM TO ALLOW FRONT APPROACH.
- REFER TO SPECIFICATION FOR WASHROOM ACCESSORIES. CONFIRM IF ACCESSORIES ARE RECESSED, SEMI-RECESSED OR FACE MOUNTED PRIOR TO INSTALLATION.
- PROVIDE BACKING SUPPORT IN WALLS AS REQUIRED FOR WASHROOM ACCESSORIES.
- CONFIRM EXACT LOCATION AND MOUNTING HEIGHTS ON SITE PRIOR TO INSTALLATION.
- DIMENSIONS AS PER CURRENT BUILDING CODE.
- WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE TO THE LATCH SIDE OF THE DOOR, INCLUDING DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL.



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
LICENCE 4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

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DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
TYPICAL MOUNTING HEIGHTS

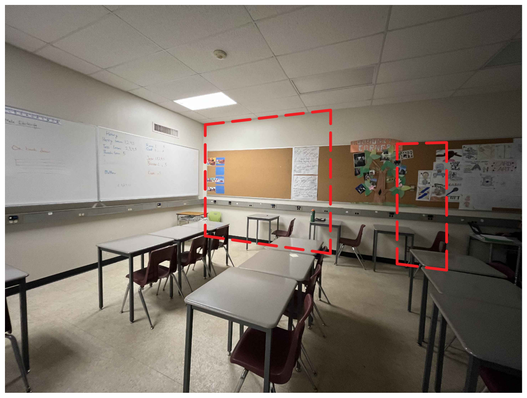
DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A004
SHEET No: 5 of 17	

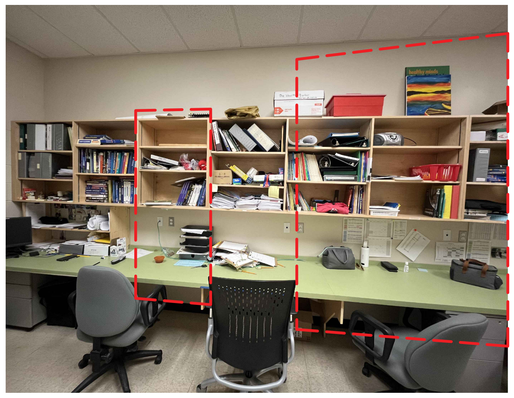
TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL NOTES - EXISTING SITE CONDITIONS: SITE IMAGES

1. SITE IMAGES ARE DEMONSTRATED FOR ILLUSTRATIVE PURPOSES ONLY REFER TO ALL CONTRACT DOCUMENTS (I.E. PLANS, WALL SECTIONS, DETAILS ASSEMBLY TYPES ETC.) FOR ALL SCOPE OF WORK, DETAIL LOCATIONS, AND DETAIL INTERFACES (AS THOSE DOCUMENTS GOVERN OVER SITE IMAGES)



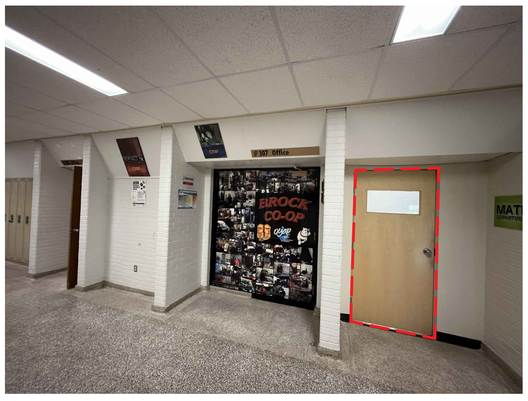
8 A005 EXISTING PLP CLASSROOM
BROCK HS



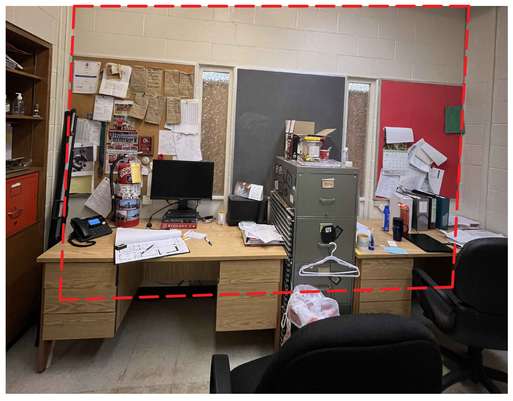
6 A005 EXISTING WORKROOM 307A
BROCK HS

4 A005 EXISTING WORKROOM 307A
BROCK HS

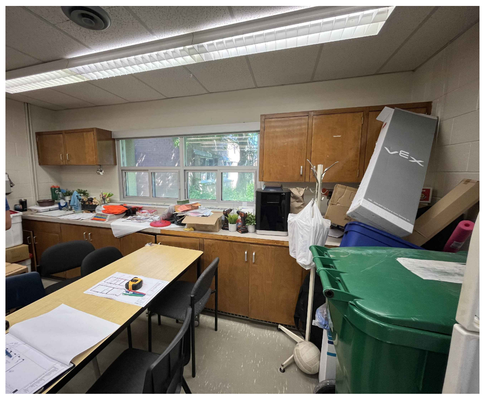
2 A005 EXISTING WORKROOM 307A
BROCK HS



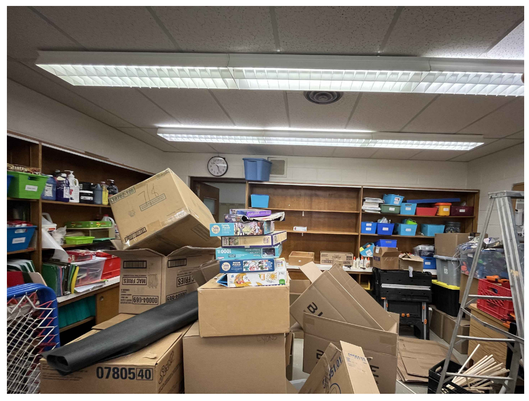
7 A005 CORRIDOR
BROCK HS



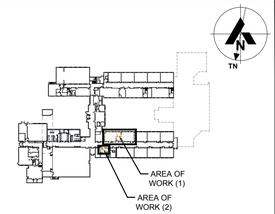
5 A005 EXISTING OFFICE
BROCK HS



3 A005 EXISTING WORKROOM 305
BROCK HS



1 A005 EXISTING WORKROOM 305
BROCK HS



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
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4813

No.	Date	Description	By
A.	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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BROCK HIGH SCHOOL

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CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

SHEET TITLE:

EXISTING CONDITIONS:
SITE IMAGES

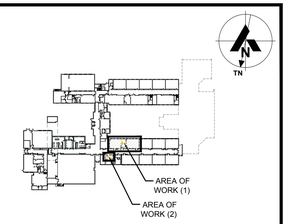
DISCIPLINE:

ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A005
SHEET No: 6 of 17	

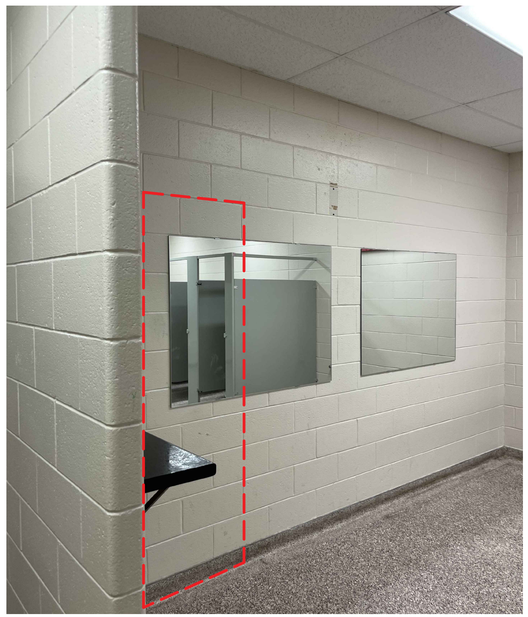
GENERAL NOTES - EXISTING SITE CONDITIONS: SITE IMAGES

1. SITE IMAGES ARE DEMONSTRATED FOR ILLUSTRATIVE PURPOSES ONLY REFER TO ALL CONTRACT DOCUMENTS (I.E. PLANS, WALL SECTIONS, DETAILS ASSEMBLY TYPES ETC.) FOR ALL SCOPE OF WORK, DETAIL LOCATIONS, AND DETAIL INTERFACES (AS THOSE DOCUMENTS GOVERN OVER SITE IMAGES)

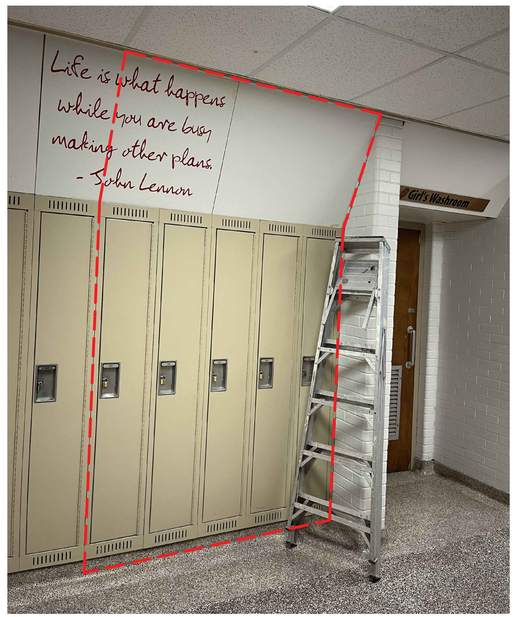


KEY PLAN - SECOND FLOOR

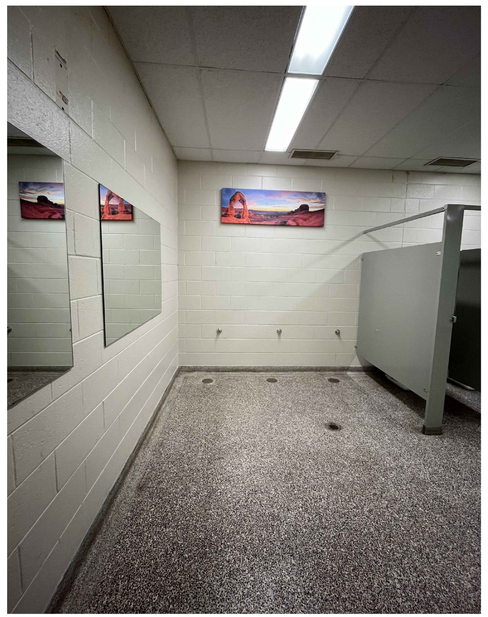
4 A006 EXISTING GIRLS BATHROOM
BROCK HS



3 A006 EXISTING GIRLS BATHROOM
BROCK HS



2 A006 HALLWAY INTO EX. GIRLS BATHROOM
BROCK HS



2 A006 EXISTING GIRLS WASHROOM
BROCK HS

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
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4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
EXISTING CONDITIONS:
SITE IMAGES

DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR	SCALE: AS NOTED
DESIGNER: TR	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A006
SHEET No: 7 of 17	

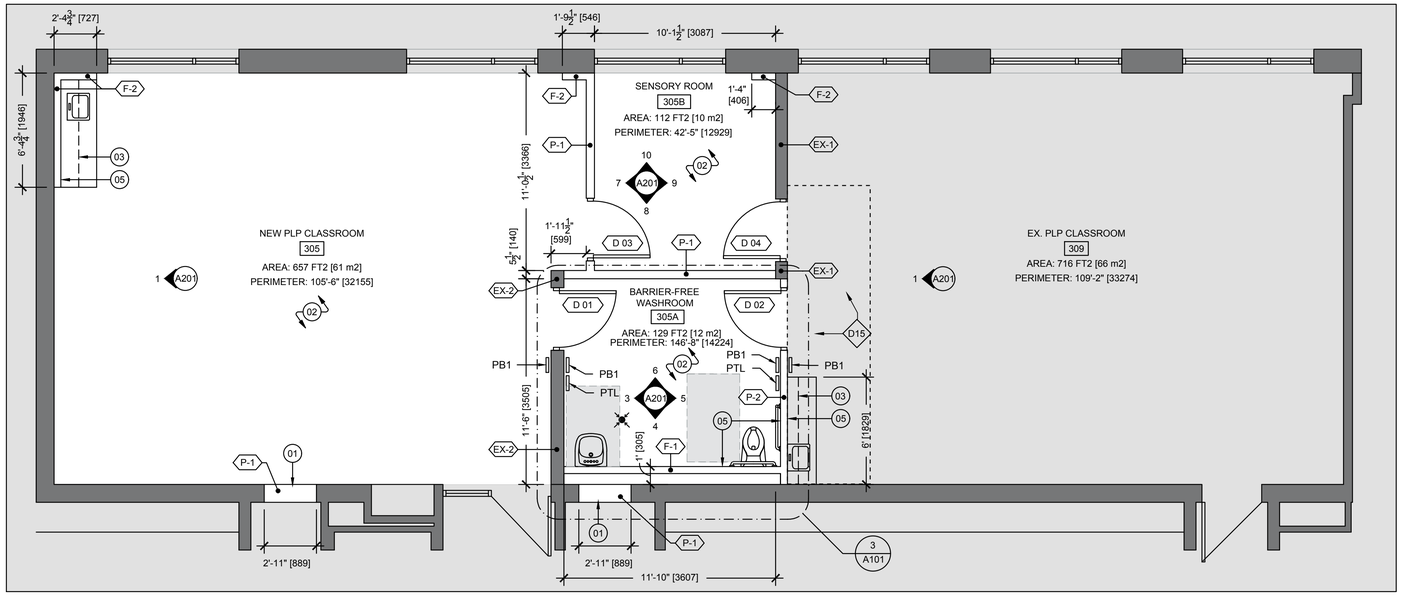
TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL DEMOLITION PLAN NOTES:

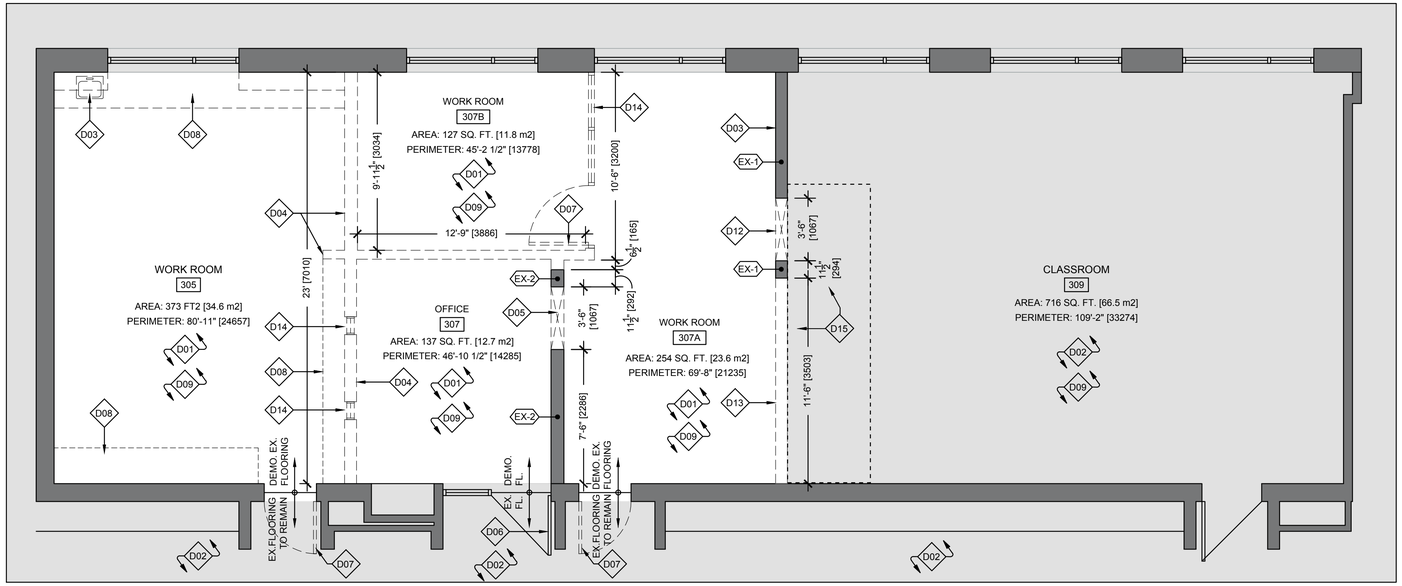
1. REMOVE ALL EXISTING REDUNDANT SERVICES, CONDUITS AND PLUMBING. ALL EXPOSED REMAINING CONDUIT TO BE REWORKED AND CLEANED UP. PATCH AND REPAIR EXISTING SUBSTRATES WHERE CONDUIT IS REMOVED.
2. ALL LIFE SAFETY EQUIPMENT TO BE REMOVED AND STORED IN A PROTECTED AREA. AFTER DEMOLITION REINSTALL LIFE SAFETY EQUIPMENT TO WORKING ORDER. TO BE TESTED BY THE AGENCY.
3. ASSUME ALL EXISTING TRIM, MOULDING, FINISHES AND BUILT-IN MILLWORK TO REMAIN AS-IS UNLESS OTHERWISE NOTED ON DRAWINGS. GENERAL CONTRACTOR TO PROTECT DURING CONSTRUCTION.
4. FOR ADDITIONAL INFORMATION OF EXISTING CONDITIONS, REFER TO SET OF EXISTING DRAWINGS. CONTRACTOR MUST REVIEW EXISTING BUILDING DRAWINGS AND CORRELATE NOTED DRAWINGS WITH PROPOSED DEMOLITION ACTIVITIES PRIOR TO COMMENCING WORK ON THIS SECTION.
5. THERE MAY BE OVERLAP OF WORK BETWEEN TENANT RELOCATION PLAN AND DEMOLITION PACKAGE. CONTRACTOR TO CO-ORDINATE ORDER OF WORK GIVING PREFERENCE TO TENANT RELOCATION PLAN IN ORDER TO MAINTAIN TENANT STAGING SCHEDULE.
6. REFER TO OVERALL GENERAL NOTES FOR DEMOLITION AND NEW CONSTRUCTION CO-ORDINATION..
7. REMOVE ALL MECHANICAL AND ELECTRICAL DEVICES LOCATED ON PARTITIONS TO BE DEMOLISHED. DISCONNECTIONS BY DIVISIONS 15 AND 16 (REFER TO MECHANICAL AND ELECTRICAL).
8. FOR FIRE AND SMOKE DETECTOR PROTECTION, REMOVAL AND VERIFICATION REFER TO ELECTRICAL.
9. REMOVE AND SALVAGE ALL EXISTING KEY CARD ACCESS DEVICES INCLUDED IN SCOPE OF WORK. COORDINATE STORAGE LOCATION WITH AGENCY.

GENERAL PROPOSED PLAN NOTES:

1. REFER TO *ELECTRICAL DRAWINGS* / SPECIFICATIONS FOR ALL LOCATIONS / QUANTITIES OF ELECTRICAL RECEPTACLES / DEVICES.
2. REFER TO *MECHANICAL DRAWINGS* / SPECIFICATIONS FOR ALL LOCATIONS / QUANTITIES OF MECHANICAL RECEPTACLES.
3. REFER TO *ARCHITECTURAL ASSEMBLIES* FOR ALL NEW PARTITIONS, FURRINGS, AND CEILING ASSEMBLIES.
4. ALL EXPOSED ROUTING OF ELECTRICAL SERVICES ON CEILINGS / WALLS ABOVE TO BE REVIEWED ONSITE WITH ARCHITECT PRIOR TO INSTALLATION.
5. FOR FINISHES NOT INCLUDED ON INTERIOR ELEVATIONS / PROPOSED FLOOR PLANS (IE: WALL PAINT FINISH, CEILING PAINT FINISHES, AND FLOOR TILE) REFER TO ROOM FINISH SCHEDULE.



2 / A101 PROPOSED PLAN
BROCK HS - SECOND FLOOR - PLP CLASSROOMS
1/4" = 1'-0"



1 / A101 DEMOLITION PLAN
BROCK HS - SECOND FLOOR - PLP CLASSROOMS
1/4" = 1'-0"

DEMOLITION NOTES:

- D01 DEMOLISH EX. FLOORING FINISH AND WALL BASE THROUGHOUT. PATCH AND REPAIR SUBSTRATE FOR NEW FINISH. REFER TO PROPOSED
- D02 EXISTING FLOORING TO REMAIN
- D03 DEMOLISH EXISTING PLUMING FIXTURES (REFER TO MECHANICAL)
- D04 DEMOLISH EXISTING CMU WALL TO EXTENTS AS NOTED ON DRAWING. (REFER TO STRUCTURAL) PATCH AND MAKE GOOD EX. SUBSTRATE TO RECEIVE NEW FINISHES.
- D05 DEMOLISH NOTED PORTION OF EXISTING CONCRETE MASONRY WALL TO CREATE DOOR OPENING. REFER TO STRUCTURAL. CO-ORDINATE R.O. DIMENSION WITH PROPOSED ARCHITECTURAL AND DOOR SCHEDULE
- D06 N/A
- D07 DEMOLISH EX. DOOR, FRAME, RELATED HARDWARE AND SIDELIGHT (IF APPLICABLE). PATCH AND MAKE GOOD FLOOR BELOW TO RECEIVE NEW FLOOR FINISH.
- D08 REMOVE EX. MILLWORK CABINETS AND SHELVING AND RETURN TO OWNER. PATCH AND REPAIR SUBSTRATE FOR NEW FINISH.
- D09 ALL EQUIPMENT AND FURNITURE (INCLUDING BUT NOT LIMITED TO TABLES, CHAIRS, TACK BOARDS, OPEN SHELVING, FILING CABINETS) TO BE REMOVED AND TURNED OVER TO OWNER PRIOR TO CONSTRUCTION
- D10 PATCH AND MAKE GOOD EXPOSED WALL FOR PROPOSED FINISH. GRIND & MAKE SMOOTH AS REQUIRED FOR EVEN FINISH.
- D11 N/A
- D12 DEMOLISH NOTED PORTION OF EXISTING METAL STUD WALL TO CREATE DOOR OPENING. CO-ORDINATE R.O. DIMENSION WITH PROPOSED ARCHITECTURAL AND DOOR SCHEDULE.
- D13 DEMOLISH EXISTING METAL STUD WALL TO EXTENTS AS NOTED ON DRAWINGS. PATCH AND MAKE GOOD EX. SUBSTRATE TO RECEIVE NEW FLOOR FINISH.
- D14 DEMOLISH EXISTING PARTITION AND GLAZED SCREEN. PATCH AND MAKE GOOD EX. SUBSTRATE TO RECEIVE NEW FLOOR FINISH.
- D15 THE REMOVAL OF THIS EXISTING METAL STUD WALL MAY NECESSITATE TEMPORARY SUPPORT OF EXISTING COMPONENTS IN THE EX. PLP CLASSROOM (I.E. EXISTING SUSPENDED CEILING AND GRID TO REMAIN, EXISTING FLOORING TO REMAIN). CONTRACTOR TO RETURN ALL WALL, FLOOR AND CEILING FINISHES BACK TO ORIGINAL CONDITION AND MINIMIZE IMPACT TO ANY FINISHES IN THIS ROOM

PROPOSED NOTES:

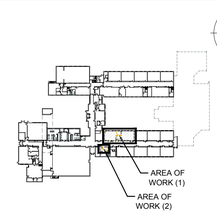
- 01 INFILL OPENING FLUSH WITH NEW CMU AND DOWEL AS PER STRUCTURAL. REMOVE EX. CMU AS REQUIRED SO ENTIRE INFILL IS KEYED INTO EX. RUNNING BOND (REFER TO STRUCTURAL). PATCH AND MAKE GOOD SURFACE FOR NEW FINISH
- 02 PATCH AND MAKE GOOD EX. CONCRETE FLOOR FOR NEW FLOOR FINISH
- 03 NEW MILLWORK AND COUNTER WITH SINK (REFER TO INT. ELEVATIONS & MECHANICAL)
- 04 N/A
- 05 PROVIDE 3/4" PLYWOOD BACKING SUPPORT BETWEEN WALL STUDS FOR ALL WALL HUNG ACCESSORIES IN WASHROOMS, BEHIND ALL GRAB BAR MOUNTING BRACKETS AND BEHIND WALL MOUNTED MILLWORK CABINETS.

PROPOSED PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	PROPOSED WALL
D01	NEW DOOR WITH DOOR TAG
N	NEW LIGHT FIXTURE

DEMOLITION PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	EXISTING ELEMENT TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR SPECIFIC SCOPE OF WORK.
	DEMOLISH EXISTING DRYWALL CEILINGS AND SUPPORTS
	DEMOLISH EXISTING ACT AND CEILING SUPPORTS
	EXISTING FF&E TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR MORE INFORMATION
	DEMOLISH EXISTING DOOR
	EXISTING DOOR TO REMAIN



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE 4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR DOOR TENDER	LC

STAMPS:

ENGINEER:
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CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
DEMO & PROPOSED PLAN

DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A101
SHEET No: 8 of 17	

GENERAL NOTES: PROPOSED REFLECTED CEILING PLAN

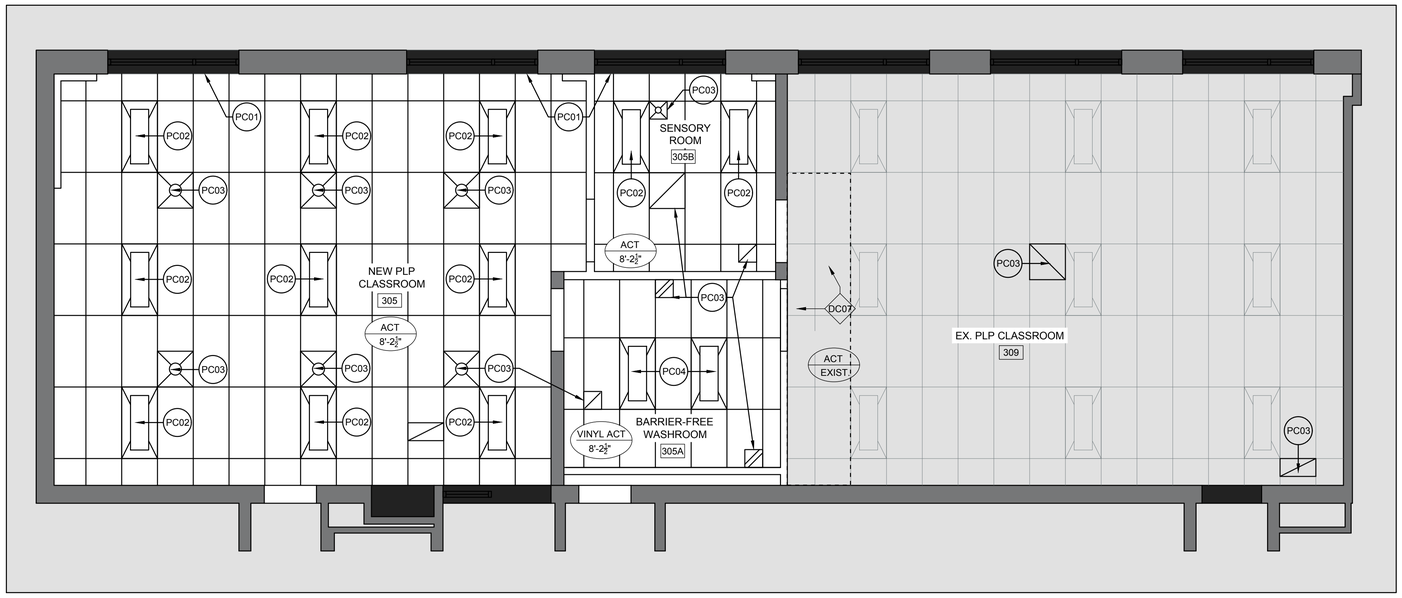
1. REFER TO *ELECTRICAL DRAWINGS* / SPECIFICATIONS FOR ALL LIGHTING FIXTURE TYPES AND LAYOUTS: (DEMO AND PROPOSED).
2. REFER TO *MECHANICAL DRAWINGS* / SPECIFICATIONS FOR ALL FIRE PROTECTION / DIFFUSERS / GRILLE TYPES AND LAYOUTS: (DEMO AND PROPOSED).
3. REFER TO *ARCHITECTURAL ASSEMBLIES* FOR ALL NEW PARTITIONS, FURRINGS, AND CEILING ASSEMBLIES.
4. ALL EXPOSED ROUTING OF ELECTRICAL SERVICES ON CEILINGS / WALLS ABOVE TO BE REVIEWED ONSITE WITH ARCHITECT PRIOR TO INSTALLATION.
5. PROVIDE CONCEALED BRACING TO LATERALLY STABILIZE SUSPENDED CEILINGS WHERE CEILINGS ARE NOT FASTENED TO WALLS.
6. ALL LIFE SAFETY EQUIPMENT TO BE REMOVED AND STORED IN A PROTECTED AREA. AFTER DEMOLITION REINSTALL LIFE SAFETY EQUIPMENT TO WORKING ORDER TO BE TESTED BY THE OWNER.

DEMOLITION NOTES:

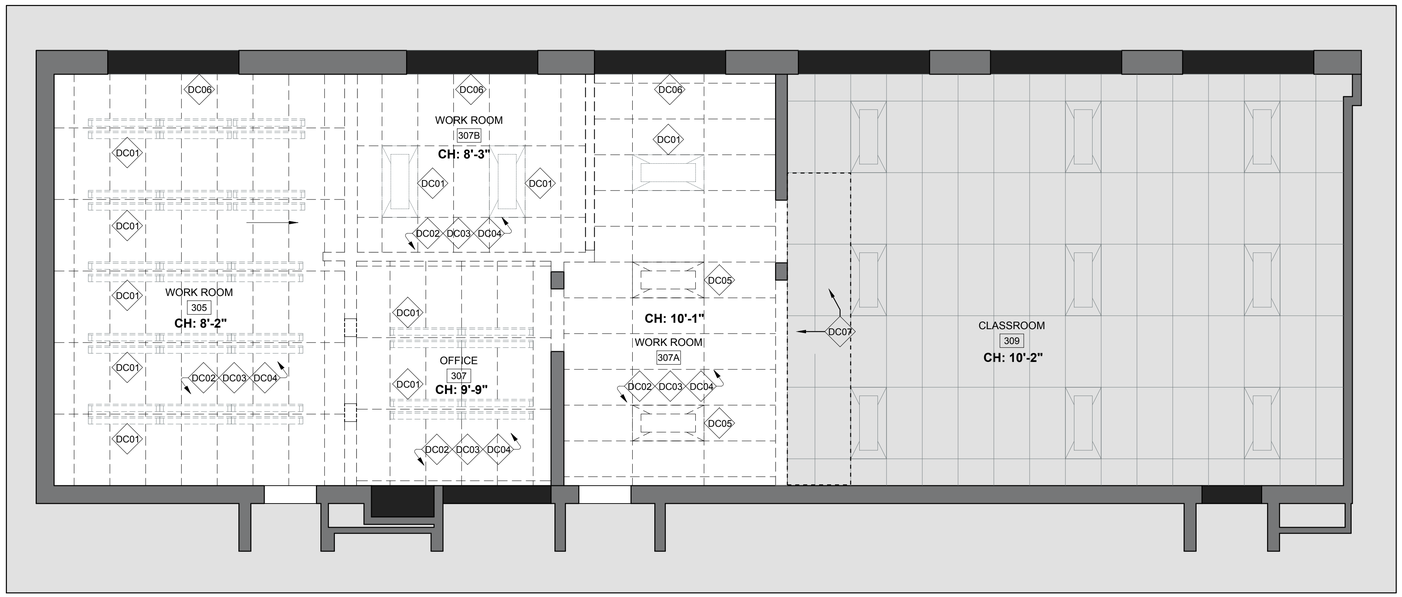
- DC01 DEMOLISH EX. LIGHT FIXTURE(S) THROUGHOUT. REFER TO ELECTRICAL
- DC02 DEMOLISH EX. SUSPENDED ACT CEILING AND ASSOCIATED SUPPORT BACK TO EX. STRUCTURE THROUGHTOUT.
- DC03 EX. SUPPLY AIR DIFFUSER TO BE DEMOLISHED TO ALLOW FOR NEW CEILING INSTALLATION. REFER TO MECHANICAL.
- DC04 EX. RETURN AIR GRILL WITH BOOTH ABOVE TO BE REMOVED TO ALLOW FOR NEW CEILING INSTALLATION. REFER TO MECHANICAL.
- DC05 REMOVE/REINSTALL EXISTING LIGHT (REFER TO PROPOSED BARRIER-FREE WASHROOM & ELECTRICAL)
- DC06 TEMPORARILY REMOVE EX. WINDOW BLINDS. STORE IN A PROTECTED SPACE DURING DEMOLITION. REINSTALL ONCE CONSTRUCTION IS COMPLETE.
- DC07 THE REMOVAL OF THIS EXISTING METAL STUD WALL MAY NECESSITATE TEMPORARY SUPPORT OF EXISTING COMPONENTS IN THE EX. PLP CLASSROOM (I.E. EXISTING SUSPENDED CEILING AND GRID TO REMAIN, EXISTING FLOORING TO REMAIN). CONTRACTOR TO RETURN ALL WALL, FLOOR AND CEILING FINISHES BACK TO ORIGINAL CONDITION AND MINIMIZE IMPACT TO ANY FINISHES IN THIS ROOM

PROPOSED NOTES:

- PC01 EX. WINDOW BLINDS TO BE REINSTALLED
- PC02 NEW LIGHTING (REFER TO ELECTRICAL)
- PC03 NEW DIFFUSER (REFER TO MECHANICAL)
- PC04 REINSTALLED EXISTING LIGHT (REFER TO ELECTRICAL)



2 A102 PROPOSED REFLECTED CEILING PLAN
BROCK HS - SECOND FLOOR - PLP CLASSROOMS
1/4" = 1'-0"



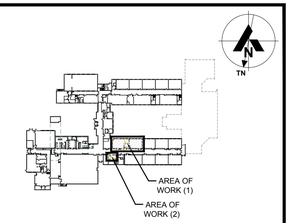
1 A102 DEMOLITION REFLECTED CEILING PLAN
BROCK HS - SECOND FLOOR - PLP CLASSROOMS
1/4" = 1'-0"

PROPOSED PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	PROPOSED WALL
D01	NEW DOOR WITH DOOR TAG
N	NEW LIGHT FIXTURE

DEMOLITION PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	EXISTING ELEMENT TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR SPECIFIC SCOPE OF WORK.
	DEMOLISH EXISTING DRYWALL CEILINGS AND SUPPORTS
	DEMOLISH EXISTING ACT AND CEILING SUPPORTS
	EXISTING FF&E TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR MORE INFORMATION
	DEMOLISH EXISTING DOOR
	EXISTING DOOR TO REMAIN



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
LICENCE
4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

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CLIENT:
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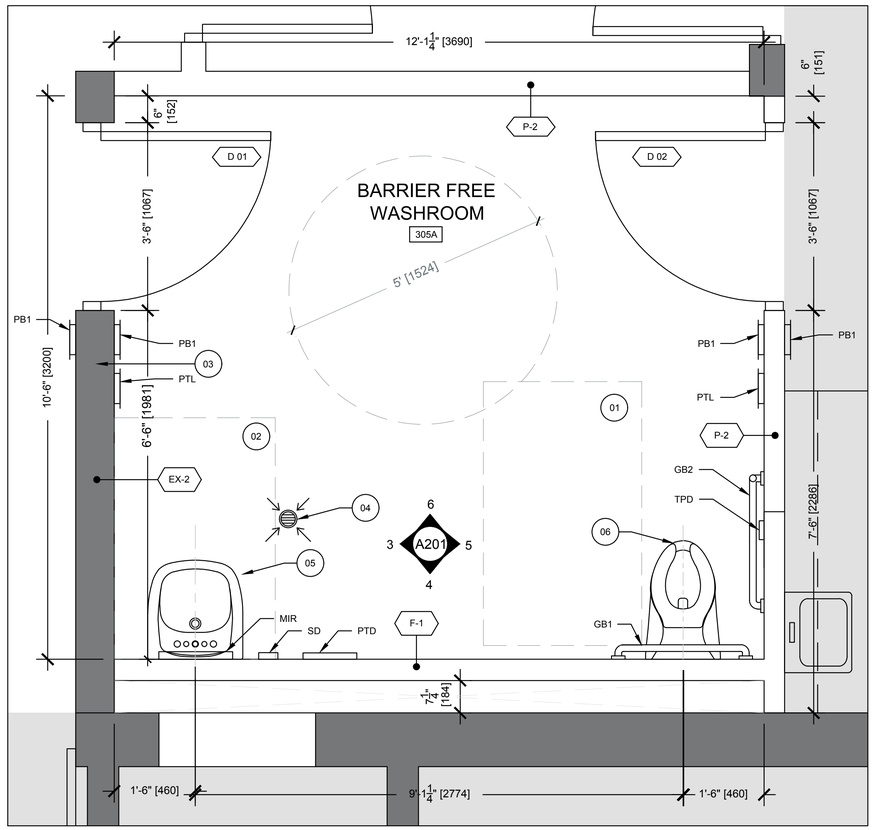
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
DEMO & PROPOSED RCP

DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A102
SHEET No: 9 of 17	



3 / A101 PROPOSED ENLARGED PLAN
BROCK HS - SECOND FLOOR - BARRIER-FREE WASHROOM 305A 3/4" = 1'-0"

PROPOSED PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)	
EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	PROPOSED WALL
D01	NEW DOOR WITH DOOR TAG
N	NEW LIGHT FIXTURE

DEMOLITION PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)	
EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	EXISTING ELEMENT TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR SPECIFIC SCOPE OF WORK.
	DEMOLISH EXISTING DRYWALL CEILINGS AND SUPPORTS
	DEMOLISH EXISTING ACT AND CEILING SUPPORTS
	EXISTING FF&E TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR MORE INFORMATION
	DEMOLISH EXISTING DOOR
	EXISTING DOOR TO REMAIN

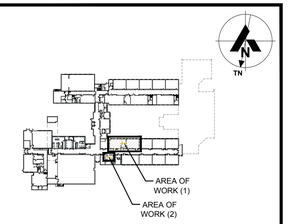
PROPOSED NOTES:

1. OBC CLEARANCE FOR BARRIER FREE SINK (9'-3" x 4'-5")
2. OBC CLEARANCE FOR TRANSFER SPACE AT TOILET (3'-0" x 5'-0")
3. PROVIDE CONCEALED WIRING FOR PUSH BUTTONS AT ALL CONCRETE MASONRY WALLS
4. NEW FLOOR DRAIN (REFER TO MECHANICAL)
5. NEW BARRIER FREE SINK (REFER TO MECHANICAL)
6. NEW TOILET (REFER TO MECHANICAL)

WASHROOM ACCESSORY LEGEND

(REFER TO GENERAL NOTES 2 FOR ALL COORDINATION ITEMS)

GB1	HORIZONTAL GRAB BAR
GB2	L-SHAPED GRAB BAR
TPD	TOILET PAPER DISPENSER (COORDINATION ITEM)
SD	SOAP DISPENSER (COORDINATION ITEM)
MIR	WALL MOUNTED WASHROOM MIRROR
PTD	PAPER TOWEL DISPENSER (COORDINATION ITEM)
PB1	PUSH BUTTON DOOR OPERATOR
PTL	PUSH TO LOCK BUTTON
CH	COAT HOOK



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
LICENCE
4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

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CLIENT:
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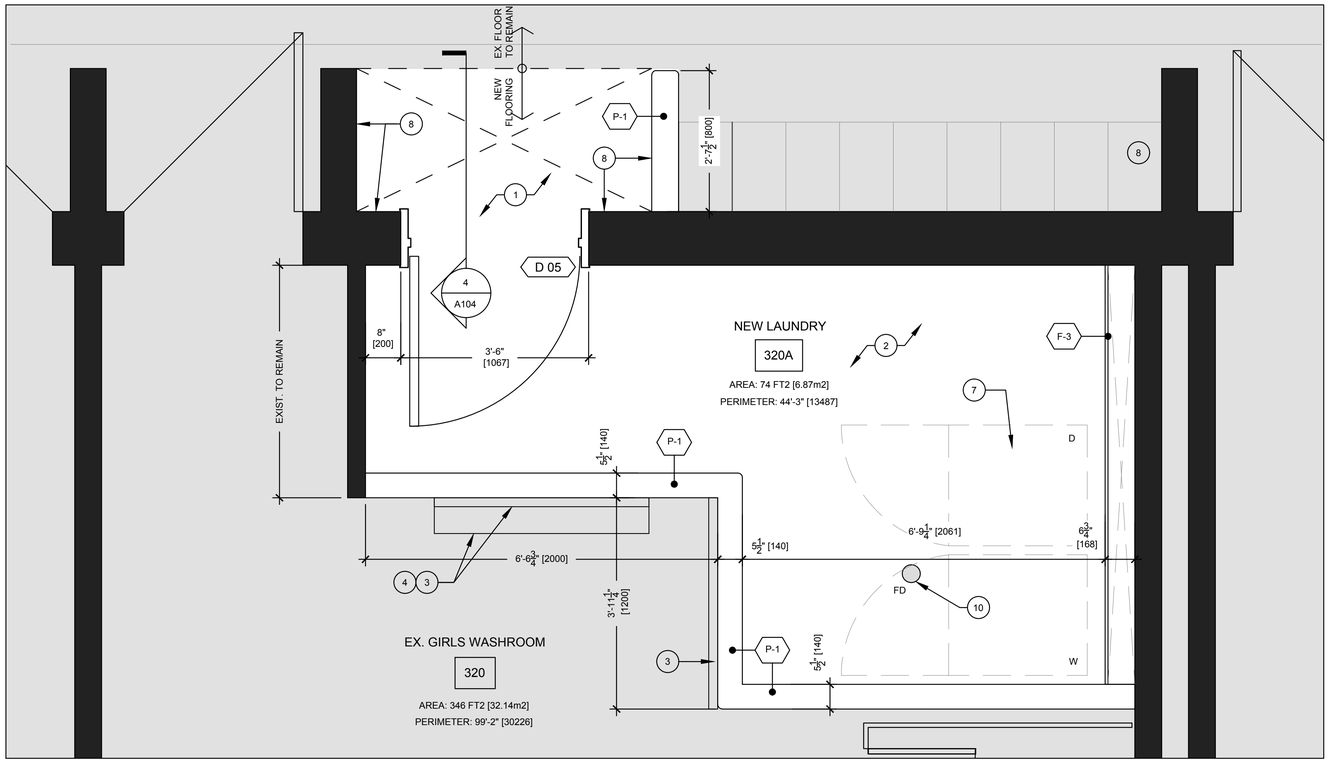
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
BARRIER-FREE WASHROOM
PLAN ENLARGEMENT
DEMO & PROPOSED

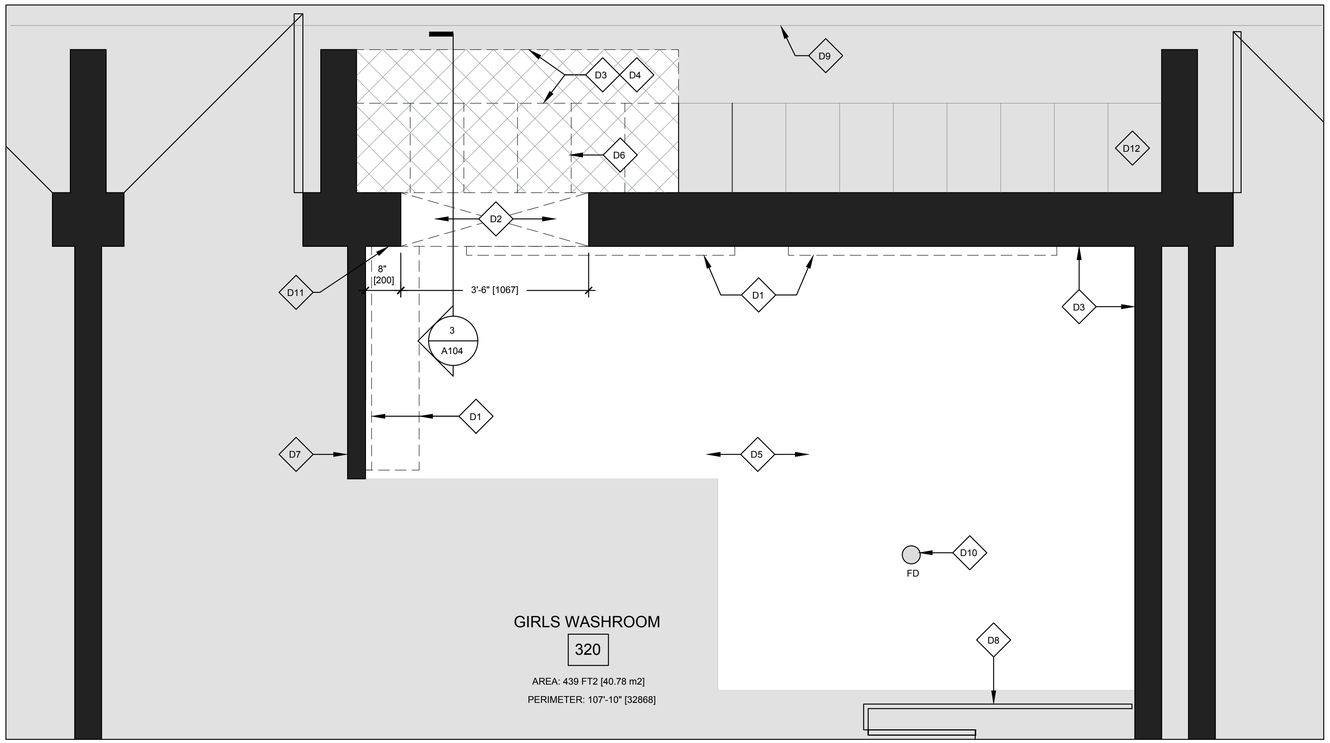
DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A103
SHEET No: 10 of 17	



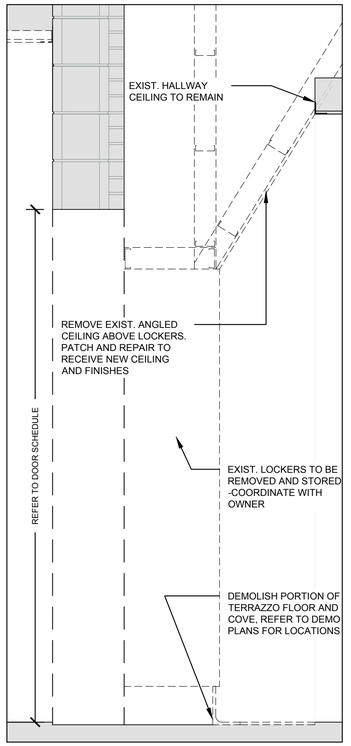
2 PROPOSED PLAN
A104 BROCK HS - SECOND FLOOR - LAUNDRY 307

3/4" = 1'-0"



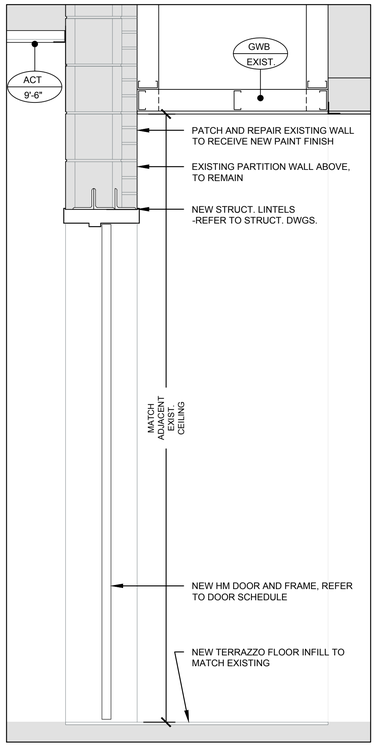
1 DEMOLITION PLAN
A104 BROCK HS - SECOND FLOOR - LAUNDRY 307

3/4" = 1'-0"



3 DEMOLITION SECTION DETAIL
A104 BROCK HS - SECOND FLOOR - LAUNDRY 320A

1" = 1'-0"



4 PROPOSED SECTION DETAIL
A104 BROCK HS - SECOND FLOOR - LAUNDRY 320A

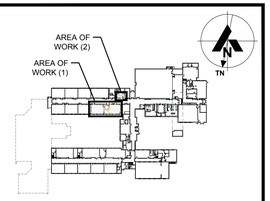
1" = 1'-0"

DEMOLITION NOTES:

- D1 REMOVE EX. MIRRORS, SHELVES, PICTURES AND STORE IN A PROTECTED PLACE DURING CONSTRUCTION. FOR RE-INSTALLATION AND LOCATION REFER TO PROPOSED. PATCH AND MAKE GOOD EXISTING SURFACE TO RECEIVE NEW FINISHES (IF APPLICABLE)
- D2 DEMOLISH NOTED PORTION OF EXISTING LOADING BEARING WALL TO CREATE DOOR OPENING. REFER TO STRUCTURAL. CO-ORDINATE R.O. DIMENSION WITH PROPOSED ARCHITECTURAL AND DOOR SCHEDULE
- D3 DEMOLISH EX. TERRAZZO FLOOR TOPPING & COVE BASE BACK TO EXISTING METAL DIVIDER STRIP. PATCH AND REPAIR SUBSTRATE FOR NEW FINISH
- D4 PATCH AND MAKE GOOD EX. SUBSTRATE TO RECEIVE NEW FLOOR FINISH.
- D5 EX. TERRAZZO FLOORING TO REMAIN. GC TO PROTECT DURING DEMOLITION AND CONSTRUCTION.
- D6 EXISTING METAL LOCKERS TO BE REMOVED AND STORED (COORDINATE WITH OWNER)
- D7 PATCH AND MAKE GOOD ALL EXPOSED EX. CMU THROUGHOUT FOR NEW WALL FINISH
- D8 EXISTING WASHROOM PARTITIONS TO REMAIN. GC TO PROTECT DURING DEMOLITION AND CONSTRUCTION
- D9 EXISTING METAL DIVIDER STRIP IN TERRAZZO FLOORING TO REMAIN
- D10 EXISTING FLOOR DRAIN TO REMAIN
- D11 GC TO SITE VERIFY DIMENSIONS TO ALIGN WITH HALF COURSE OF MASONRY UNIT
- D12 EXISTING LOCKERS TO REMAIN

PROPOSED NOTES:

1. PROVIDE AND INSTALL NEW TERRAZZO FLOOR TOPPING & BASE COVE (WHERE REQUIRED). MATCH EX. ADJACENT TERRAZZO COVE HEIGHT
2. PATCH AND MAKE GOOD EX. CONCRETE FLOOR FOR NEW FLOOR FINISH
3. RELOCATED EX. MIRRORS TO BE MOUNTED AS PER EXISTING CONDITIONS
4. RELOCATED EX. SHELVING TO BE MOUNTED AS PER EXISTING CONDITIONS
5. NEW LAUNDRY MACHINES - REFER TO MECHANICAL DRAWING
6. PROVIDE AND INSTALL NEW PORCELAIN TILE BASE TO MATCH EXISTING
7. EXISTING LOCKERS TO REMAIN
8. GC TO SITE VERIFY DIMENSIONS TO ALIGN WITH HALF COURSE OF MASONRY UNIT



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE 4813

No.	Date	Description	By
A	06/25/2024	ISSUED FOR DOOR TENDER	LC

STAMPS:

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CLIENT:

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BROCK HIGH SCHOOL

DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

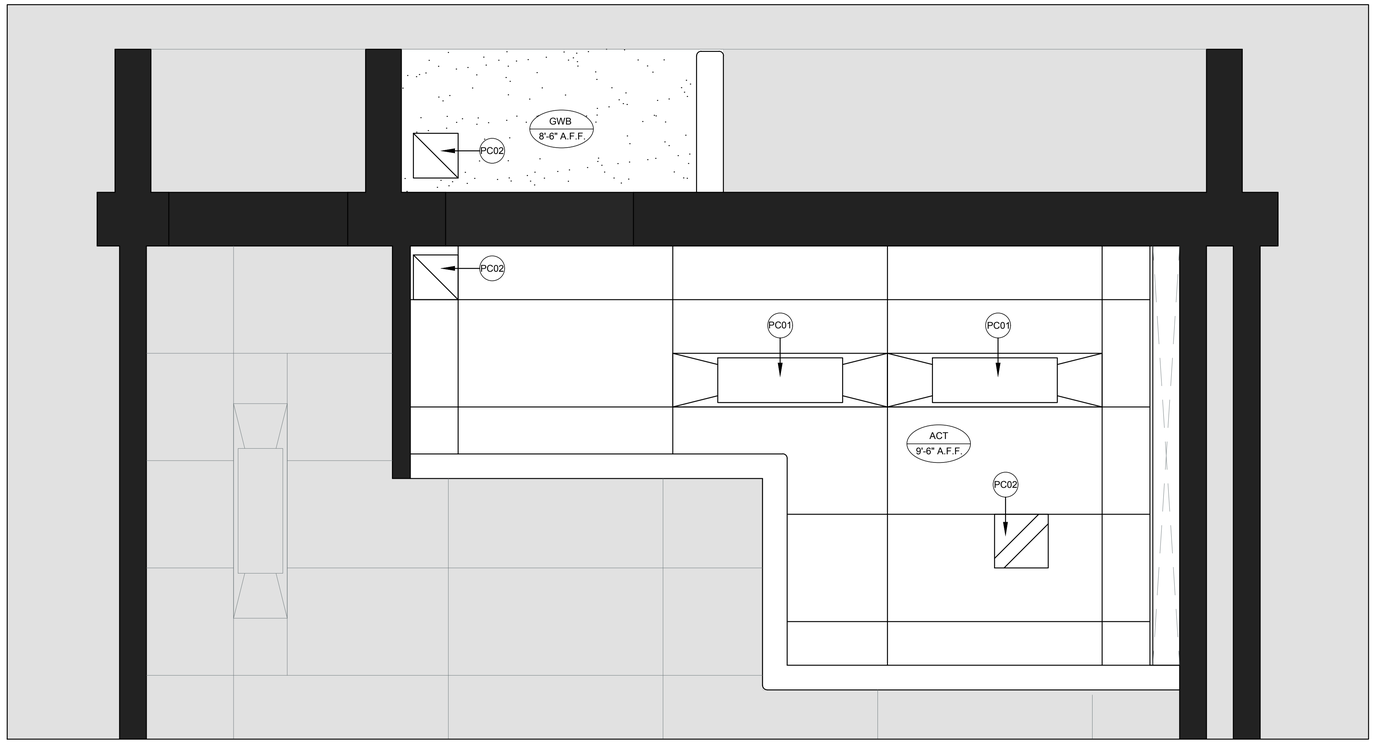
SHEET TITLE:

LAUNDRY
PLAN ENLARGEMENT
DEMO & PROPOSED

DISCIPLINE:

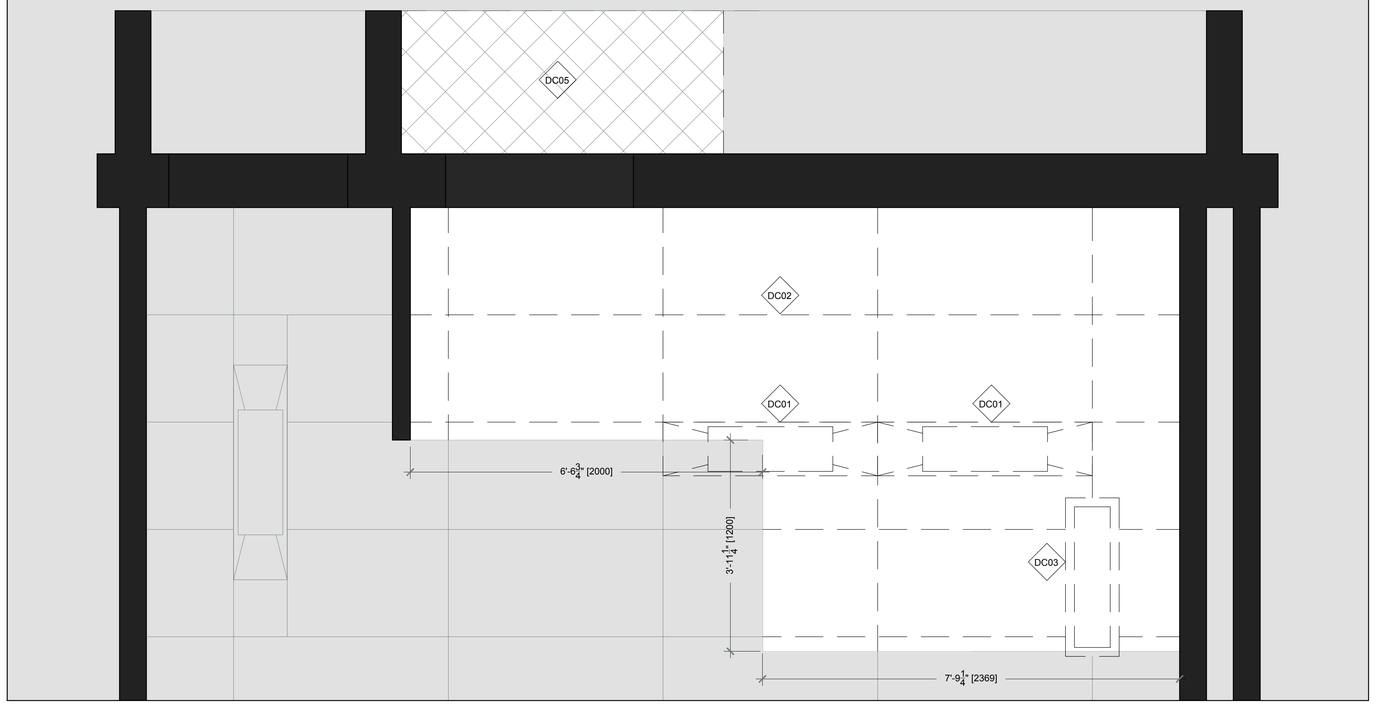
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: 20013706	DRAWING No: A104
SHEET No: 11 of 17	



2 / A104 PROPOSED REFLECTED CEILING PLAN
BROCK HS - SECOND FLOOR - LAUNDRY 307

3/4" = 1'-0"



1 / A104 DEMOLITION REFLECTED CEILING PLAN
BROCK HS - SECOND FLOOR - LAUNDRY 307

3/4" = 1'-0"

DEMOLITION NOTES:

- DC01 DEMOLISH EX. LIGHT FIXTURE(S) THROUGHOUT. REFER TO ELECTRICAL
- DC02 DEMOLISH EX. SUSPENDED ACT CEILING AND ASSOCIATED SUPPORT BACK TO EX. STRUCTURE THROUGHTOUT.
- DC03 EX. SUPPLY AIR DIFFUSER TO BE DEMOLISHED TO ALLOW FOR NEW CEILING INSTALLATION. REFER TO MECHANICAL.
- DC04 EX. RETURN AIR GRILL WITH BOOTH ABOVE TO BE REMOVED TO ALLOW FOR NEW CEILING INSTALLATION. REFER TO MECHANICAL.
- DC05 DEMOLISH PORTION OF EXISTING GWB BULKHEAD ABOVE LOCKERS - REFER TO PROPOSED FOR LAYOUT. PATCH AND MAKE GOOD TO RECEIVE NEW FINISHES

PROPOSED NOTES:

- PC01 NEW LIGHTING (REFER TO ELECTRICAL)
- PC02 NEW DIFFUSER (REFER TO MECHANICAL)

GENERAL NOTES: PROPOSED REFLECTED CEILING PLAN

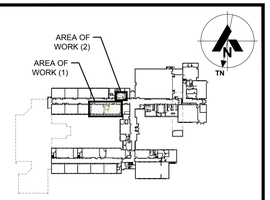
1. REFER TO *ELECTRICAL DRAWINGS* / SPECIFICATIONS FOR ALL LIGHTING FIXTURE TYPES AND LAYOUTS: (DEMO AND PROPOSED).
2. REFER TO *MECHANICAL DRAWINGS* / SPECIFICATIONS FOR ALL FIRE PROTECTION / DIFFUSERS / GRILLE TYPES AND LAYOUTS: (DEMO AND PROPOSED).
3. REFER TO *ARCHITECTURAL ASSEMBLIES* FOR ALL NEW PARTITIONS, FURRINGS, AND CEILING ASSEMBLIES.
4. ALL EXPOSED ROUTING OF ELECTRICAL SERVICES ON CEILINGS / WALLS ABOVE TO BE REVIEWED ONSITE WITH ARCHITECT PRIOR TO INSTALLATION.
5. PROVIDE CONCEALED BRACING TO LATERALLY STABILIZE SUSPENDED CEILINGS WHERE CEILINGS ARE NOT FASTENED TO WALLS.
6. ALL LIFE SAFETY EQUIPMENT TO BE REMOVED AND STORED IN A PROTECTED AREA. AFTER DEMOLITION REINSTALL LIFE SAFETY EQUIPMENT TO WORKING ORDER TO BE TESTED BY THE OWNER.

PROPOSED PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	PROPOSED WALL
D01	NEW DOOR WITH DOOR TAG
N	NEW LIGHT FIXTURE

DEMOLITION PLAN LEGEND (REFER TO ALL KEYNOTES DESCRIBING EXACT SCOPE OF WORK)

EX.	EXISTING
	EXISTING WALL TO REMAIN
	EXISTING N.I.C.
	EXISTING ELEMENT TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR SPECIFIC SCOPE OF WORK.
	DEMOLISH EXISTING DRYWALL CEILINGS AND SUPPORTS
	DEMOLISH EXISTING ACT AND CEILING SUPPORTS
	EXISTING FF&E TO BE DEMOLISHED OR REMOVED. REFER TO KEYNOTES FOR MORE INFORMATION
	DEMOLISH EXISTING DOOR
	EXISTING DOOR TO REMAIN



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE 4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

STAMPS:

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CLIENT:
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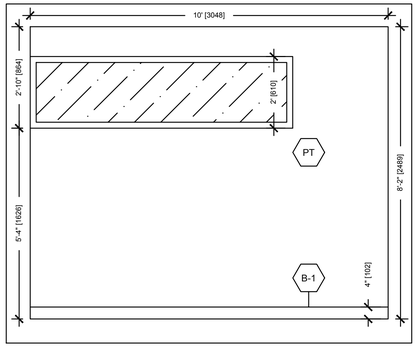
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

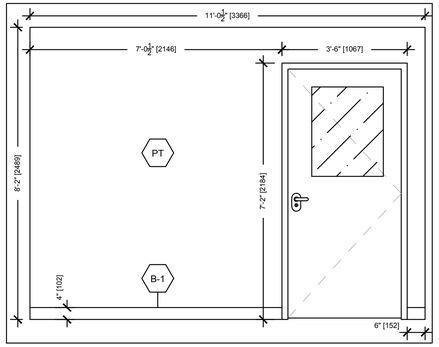
SHEET TITLE:
LAUNDRY
PLAN ENLARGEMENT
DEMO & PROPOSED RCP

DISCIPLINE:
ARCHITECTURAL

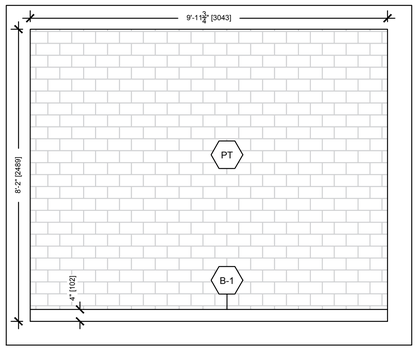
DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A105
SHEET No: 12 of 17	



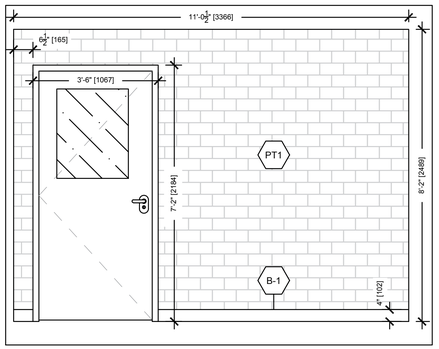
10 A201 NORTH ELEVATION
SENSORY ROOM 305B 1/2" = 1'-0"



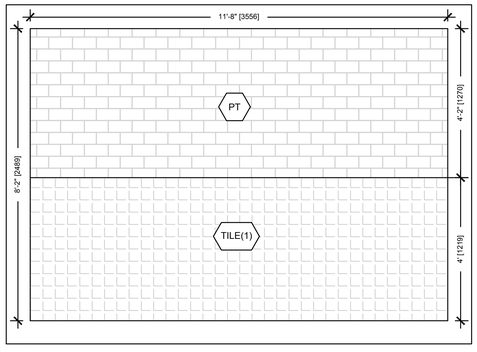
9 A201 EAST ELEVATION
SENSORY ROOM 305B 1/2" = 1'-0"



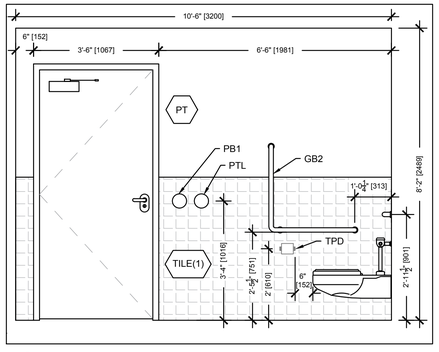
8 A201 SOUTH ELEVATION
SENSORY ROOM 305B 1/2" = 1'-0"



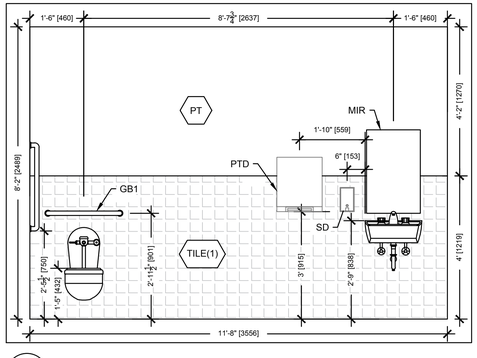
7 A201 WEST ELEVATION
SENSORY ROOM 305B 1/2" = 1'-0"



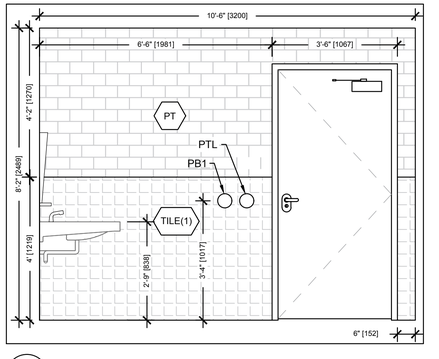
6 A201 NORTH ELEVATION
BARRIER-FREE WASHROOM 305A 1/2" = 1'-0"



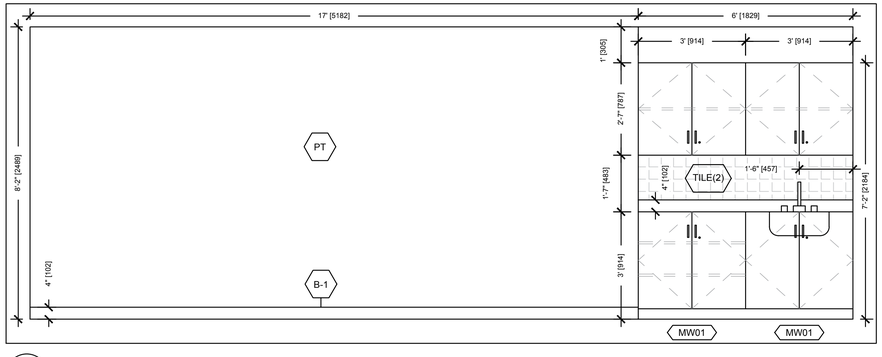
5 A201 EAST ELEVATION
BARRIER-FREE WASHROOM 305A 1/2" = 1'-0"



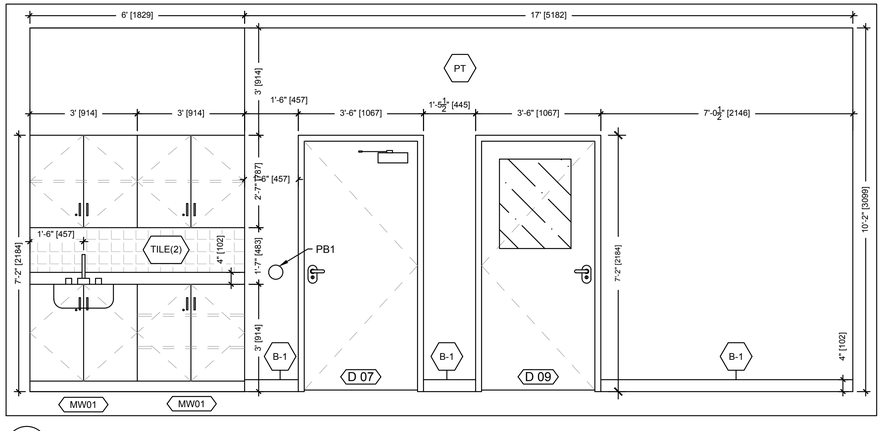
4 A201 SOUTH ELEVATION
BARRIER-FREE WASHROOM 305A 1/2" = 1'-0"



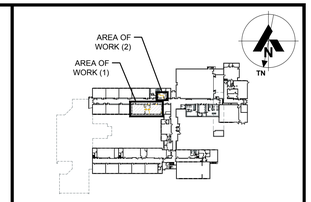
3 A201 WEST ELEVATION
BARRIER-FREE WASHROOM 305A 1/2" = 1'-0"



2 A201 WEST ELEVATION
PLP CLASSROOM 305 1/2" = 1'-0"



1 A201 WEST ELEVATION
PLP CLASSROOM 309 1/2" = 1'-0"



KEY PLAN - SECOND FLOOR

INTERIOR ELEVATIONS MATERIAL LEGEND

TILE(1) TILE(2)	CERAMIC TILE
PT1 PT2	PAINT
B-1	BASE TRIM

WASHROOM ACCESSORY LEGEND

(REFER TO GENERAL NOTES 2 FOR ALL COORDINATION ITEMS)

GB1	HORIZONTAL GRAB BAR
GB2	L-SHAPED GRAB BAR
TPD	TOILET PAPER DISPENSER (COORDINATION ITEM)
SD	SOAP DISPENSER (COORDINATION ITEM)
MIR	WALL MOUNTED WASHROOM MIRROR
PTD	PAPER TOWEL DISPENSER (COORDINATION ITEM)
PB1	PUSH BUTTON DOOR OPERATOR
PTL	PUSH TO LOCK BUTTON
CH	COAT HOOK

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDIP
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No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

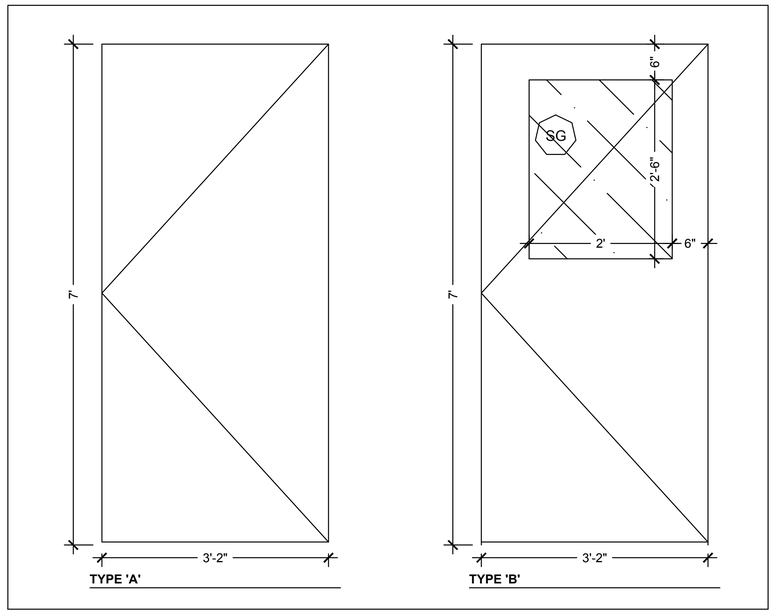
SHEET TITLE:
INTERIOR ELEVATIONS

DISCIPLINE:
ARCHITECTURAL

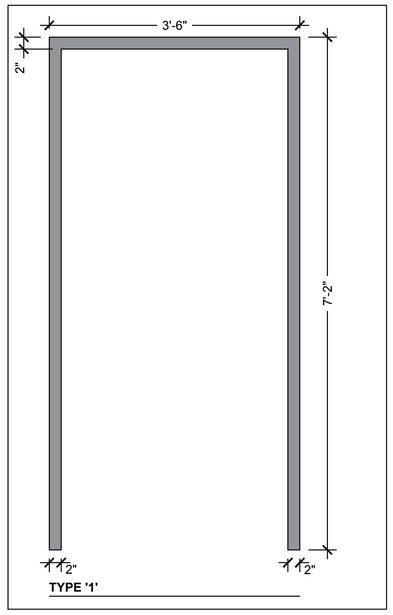
DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A201
SHEET No: 13 of 17	

DOOR SCHEDULE

NUMBER	TO ROOM NO.	FROM ROOM NO.	FRAME			PANEL								
			TYPE	MATERIAL	FINISH	TYPE	WIDTH	HEIGHT	MATERIAL	FINISH	HARDWARE	GLASS	ELECTRIFICATION	NOTES
D 01	305A (BF WASHROOM)	305 (NEW PLP CLASSROOM)	'1'	HM	PT	'A'	3'-2"	7'-0"	HM	PT	I12	NO	DP01	H1, DS1
D 02	305A (BF WASHROOM)	309 (EX PLP CLASSROOM)	'1'	HM	PT	'A'	3'-2"	7'-0"	HM	PT	I12	NO	DP01	H1, DS1
D 03	305B (SENSORY ROOM)	305 (PLP CLASSROOM)	'1'	HM	PT	'B'	3'-2"	7'-0"	HM	PT	I10	SG	N/A	H1, DS1
D 04	305B (SENSORY ROOM)	309 (EX PLP CLASSROOM)	'1'	HM	PT	'B'	3'-2"	7'-0"	HM	PT	I10	SG	N/A	H1, DS1
D 05	320A (LAUNDRY)	360 (CORRIDOR)	'1'	HM	PT	'B'	3'-2"	7'-0"	HM	PT	I10	SG	N/A	H1, DS1



4 A601 DOOR PANEL TYPES
1"=1'-0"



3 A601 DOOR FRAME TYPES
1"=1'-0"

DOOR SCHEDULE GENERAL NOTES

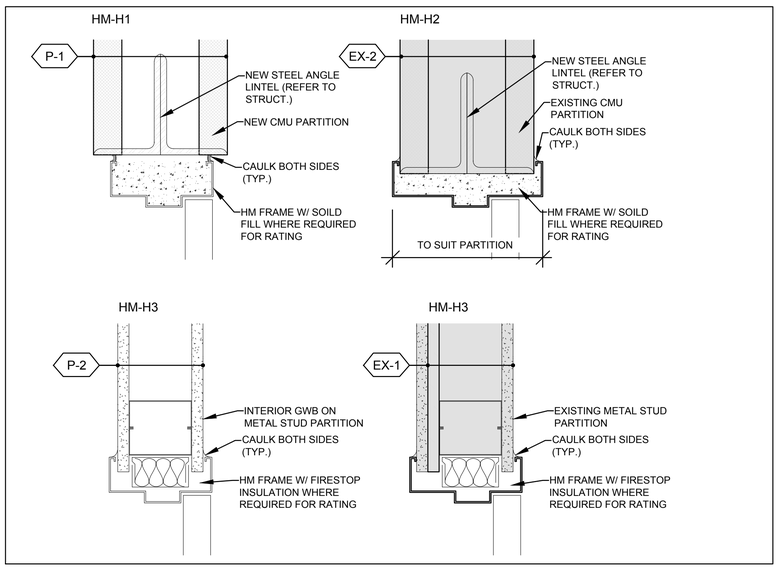
1. DOOR OFFSET TO BE 100mm FROM INTERIOR PARTITION UNLESS OTHERWISE NOTED
2. COORDINATE WITH DOOR SCHEDULE FOR DOOR AND SCREEN DIMENSIONS
3. COORDINATE WITH SPECIFICATION FOR APPROVED MANUFACTURERS. DIMENSIONS MAY VARY TO SUITE FRAME MATERIAL AND PROFILES
4. COORDINATE WITH DOOR SCHEDULE FOR TYPE OF GLAZING OR INSERTS
5. REFER TO PLANS FOR DOOR SWING/OPERATION DIRECTION
6. COORDINATE WITH HARDWARE SCHEDULE FOR HARDWARE AND OTHER ACCESSORIES
7. COORDINATE WITH MECHANICAL FOR LOCATIONS OF DOOR LOUVERS
8. COORDINATE WITH ELECTRICAL FOR DEVICES REQUIRING POWER (I.E. OPERATORS, HOLD-OPENS, CARD ACCESS ETC.)
9. REFER TO SPECIFICATIONS FOR ALL DOOR AND FRAME PAINT COLOURS

DOOR SCHEDULE ABBRIVIATIONS

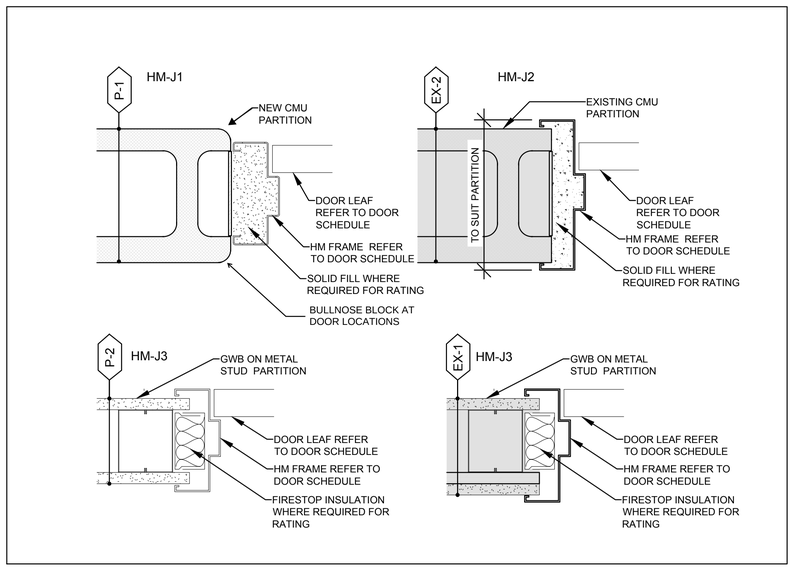
HM	HOLLOW METAL
PT	PAINT
DP01	AUTOMATIC DOOR OPERATOR (REFER TO SPEC.)
I10	ENTRANCE LOCKSET
I12	PRIVACY LOCKSET
H1	HINGES ON LOCK DOORS
H2	STANDARD HINGES
DS1	DOOR STOP
PB1	PUSH BUTTON DOOR OPERATOR
PTL	PUSH TO LOCK BUTTON
SG	SAFETY GLASS

DOOR SCHEDULE LEGEND

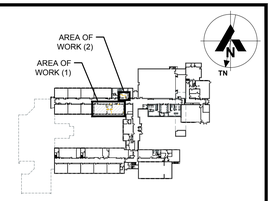
SG — GLAZING (INTERIOR, NON RATED)



2 A601 TYPICAL DOOR HEAD DETAILS
3" = 1'-0"



1 A601 TYPICAL DOOR JAMB DETAILS
3" = 1'-0"



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE 4813

No.	Date	Description	By
A	06/25/2024	ISSUED FOR DOOR TENDER	LC

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CLIENT:

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BROCK HIGH SCHOOL

DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

SHEET TITLE:

DOOR SCHEDULE

DISCIPLINE:

ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z00013706	DRAWING No: A601
SHEET No: 14 of 17	

ROOM FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	COMMENTS
305	NEW PLP CLASSROOM	VCT	B-1	PT	N/A	SEE GENERAL NOTE 5
305A	BARRIER FREE WASHROOM	VCT	N/A	TILE (1)	N/A	
305B	SENSORY ROOM	VCT	B-1	PT	N/A	SEE GENERAL NOTE 5
309	EX PLP CLASSROOM	VCT	B-1	PT	N/A	
320A	LAUNDRY ROOM	VCT	B-1	PT	N/A	

ROOM FINISH GENERAL NOTES

1. UNLESS OTHERWISE NOTED FLOORING MATERIAL CHANGES SHOULD OCCUR AT THE DOOR THRESHOLD
2. WHERE NO FINISHES ARE IDENTIFIED REFER TO ROOM FINISH SCHEDULE
3. PLEASE NOTE THAT "CEILING ASSEMBLIES" (I.E. ACT/GWB) ARE NOT DOCUMENTED ON THE ROOM FINISH SCHEDULE. FOR SPECIFIC "CEILING ASSEMBLIES REFER TO RCP'S
4. TILE WALLS IN BARRIER FREE WASHROOM UP TO 4' HEIGHT PAINT THE REMAINING PORTION OF WALL (PT)
5. NEW PERIMETER WALL RADIATOR HOUSING TO BE PAINTED TO MATCH WALL IN THIS ROOM(PT)

CEILING FINISHES

ACT	**ACOUSTIC PANELS:** NON FIRE RATED CEILINGS TO CAN/CGSB-92.1 **TYPE:** MINERAL COMPOSITION & SAG RESISTANT. **PATTERN:** NON-DIRECTIONAL FISSURES. **EDGE TYPE:** SQUARE. **COLOUR:** WHITE. **SIZE:** 16mm MINIMUM THICKNESS, 610mm X 1220mm. **SHAPE:** RECTANGLE. **ACCEPTABLE PRODUCTS*:** *1. ARMSTRONG WORLD INDUSTRIES CANADA* LTD.: FINE FISSURED 1729. *2. CERTAINTEED CEILINGS*: FINE FISSURED HHF-497 HNRCX. *3. CGC INC*: RADAR 2410.
VINYL ACT	**ACOUSTIC PANELS:** NON FIRE RATED CEILINGS TO CAN/CGSB-92.1 **TYPE:** MINERAL COMPOSITION WITH VINYL-FACED MEMBRANE SURFACE FINISH. **PATTERN:** SMOOTH. **EDGE TYPE:** SQUARE. **COLOUR:** WHITE. **SIZE:** 16mm MINIMUM THICKNESS, 610mm X 1220mm & 610mm X 610mm (2x4 & 2x2). **SHAPE:** RECTANGLE. **ACCEPTABLE PRODUCTS*:** *1. ARMSTRONG WORLD INDUSTRIES CANADA* LTD.: CLEAN ROOM VL 870. *2. CERTAINTEED CEILINGS*: VINYLSHIELD A, 1100-CRF-1. *3. CGC INC*: MARS HEALTHCARE CLEANROOM ACOUSTICAL PANELS 86169CR.
GRID	TYPE 1 (T-BAR - 1) TWO DIRECTIONAL EXPOSED TEE-BAR GRID, DOUBLE WEB. ARMSTRONG WORLD INDUSTRIES CANADA LTD: PRELUDE XL EXPOSED TEE SYSTEM* COLOUR: *NATURAL ALUMINUM*
**OR APPROVED ALTERNATE*	

PAINT FINISHES

PT 1	*UNIVERSAL GREY* **[00NN 62/000]** FROM DULUX*
PT 2	*CLOUD WHITE* **[#967]** FROM BENJAMIN MOORE*
FRAME	*ASPHALT* **[CC-548]** FROM BENJAMIN MOORE*
**OR APPROVED ALTERNATE*	

FLOORING FINISHES

VCT	*WARM SOFT GRAY* **[51861]** FROM ARMSTRONG*
ROLLED	*GLACIER* **[5225]** POLYFLOR POLYSAFE VERONA PUR 2mm, SLIP RESISTANT SHEET VINYL. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS
**OR APPROVED ALTERNATE*	

BASEBOARD FINISHES

B - 1	*BLACK* **[40]** 4" RUBBER BY JOHNSONITE*
**OR APPROVED ALTERNATE*	

CERAMIC TILES

TILE (1)	*OLYMPIA TILE, COLOUR & DIMENSION COLLECTION** 4"x16" (10x40cm) COLOURS: *WARM WHITE* (BRIGHT FINISH)
GROUT (1)	ALPHA, *WHITE*, BY PROFIX* or POWER GROUT, *OPTIC WHITE*, BY TEC*
TILE (2)	*(COOL GREY)* BEAUBRIDGE TILES BY CENTURA* 1' x 2' (typical)
GROUT	*(RAIN)* BY MAPEI*
TRIM	*JOLLY EDGE TRIM* ALUM BRUSH CHROME, BY *SCHLUTER**
CORNER	*DILEX-AHK* IN CORNER 90° ALUM SATIN, BY *SCHLUTER**
**OR APPROVED ALTERNATE*	

GLAZING:

1. NON FIRE RATED - INTERIOR:
   1.a. 6mm CLEAR LAMINATED.
2. FIRE RATED - INTERIOR & EXTERIOR:
   2.a. 6mm CLEAR *FIRE LITE TYPE NT*, or
   2.b. 6mm CLEAR PYROLITE.

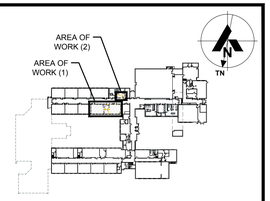
ROLLER BLINDS

NEW ROLLER BLINDS FOR EXTERIOR WINDOWS SHALL BE DUAL CASSETTE BLACKOUT AND ROLLER BLINDS, "ALTEX SUNPROJECT TECHNO SERIES LIFT" COMPLETE WITH 70mm DOUBLE CASSETTE FINISH "BRONZE ANODIZED" CHAIN OPERATED OR EQUAL BY MECHO SHADE / HUNTER DOUGLAS OR SOLARFLECTIVE.

(SHADES ALTEX XT 3800 SERIES 3% OPEN - BLACKOUT ALTEX ECO SCREEN OR APPROVED EQUAL - COLOUR TO BE SELECTED BY DDSB PROJECT SUPERVISOR. BLINDS INTENDED FOR INTERIOR GLAZING SHALL 3% OPEN ONLY, NO BLACKOUT).

WALL-MOUNTED WASHROOM MIRROR:

1. B-1658 SERIES STANDARD SIZE TEMPERED GLASS CHANNEL-FRAME MIRRORS FROM *BOBRICK*.
   1.1. SAME FRAME AS B-165 SERIES.
   1.2. ¼" (6mm) TEMPERED GLASS MIRROR.
2. 24" W x 36" H (610mm X 915mm).



KEY PLAN - SECOND FLOOR

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
LICENCE 4813

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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CLIENT:

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BROCK HIGH SCHOOL

DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

SHEET TITLE:

SCHEDULES

DISCIPLINE:

ARCHITECTURAL

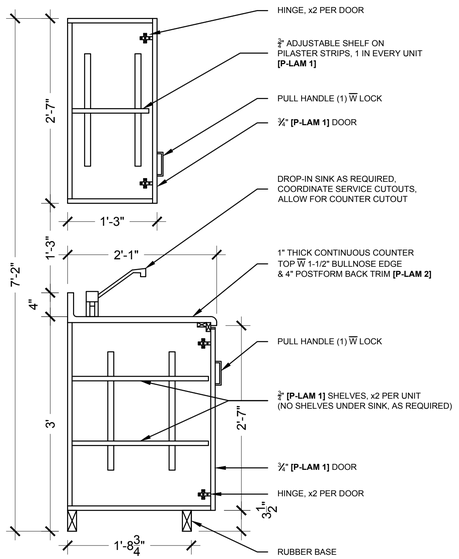
DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A602
SHEET No: 15 of 17	

MILLWORK UNIT SCHEDULE

TAG #	DESCRIPTION
MW01	**[P-LAM 1]** UPPER & LOWER STORAGE W CONTINUOUS **[P-LAM 2]** COUNTER, TWO (x2) ADJUSTABLE SHELVES IN LOWERS & ONE (x1) ADJUSTABLE SHELF IN UPPERS, NO LOWER SHELVES WHERE SINK IS REQUIRED. ALLOW FOR CUTOUTS AND COORDINATE WITH TRADES FOR SINK INSTALL.

ALL FACES: [P-LAM 1]
BASE: BLACK RUBBER

COUNTER TOP: [P-LAM 2]



1 / A603 UPPER & LOWER STORAGE W COUNTER DETAIL <MW01> — 1" = 1'-0"

MILLWORK GENERAL NOTES:

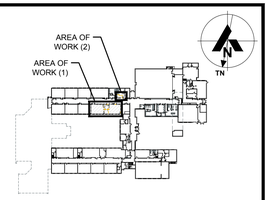
1. MILLWORK TO BE ¾" (UNLESS OTHERWISE NOTED) PLYWOOD WITH PLASTIC LAMINATE FINISH ON ALL EXPOSED FACES AND EDGES {INSIDE **AND** OUTSIDE}.
2. THE "GRAIN" OR "PATTERN" SHALL RUN THE SAME DIRECTION TO SIMILAR, ADJACENT UNITS, PREFERING TO RUN LENGTH WISE.
3. NO SHARP EDGES SHALL BE ALLOWED, AND LAMINATE FINISH SHALL BE FREE OF CHIPS AND BREAKAGE.
4. ALL SURFACES TO BE CLEAN AND FREE OF MARKINGS.

MILLWORK HARDWARE & SPECIFICATIONS

HANDLES (1)	MODERN METAL PULL - **BP9256160140** (CHROME) FROM RICHELIEU. CENTER TO CENTER: 160mm, OVERALL LENGTH: 182mm
HINGES	BLUM 125 DEGREE SELF CLOSING
PILASTER STRIPS & CLIPS	*U-SHAPED STEEL PILASTER* - **2552G96** (ZINC), *PILASTER SHELF CLIP* - **25622G** (STEEL, ZINC FINISH) - ALL BY KNAPE & VOGT, FROM RICHELIEU

MILLWORK FINISHES

P-LAM 1	*HARD ROCK MAPLE* **[86992 - 58]** BY FORMICA	(MATTE FINISH)
P-LAM 2	*COSMIC STRANDZ* **[4941K - 60]** BY WILSONART	(MATTE FINISH)



KEY PLAN - SECOND FLOOR

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06/26/2024
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No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

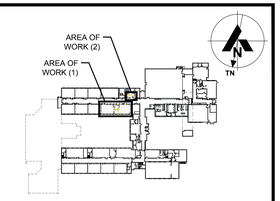
SHEET TITLE:

MILLWORK & SCHEDULES

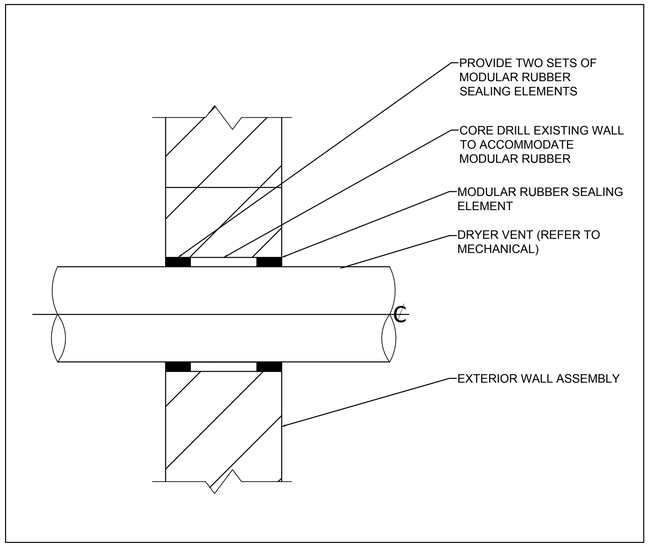
DISCIPLINE:

ARCHITECTURAL

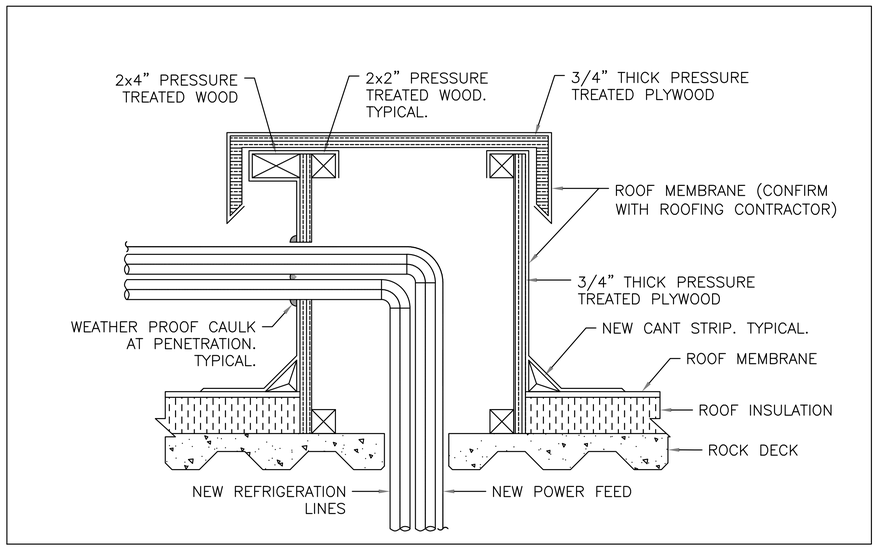
DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A603
SHEET No: 16 of 17	



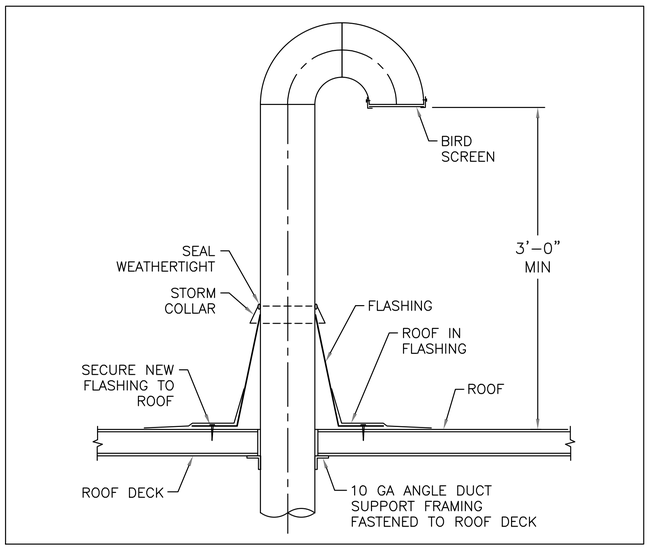
KEY PLAN - SECOND FLOOR



2 A604 DRYER VENT WALL PENETRATION DETAIL
NTS



3 A604 DOG HOUSE DETAIL FOR PIPE THROUGH ROOF
NTS



1 A604 GOOSENECK DUCT THROUGH ROOF
NTS

ONTARIO ASSOCIATION OF ARCHITECTS
06/26/2024
GUY L CUDLIP
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No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	LC

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CLIENT:
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BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
EXTERIOR DETAILS

DISCIPLINE:
ARCHITECTURAL

DRAFTER: TR/CM	SCALE: AS NOTED
DESIGNER: TR/CM	DATE: 2024/06/28
APPROVER: WH	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: A604
SHEET No: 17 of 17	

TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL NOTES:

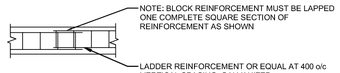
1. ALL WORK SHALL COMPLY WITH THE CURRENT PROVISIONS OF THE ONTARIO BUILDING CODE AND NATIONAL BUILDING CODE OF CANADA (NBCC), BEST TRADE PRACTICES, LOCAL AND PROVINCIAL REGULATIONS AND WITH APPLICABLE CSA STANDARDS. IN ALL CASES THE LATEST EDITIONS OF THE CODES AND STANDARDS SHALL APPLY.
2. LOCATE ALL BURIED SERVICES PRIOR TO EXCAVATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY BRACING AND SHORING NECESSARY TO UNDERTAKE THE WORK.
3. READ THESE DRAWINGS IN CONJUNCTION WITH ALL RELATED DRAWINGS AND CONTRACT DOCUMENTS.
4. VERIFY ALL DIMENSIONS ON THE STRUCTURAL DRAWINGS WITH THE REMAINDER OF THE CONTRACT DRAWINGS BEFORE CONSTRUCTION. ANY DISCREPANCIES OR ERRORS MUST BE REPORTED TO THE ENGINEER PRIOR TO STARTING THE WORK.
5. DO NOT SCALE DRAWINGS.
6. DESIGN LOADS FOR EACH PORTION OF THE STRUCTURE ARE SHOWN ON PLAN. DO NOT EXCEED THESE LOADS DURING CONSTRUCTION.
7. DESIGN LOADS INDICATED ARE UNFACTORED UNLESS NOTED OTHERWISE.
8. ALL DIMENSIONS ON DRAWING ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
9. DELIVER, HANDLE AND STORE MATERIALS TO AVOID DAMAGE IN ANY MANNER.
1. MAINTAIN A SET OF DRAWINGS ON SITE & UPDATE WEEKLY WITH CONSTRUCTION RECORD INFORMATION.

STRUCTURAL MASONRY

1. MASONRY WORK SHALL CONFORM TO REQUIREMENTS OF CAN/CSA-A371, MASONRY CONSTRUCTION FOR BUILDINGS.
2. MASONRY MATERIAL TYPES AND STRENGTHS USED IN THIS PROJECT SHALL BE AS FOLLOWS:

MATERIAL	CSA STANDARD	TYPE
CLAY BRICK	A82	GRADE SW
CONCRETE BRICK	A165.2	TYPE I-25
CONCRETE MASONRY UNITS (HOLLOW)	A165.1	H/15
CONCRETE MASONRY UNITS (SOLID)	A165.1	S/15
GROUT	A179M	20 MPa
MORTAR	A179M	TYPE S
REINFORCING BARS	G30	GRADE 400R

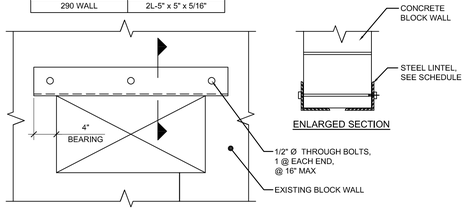
3. THE NET AREA COMPRESSIVE STRENGTH OF THE MASONRY ASSEMBLY (f'm) SHALL NOT BE LESS THAN 7.5 MPa.
4. GROUT SHALL BE COARSE GROUT. GROUT SHALL BE FLUID ENOUGH IN ORDER TO FLOE IN ALL JOINTS OF THE MASONRY WITHOUT SEGREGATION.
5. MORTAR AND GROUT MIX DESIGNS FOR EACH TYPE AND STRENGTH SHALL BE PREPARED BY CONTRACTOR AND TESTED BY AN INDEPENDENT TESTING LABORATORY, THE MIX DESIGNS SHALL THEN BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
6. ALL CELLS AND BOND BEAMS WITH REINFORCING SHALL BE FILLED SOLID WITH GROUT.
7. ALL CELLS WITH DOWELS, ANCHOR RODS, ETC., SHALL BE FILLED SOLID WITH GROUT.
8. FOR DIMENSIONS OF UNITS, SURFACE FINISHES, COURSE PATTERNS AND JOINT TYPES, REFER TO ARCHITECTURAL DRAWINGS.
9. CORING OPENINGS IN GROUTED MASONRY IS NOT PERMITTED.
10. NO PIPES OR ELECTRICAL CONDUITS SHALL PASS THROUGH MASONRY LINTELS AND/OR REINFORCED, GROUTED CELLS.
11. SEE ARCHITECTURAL DRAWINGS FOR NON-LOAD BEARING MASONRY WALL DIMENSIONS AND LOCATIONS.
12. PROVIDE LINTELS OVER ALL OPENINGS OR RECESSES IN NON-LOAD BEARING MASONRY WALLS, INCLUDING THOSE FOR MECHANICAL/ELECTRICAL SERVICES OR EQUIPMENT, IN ACCORDANCE TO TYP DETAILS.
13. SUPPORT MASONRY LINTELS FOR A MINIMUM OF SEVEN DAYS OR UNTIL SUFFICIENT STRENGTH IS GAINED TO SAFELY SUPPORT LOADS IMPOSED.
14. PROVIDE LATERAL SUPPORT AT THE TOP OF NON LOAD-BEARING MASONRY WALLS IN ACCORDANCE TO TYP DETAILS.
15. HORIZONTAL REINFORCEMENT TO BE ACCORDING TO THE FOLLOWING DETAIL BELOW;



BLOCK JOINT REINFORCING LAP

NOTE:
SCAN THE MASONRY WALL PRIOR TO CORING INTO THE WALL TO PREVENT CUTTING THROUGH THE EXISTING REINFORCEMENT.

STEEL LINTEL SCHEDULE	
CLEAR SPAN	UP TO 4'-0"
140 WALL	2L-4" x 3" x 5/16"
190 WALL	2L-4"x4"x5/16"
240 WALL	2L-5" x 5" x 5/16"
290 WALL	2L-5" x 5" x 5/16"



INSTALLATION PROCEDURE:

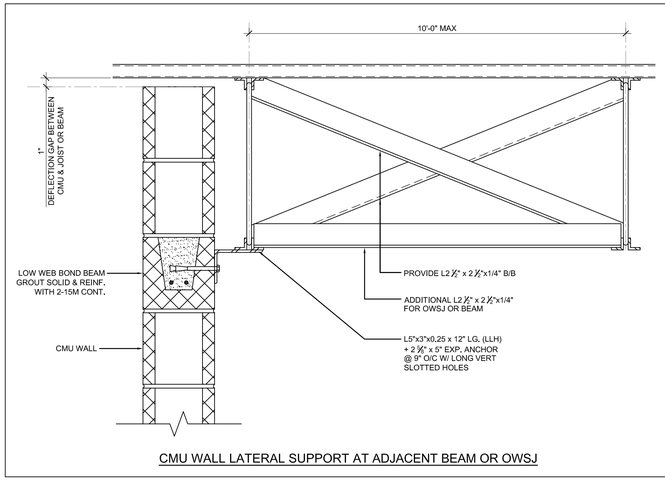
1. SAW CUT MORTAR JOINT AND INSTALL ANGLE ONE SIDE AT A TIME.
2. REMOVE MASONRY BELOW LINTEL.
3. INSTALL THROUGH BOLTS.

STEEL LINTEL SCHEDULE FOR NEW OPENINGS IN EXISTING CMU WALL

STEEL LINTEL SCHEDULE				
CLEAR SPAN	UP TO 4'-0"	4'-0" TO 6'-0"	6'-0" TO 7'-0"	ARRANGEMENT
90 WALL	L3 1/2" x 3 1/2" x 5/16"	L5" x 3 1/2" x 5/16"	L6" x 3 1/2" x 5/16"	
140 WALL	2 - L2 1/2" x 2 1/2" x 5/16"	2 - L3 1/2" x 2 1/2" x 5/16"	2L - 6" x 2 1/2" x 5/16"	
190 WALL	2 - L3 1/2" x 3 1/2" x 5/16"	2 - L5" x 3 1/2" x 5/16"	2L - 6" x 3 1/2" x 5/16"	
240 WALL	2 - L4" x 4" x 5/16"	2 - L6" x 4" x 5/16"	2L - 6" x 4" x 5/16"	
290 WALL	2 - L3 1/2" x 3 1/2" x 5/16"	3 - L5" x 3 1/2" x 5/16"	3L - 6" x 3 1/2" x 5/16"	
UP TO 10'-0"	W8x18 + PL 1/4" THK, IN CENTER OF WALL			SEE DETAIL

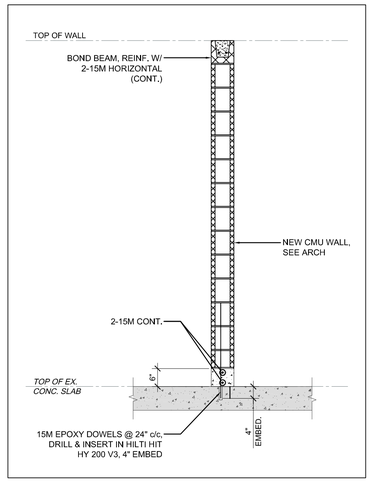
1. PAIR OF LINTEL ANGLES TO BE STITCH WELDED (T&B) @ 2'-0" o/c.
2. MINIMUM BEARING FOR STEEL ANGLES SHALL BE 6", UNO.
3. FOR LINTELS ABUTTING STEEL COLUMNS, CONCRETE WALLS OR OTHER COLUMNS PROVIDE L3 1/2" x 3 1/2" x 3/8" FASTENED TO ABUTMENT.
4. ALL ANGLES SHALL BE LLV, UNO.
5. ALL LOOSE ANGLES SHALL BE HOT DIPPED GALVANIZED, UNO.

STEEL LINTEL SCHEDULE FOR NEW OPENINGS IN NEW CMU WALL

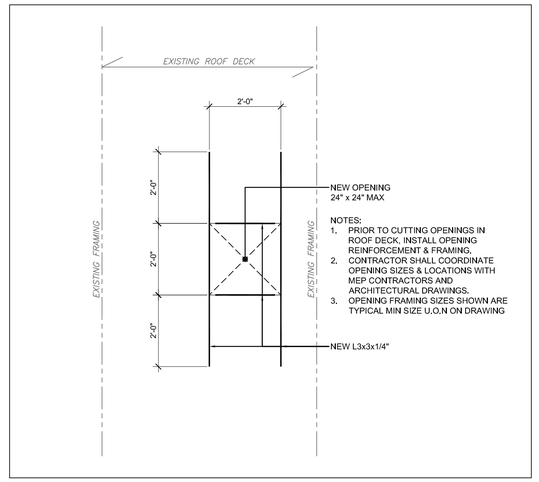


CMU WALL LATERAL SUPPORT AT ADJACENT BEAM OR OWSJ

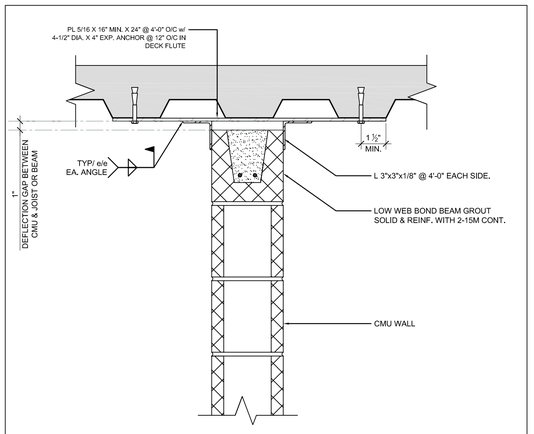
3 S001 DETAIL
SCALE: 1 1/2" = 1'-0"



2 S001 SECTION
SCALE: 1 1/2" = 1'-0"

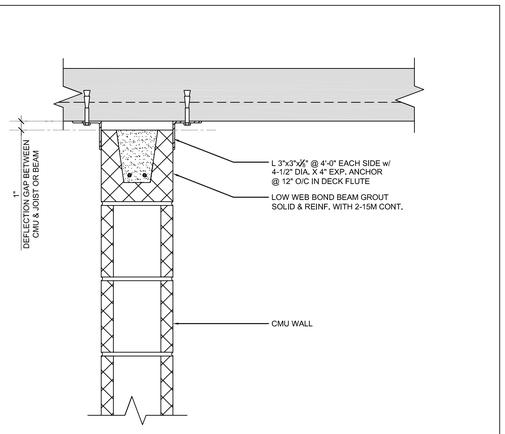


1 S001 PARTIAL PLAN
SCALE: 1/2" = 1'-0"



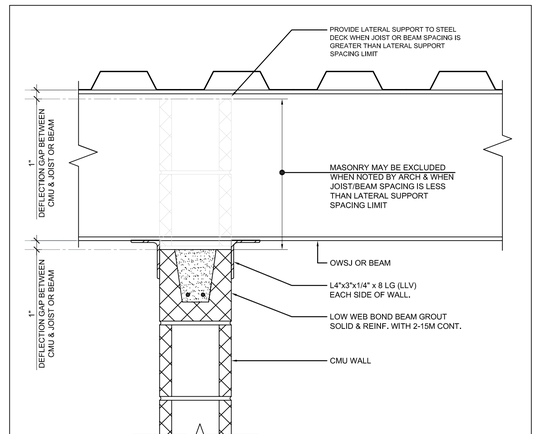
LOAD BEARING CMU WALL LATERAL SUPPORT - PERPENDICULAR TO DECK

6 S001 DETAIL
SCALE: 1 1/2" = 1'-0"



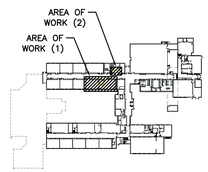
LOAD BEARING CMU WALL LATERAL SUPPORT - PERPENDICULAR TO DECK

5 S001 DETAIL
SCALE: 1 1/2" = 1'-0"



LOAD BEARING CMU WALL LATERAL SUPPORT - PARALLEL TO DECK

4 S001 DETAIL
SCALE: 1 1/2" = 1'-0"



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	06/28/2024	ISSUED FOR PERMIT & TENDER	WE

STAMPS:

LICENSED PROFESSIONAL ENGINEER
06/27/2024
W. ELSAYED
100136053
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville, ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
NEW STRUCTURAL LAYOUT

DISCIPLINE:
STRUCTURAL

DRAFTER: KL	SCALE: AS NOTED
DESIGNER: ZR	DATE: 2024/06/26
APPROVER: WE	APPROVER: WE
PROJECT No: Z0013706	DRAWING No: S101
SHEET No: # of #	

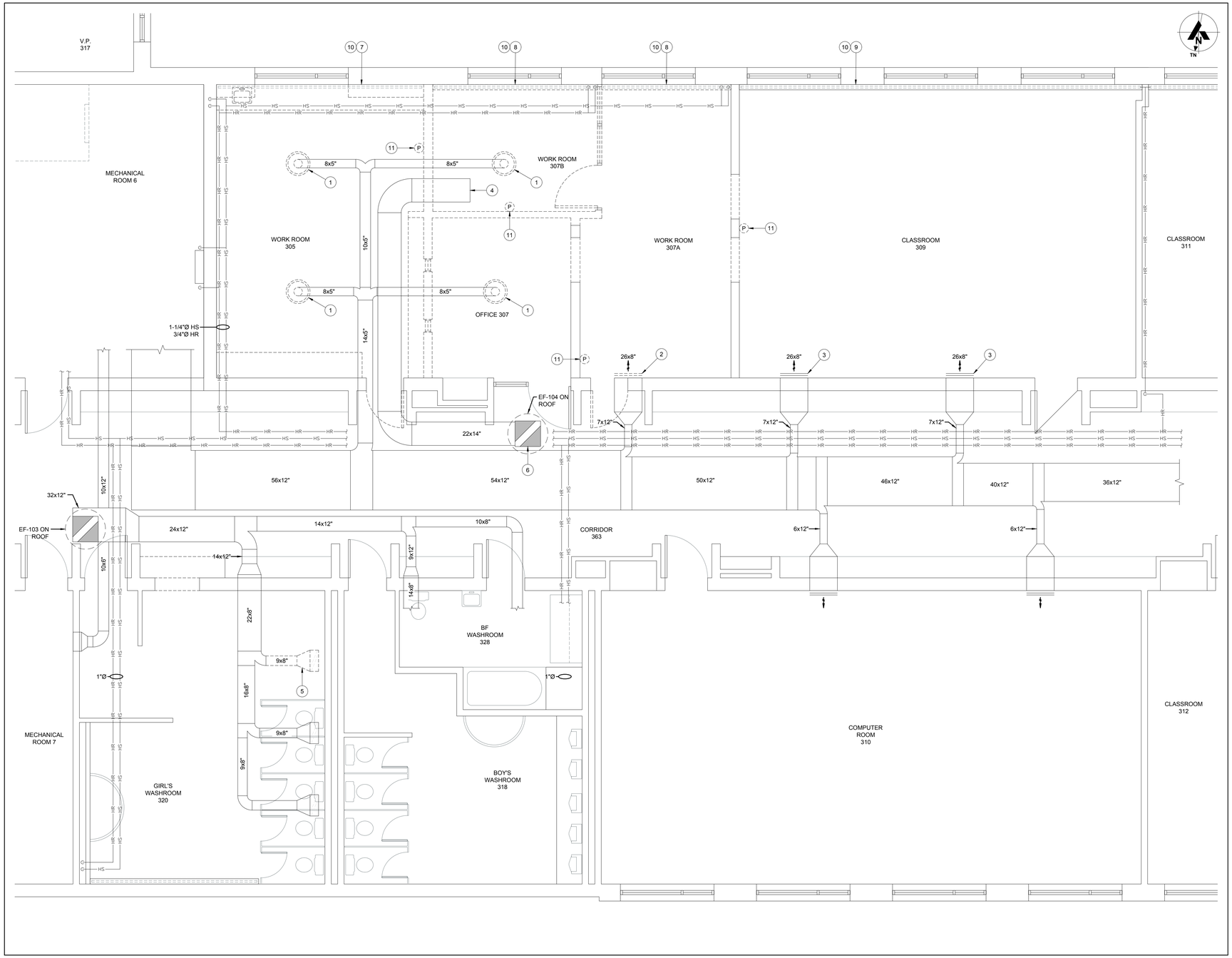
TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL DEMOLITION HVAC NOTES:

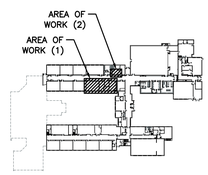
1. THE CONTRACTOR SHALL ALLOW FOR DETAILED SITE INVESTIGATION TO CONFIRM ALL SERVICES PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
2. DISCONNECT AND REMOVE ALL REDUNDANT EQUIPMENT, DUCTWORK, PIPING AND OTHER REDUNDANT SERVICES THROUGHOUT AREA OF WORK.
3. REMOVE OBSOLETE ABOVEGROUND SERVICES BACK TO SOURCE/MAINS AND CAP.
4. ANY REDUNDANT RISERS CAN REMAIN WITHIN EXISTING WALLS (WHERE WALLS ARE SCHEDULED TO REMAIN) BUT SERVICES SHALL BE CUT AND CAPPED WITHIN WALL SO FACE OF WALL CAN BE PATCHED AND FINISHED SMOOTH.
5. TEMPORARILY SEAL ALL OPEN DUCTS THROUGHOUT CONSTRUCTION TO PREVENT DUST AND DIRT FROM ENTERING THE SYSTEM. WHERE THE CONTRACTOR DOES NOT CONFORM THEY ARE RESPONSIBLE FOR CLEANING OF THE SYSTEMS IN A MANNER APPROVED BY THE CONSULTANT.

DEMO MECHANICAL WORKING NOTES:

1. REMOVE EXISTING ROUND DIFFUSER AND BOTTOM TAKEOFF. CAP MAIN DUCT WHERE TAKEOFF REMOVED.
2. REMOVE EXISTING SUPPLY GRILLE AND DISPOSE OF.
3. REMOVE EXISTING SUPPLY AIR GRILLE AND RETAIN FOR REINSTALLATION.
4. REMOVE EXISTING CAP ON END OF E/A DUCT.
5. REMOVE EXISTING E/A GRILLE AND CUT BACK DUCTWORK TO SUIT NEW CONNECTION FOR LAUNDRY ROOM.
6. REMOVE EXISTING ROOF MOUNTED EXHAUST FAN. EXISTING BACKDRAFT DAMPER AND CURB TO REMAIN FOR REUSE.
7. EXISTING WALLFIN ELEMENT CONCEALED WITHIN MILLWORK TO REMAIN. VACUUM ELEMENT PRIOR TO INSTALLATION OF NEW ENCLOSURE.
8. REMOVE EXISTING WALLFIN ENCLOSURE AND DISPOSE OF. EXISTING WALLFIN ELEMENT TO REMAIN. VACUUM ELEMENT PRIOR TO INSTALLATION OF NEW ENCLOSURE.
9. REMOVE EXISTING WALLFIN ENCLOSURE AND RETAIN FOR REINSTALLATION. VACUUM ELEMENT PRIOR TO INSTALLATION OF NEW ENCLOSURE.
10. REMOVE EXISTING PNEUMATIC CONTROL VALVE. REMOVE EXISTING PNEUMATIC CONTROLS AND ALL ASSOCIATED TUBING. CONTRACTOR TO RETAIN THE SERVICES OF APS FOR ALL PNEUMATICS DEMOLITION.
11. REMOVE EXISTING PNEUMATIC THERMOSTAT AND ALL ASSOCIATED PNEUMATIC TUBING. CONTRACTOR TO RETAIN THE SERVICES OF APS FOR ALL PNEUMATICS DEMOLITION.



1 M102 PLP CLASSROOMS - DEMO HVAC LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:
LICENSED PROFESSIONAL ENGINEER
B. R. TIMSON
100511696
Jun28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
DEMOLITION
HVAC LAYOUT

DISCIPLINE:
MECHANICAL

DRAFTER: MRC	SCALE: AS NOTED
DESIGNER: BRT	DATE: 2024/06/07
APPROVER: BRT	APPROVER: BRT
PROJECT No: Z0013706	DRAWING No: M101
SHEET No: 1 of 6	

TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL NEW PLUMBING NOTES:

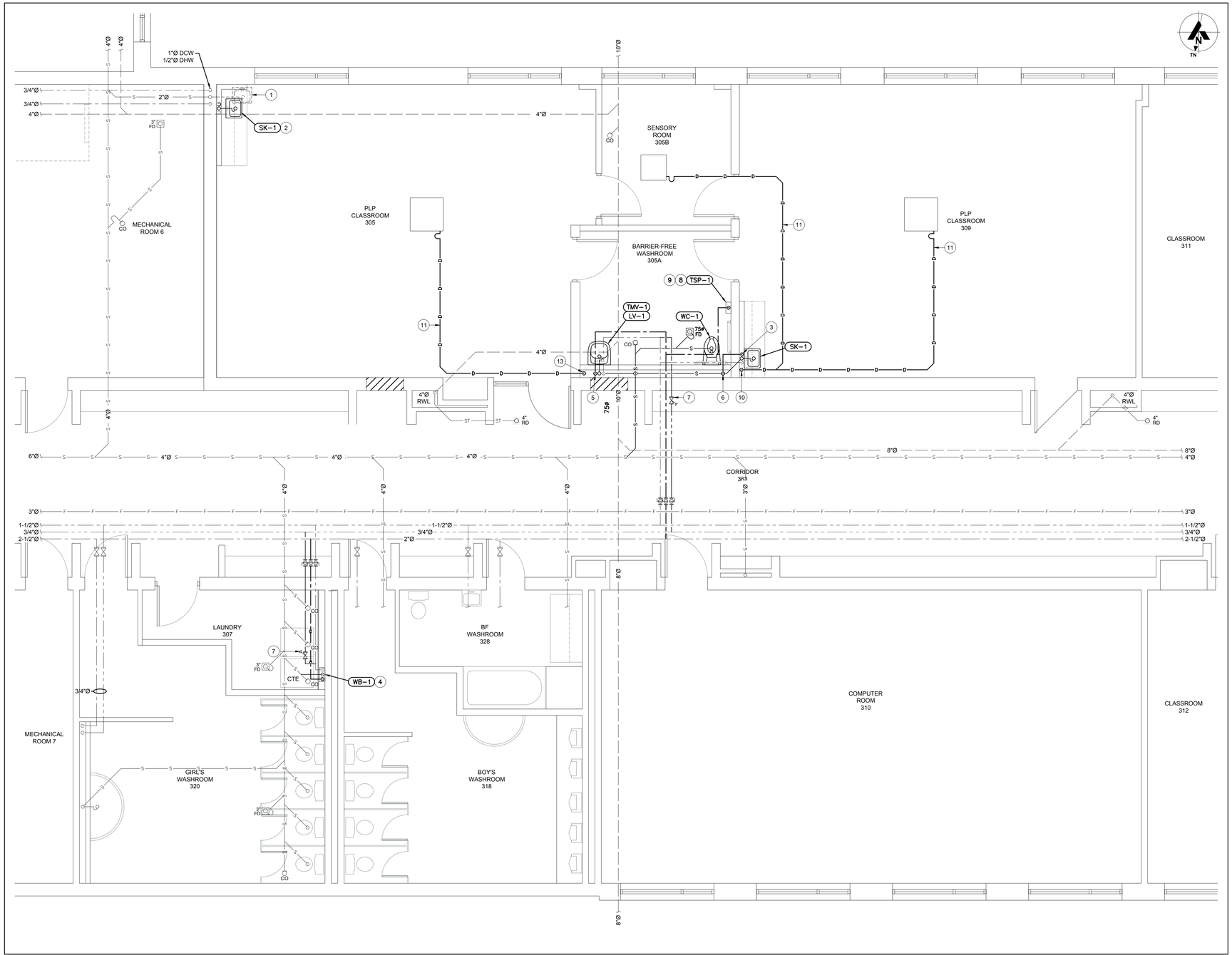
1. THE CONTRACTOR SHALL INVESTIGATE AND CONFIRM SERVICES ON SITE PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO CONSULTANT.
2. SCOPE/CAMERA EXISTING UNDERGROUND SANITARY AND STORM PIPING THROUGH WORK AREA TO CONFIRM CONDITION OF PIPE, ROUTING AND INVERTS. SUBMIT REPORT AND VIDEO ON USB.
3. SCAN FLOOR PRIOR TO FLOOR CUTS AND UNDERGROUND PIPING INSTALLATION.
4. DISCONNECT AND REMOVE ALL REDUNDANT FIXTURES, PIPING AND OTHER REDUNDANT SERVICES THROUGHOUT AREA OF WORK.
5. ABANDON ANY REDUNDANT UNDERGROUND SERVICES AND CAP FLUSH WITH FLOOR. REMOVE REDUNDANT UNDERGROUND SERVICES WHERE REQUIRED TO SUIT NEW UNDERGROUND SERVICES.
6. REMOVE OBSOLETE ABOVEGROUND SERVICES BACK TO SOURCE/MAINS AND CAP.
7. ANY REDUNDANT RISERS CAN REMAIN WITHIN EXISTING WALLS (WHERE WALLS ARE SCHEDULED TO REMAIN) BUT SERVICES SHALL BE CUT AND CAPPED WITHIN WALL SO FACE OF WALL CAN BE PATCHED AND FINISHED SMOOTH.
8. MAINTAIN VENT PIPING FOR REUSE WHERE POSSIBLE AND REMOVE ANY REDUNDANT.
9. REFER TO ARCHITECTURAL DRAWINGS AND/OR GENERAL CONTRACTOR FOR CEILING HEIGHTS TO ENSURE ALL SERVICES ARE CONCEALED WITHIN AVAILABLE CEILING SPACE. RUN ALL NEW SERVICES UP IN JOIST SPACE AND BETWEEN LIGHTS AS NOTED OR AS REQUIRED.
10. COORDINATE ALL SERVICES WITH ALL TRADES PRIOR TO INSTALLATION.
11. COVER ALL FLOOR DRAINS DURING CONSTRUCTION TO PREVENT DEBRIS FROM FALLING IN DRAINS OR GROUT BEING POURED DOWN DRAINS.
12. PROVIDE NEW PLUMBING VENTS THROUGH ROOF AS REQUIRED OR TIE INTO EXISTING WHERE POSSIBLE.
13. INSULATION AND LABEL ALL NEW PIPING.
14. FIRE STOP ALL NEW PIPING THROUGH RATED WALLS IN AREA OF WORK.
15. SUPPLY ACCESS DOORS FOR MECHANICAL DEVICES ABOVE DRYWALL CEILING AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
16. LABEL CEILING GRID AT ACCESS TO MECHANICAL EQUIPMENT AND DEVICES WITH LAMACOID NAMEPLATE.
17. THE CONTRACTOR SHALL FLUSH, SCOPE, AND PROVIDE VIDEO INSPECTION OF THE SANITARY SYSTEM AFTER COMPLETION OF WORK AND PRIOR TO SUBSTANTIAL COMPLETION. FLUSHING, SCOPING AND VIDEO SHALL INCLUDE AREA OF WORK TO WHERE IT TIES INTO THE MAIN. SUBMIT REPORT AND VIDEO ON USB.

NEW PLUMBING WORKING NOTES:

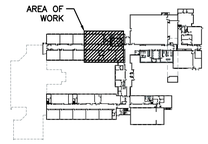
1. REMOVE EXISTING SINK, EXISTING DCW, DHW AND SAN SERVICES TO REMAIN FOR CONNECTION TO NEW SINK. REWORK SERVICES TO RUN IN NEW CHASE.
2. PROVIDE NEW SINK AND CONNECT TO EXISTING SERVICES IN CHASE.
3. 13Ø DCW & DHW DOWN IN WALL OR CHASE TO NEW SINK.
4. 13Ø DCW & DHW DOWN IN WALL TO WASHER BOX.
5. 13Ø DCW & DHW DOWN IN CHASE TO NEW LAV. 13Ø DCW & DHW DOWN IN CHASE TO NEW TMV. RUN 13Ø DCW & DTW TO LAV FAUCET. MOUNT TMV IN NEW LAV SHROUD.
6. 25Ø DCW DOWN IN CHASE TO NEW TOILET.
7. PROVIDE NEW LEAD-FREE CBV ON DRW LINE. BALANCE TO 0.5gpm.
8. NEW MECHANICAL TRAP SEAL PRIMER FOR NEW FLOOR DRAINS. COORDINATE POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
9. SUPPLY ACCESS DOORS FOR ALL CONCEALED DEVICES ABOVE DRYWALL CEILING AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
10. RUN CONDENSATE PIPING DOWN THE WALL AND TIE INTO THE SAN PIPING FOR SINK UPSTREAM OF THE TRAP.
11. INSULATE AND LABEL ALL CONDENSATE PIPING IN CEILING.

TYPICAL PLUMBING PIPE SIZING

	DCW	DHW	DTW	SANITARY	VENT
WC (TANK TYPE)	1/2"ø	--	--	3"ø	1-1/2"ø
LAVATORY	--	--	1/2"ø	1-1/4"ø	1-1/4"ø
SINK	1/2"ø	1/2"ø	--	1-1/2"ø	1-1/4"ø
CLOTHES WASHER	1/2"ø	1/2"ø	--	1-1/2"ø	1-1/4"ø
75ø FD	--	--	--	3"ø	1-1/2"ø
PROVIDE ISOLATION VALVES AT ALL FIXTURES					



1 M201 PLP CLASSROOMS - NEW PLUMBING LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:

LICENSED PROFESSIONAL ENGINEER
B. R. TIMSON
100511696
Jun28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
NEW PLUMBING LAYOUT

DISCIPLINE:
MECHANICAL

DRAFTER: MRC	SCALE: AS NOTED
DESIGNER: UZ/BRT	DATE: 2024/06/07
APPROVER: BRT	APPROVER: BRT
PROJECT No: Z0013706	DRAWING No: M201
SHEET No: 2 of 6	

TITLEBLOCK 24x36 VERT ENG 3.0

GENERAL NEW HVAC NOTES:

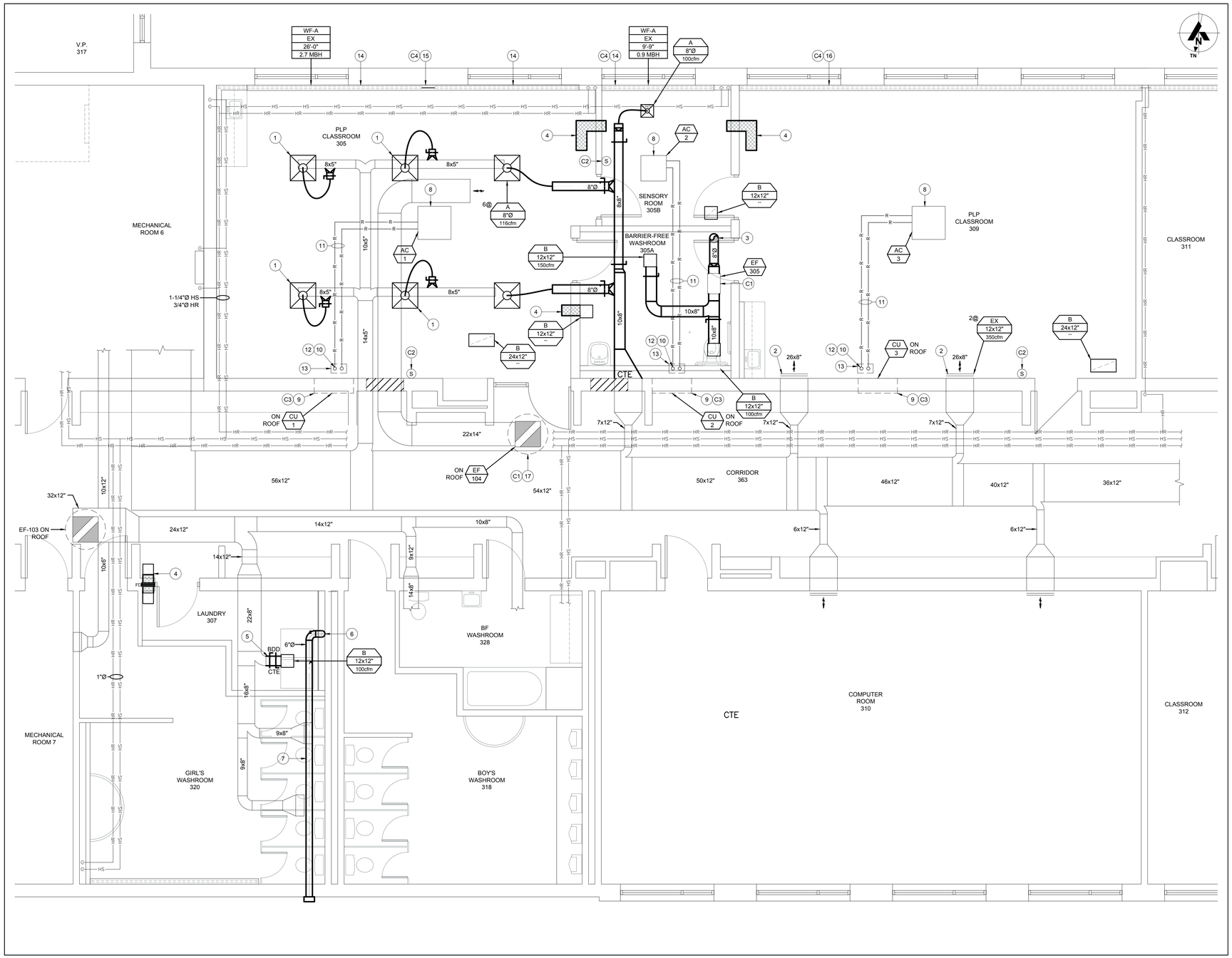
1. THE CONTRACTOR SHALL INVESTIGATE AND CONFIRM SERVICES ON SITE PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO CONSULTANT.
2. REFER TO ARCHITECTURAL DRAWINGS AND/OR GENERAL CONTRACTOR FOR CEILING HEIGHTS TO ENSURE ALL SERVICES ARE CONCEALED WITHIN AVAILABLE CEILING SPACE. RUN ALL NEW SERVICES UP IN JOIST SPACE AND BETWEEN LIGHTS AS NOTED OR AS REQUIRED.
3. COORDINATE ALL SERVICES WITH ALL TRADES PRIOR TO INSTALLATION.
4. INSULATE AND LABEL ALL NEW PIPING WITHIN CEILING SPACE.
5. FIRE STOP ALL NEW PIPING THROUGH RATED WALLS IN AREA OF WORK.
6. SUPPLY ACCESS DOORS FOR MECHANICAL DEVICES ABOVE DRYWALL CEILING AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
7. ELECTRICAL CONTRACTOR TO PROVIDE BACK BOX, CONDUIT AND PULL STRING FOR WALL SENSORS ON NEW PARTITION WALLS. COORDINATE WITH ELECTRICAL.
8. LABEL CEILING GRID AT ACCESS TO MECHANICAL EQUIPMENT AND DEVICES WITH LAMACOID NAMEPLATE.
9. TEMPORARILY SEAL ALL OPEN DUCTS THROUGHOUT CONSTRUCTION TO PREVENT DUST AND DIRT FROM ENTERING THE SYSTEM. WHERE THE CONTRACTOR DOES NOT CONFORM THEY ARE RESPONSIBLE FOR CLEANING OF THE SYSTEMS IN A MANNER APPROVED BY THE CONSULTANT.

NEW HVAC WORKING NOTES:

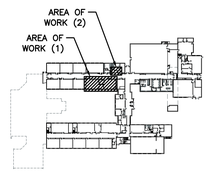
1. PROVIDE NEW DIFFUSER AND FLEXIBLE DUCT AND CONNECT TO EXISTING S/A DUCT C/W NEW TAKEOFF AND BALANCE DAMPER FROM TOP OF DUCT.
2. REINSTALL EXISTING S/A GRILLE SUCH THAT VANES DIRECT AIR UPWARD.
3. 10x8" E/A FROM FAN UP THROUGH ROOF TO GOOSENECK. REFER TO DETAIL. THERMALLY INSULATE 2.4m BACK FROM ROOF.
4. 10x10" ACOUSTICALLY LINED TRANSFER ELBOW. REFER TO DETAIL.
5. PROVIDE NEW EXHAUST GRILLE AND CONNECT TO EXISTING TAKEOFF FROM E/A MAIN ABOVE. PROVIDE BACKDRAFT DAMPER AND BALANCE DAMPER IN BRANCH DUCTWORK.
6. PROVIDE RECESSED LINT TRAP ON RISER OF DRYER RECESS VENT. MOUNT ABOVE DRYER MAX 5' AFF IN NEW CHASE WALL. REFER TO MATERIAL SPECIFICATION FOR MAKE AND MODEL.
7. 150Ø SMOOTH RIGID DUCT DRYER VENT THROUGH OUTSIDE WALL C/W LAUNDRY VENT CAP EQUAL TO REVERSOMATIC INTERCHANGEABLE HEAVY DUTY WALL CAP (FINISH TO MATCH ROOF FLASHING). FLEXIBLE OR SPIRAL WOUND DUCT NOT ACCEPTABLE. REFER TO MATERIAL SPECIFICATIONS FOR APPROVED VENTING.
8. INSTALL NEW AC UNIT AND SUSPEND FROM STRUCTURE ABOVE C/W SPRING ISOLATORS.
9. MOUNT NEW CONDENSING UNIT ON NEW ECOFEET STAND ON ROOF.
10. REFRIGERATION PIPING UP THROUGH ROOF IN NEW DOGHOUSE.
11. INSULATE ALL SUCTION AND LIQUID PIPING.
12. PROVIDE ALUMINUM JACKETING EQUAL TO 3M VENTURECLAD ON ALL REFRIGERATION PIPING EXTERIOR TO BUILDING. TYPICAL.
13. RUN NEW POWER AND CONTROL WIRING TO AC UNIT ON ROOF IN NEW DOGHOUSE.
14. INSTALL NEW BAS CONTROL VALVE FOR WALLFIN. VALVE SUPPLIED BY DDSB. PROVIDE NEW ENCLOSURE TO CONCEAL EXISTING WALLFIN ELEMENT.
15. REWORK FEED BETWEEN TWO SECTIONS OF ELEMENT TO ALLOW CONTROL FROM COMMON CONTROL VALVE. PROVIDE 24" REMOVABLE ENCLOSURE SECTION C/W LAP JOINTS FOR ACCESS TO VALVES.
16. INSTALL NEW BAS CONTROL VALVE FOR WALLFIN. VALVE SUPPLIED BY DDSB. REINSTALL EXISTING WALLFIN ENCLOSURE. COORDINATING PAINTING OF ENCLOSURE WITH GENERAL CONTRACTOR.
17. PROVIDE NEW ROOF MOUNTED EXHAUST FAN AND MOUNT ON EXISTING ROOF CURB C/W CURB ADAPTER.

NEW CONTROLS WORKING NOTES:

- C1 PROVIDE CONTROLS AND CONTROL WIRING FOR NEW FAN. NEW STARTER BY ELECTRICAL CONTRACTOR.
- C2 PROVIDE NEW SPACE SENSOR AND WIRE BACK TO NEW EQUIPMENT CONTROLLERS. PROVIDE BAS COMMUNICATIONS WIRING FOR ALL EQUIPMENT CONTROLLERS. SENSOR IN CALMING ROOM TO BE FLAT PLATE STAINLESS STYLE.
- C3 CONTROLS CONTRACTOR TO PROVIDE TIE IN TO BAS FOR ENABLE/DISABLE OF CONDENSING UNIT. TYPICAL.
- C4 PROVIDE NEW CONTROLS AND CONTROL WIRING FOR EXISTING WALLFIN.



1 M301 PLP CLASSROOMS - NEW HVAC LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:

LICENSED PROFESSIONAL ENGINEER
B. R. TIMSON
100511696
Jun28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
NEW HVAC LAYOUT

DISCIPLINE:
MECHANICAL

DRAFTER: MRC	SCALE: AS NOTED
DESIGNER: BRT	DATE: 2024/06/07
APPROVER: BRT	APPROVER: BRT
PROJECT No: Z0013706	DRAWING No: M301
SHEET No: 3 of 6	

TITLEBLOCK 24x36 VERT ENG 3.0

PLUMBING SPECIFICATIONS:

1. ALL PLUMBING PRODUCTS SHALL BE "LEAD-FREE" CERTIFIED TO ANSI/NSF 372.

2. ALL NEW ABOVE GROUND WATER PIPING SHALL BE TYPE 'L' HARD COPPER, CERTIFIED TO ASTM B88, WITH SOLDER JOINTS. EXCEPT DOMESTIC HOT WATER RECIRCULATION PIPING SHALL BE TYPE 'K' HARD COPPER.

3. DRAINAGE SYSTEM (ABOVE GROUND):
   .1 2-1/2"(63mm) AND OVER – CAST IRON MJ PIPE WITH MJ FITTINGS AND STAINLESS STEEL CLAMPS.
   .2 2"(50mm) AND UNDER – COPPER DWV PIPE WITH WROUGHT COPPER SOLDER FITTINGS OR IPEX XFR OR PVC DWV

4. DRAINAGE SYSTEM (UNDERGROUND):
   .1 PIPE UP TO AND INCLUDING 75mm(3") SHALL BE:
      .1 ULC CERTIFIED PVC 40 DWV PIPE TO CAN/CSA B181.2 COMPLETE WITH PVC DWV FITTINGS TO CAN/CSA B181.2 WITH SOLVENT WELD JOINT.
   .2 PIPE 75mm(3") UP TO AND INCLUDING 100mm(4") SHALL BE:
      .1 ULC CERTIFIED PVC 40 DWV PIPE TO CAN/CSA B181.2 COMPLETE WITH PVC DWV FITTINGS TO CAN/CSA B181.2 WITH SOLVENT WELD JOINT, OR
      .2 ULC CERTIFIED PVC SDR 28/35 BDS PIPE TO CAN/CSA B182.1 COMPLETE WITH PVC BDS FITTINGS TO CAN/CSA B182.2 WITH SOLVENT WELD JOINTS.

5. CONDENSATE PIPING SHALL BE COPPER C/W 1"(25mm) INSULATION. PLASTIC TUBING OR PIPE IS NOT ACCEPTABLE.

6. VENTS PASSING THROUGH ROOF SHALL USE HEAVY GAUGE, SEAMLESS, SPUN ALUMINUM PRE-INSULATED, VANDAL PROOF VENT FLASHING AS SUPPLIED BY NATIONAL ROOFING SUPPLY OR THALER METAL.

7. ALL NEW PIPE HANGERS SHALL BE:
   .1 EPOXY COATED CLEVIS TYPE WITH THREADED SUSPENSION RODS WHERE HANGER DIRECTLY TOUCHES PIPING.
   .2 ADJUSTABLE WROUGHT IRON CLEVIS TYPE AND/OR ADJUSTABLE RING WITH THREADED SUSPENSION RODS WHERE HANGERS WRAP AROUND OUTSIDE OF PIPE INSULATION. PROVIDE SADDLES TO PREVENT CRUSHING OF INSULATION.EXCEPT FOR SIZES LESS THAN/EQUAL TO 1-1/4"ø. INSULATION CAN WRAP AROUND HANGERS.
   .3 PIPE HANGER SPACING
      -SIZES UP TO 1-1/4"(32mm) = 8'(2.5m) SPACING
      -SIZES 1-1/2"(38mm) TO 2"(50mm) = 10'(3m) SPACING
      -SIZES 2-1/2"(63mm) AND OVER = 12'(3.5m) SPACING
   .4 PROVIDE HANGER WITHIN 12"(300mm) OF EVERY ELBOW

8. PROVIDE A SUPPLY SHUT OFF VALVE ON HOT, COLD AND/OR TEMPERED WATER SUPPLY TO EACH FIXTURE. SUPPLY SHUT OFF SHALL BE EQUAL TO MCGUIRE H165. ALL VALVES SHALL BE LINE SIZE.

9. BALL VALVES SHALL BE LEAD FREE WITH SOLDERED OR THREADED ENDS. BALL VALVES SHALL BE EQUAL TO KITZ #858 & #859. ALL VALVES SHALL BE LINE SIZE.

10. CHECK VALVES SHALL BE LEAD FREE. CHECK VALVES 2" AND SMALLER SHALL BE EQUAL TO KITZ #822 & #823 WITH SOLDER OR THREADED ENDS. 2-1/2" AND LARGER CHECK VALVES SHALL BE EQUAL TO KITZ #150UOAM WITH FLANGED ENDS. ALL VALVES SHALL BE LINE SIZE.

11. CIRCUIT BALANCING VALVES SHALL BE LEAD FREE. PROVIDE A CBV ON EACH DOMESTIC RECIRCULATION LOOP. CIRCUIT BALANCING VALVES SHALL BE IMI TA BBV LF OR 76X SERIES (NO ALTERNATES ACCEPTABLE). MOUNT WITH PORTS UPRIGHT OR AT LEAST 90° UP FROM BOTTOM. SUBMIT SHOP DRAWINGS COMPLETE WITH VALVE SIZING SCHEDULE (CBVS MAY BE SMALLER THAN LINE SIZE).

12. FLEXIBLE SUPPLIES ARE NOT ACCEPTABLE FOR FLUSH TANK TOILETS OR ANY EXPOSED INSTALLATION, WHERE SUPPLIES ARE INSTALLED UNDER COUNTER OR BEHIND SHROUDS FLEXIBLE SUPPLIES ARE ACCEPTABLE.

13. REFER TO PLUMBING FIXTURE SPECS INCLUDING FIXTURES, TRAP SEAL PRIMERS, WATER HAMMER ARRESTORS, ACCESS DOORS, ETC.

14. INSULATION:
   .1 EXTERNAL PIPE INSULATION SHALL BE RIGID, SECTIONAL FIBERGLASS TYPE AND BE COMPLETE WITH FACTORY APPLIED ALL PURPOSE VAPOUR BARRIER. PRE-FORMED INSULATION SHALL BE USED AT PIPE FITTINGS, VALVES, ETC. PROVIDE NON-CRUSHING INSULATION AT ALL PIPE HANGERS AND PROVIDE SADDLES.
   .2 INSULATE DCW, DHW, DRW AND DTW PIPING.
   .4 INSULATE VENT LINES 1.5m BACK FROM ROOF.
   .5 INSULATION THICKNESS: 1"(25mm)

15. ACCESS DOORS/COVERS
   .1 REFER TO HVAC MATERIAL SPECIFICATIONS.

PLUMBING NOTES:

1. PROVIDE BEFORE AND AFTER SCOPING/FLUSHING.
2. PROVIDE CLEANOUTS AS REQUIRED BY CODE. SIZE OF CLEANOUTS TO BE SAME SIZE AS SANITARY LINES.
3. PROVIDE ALL TRENCHING, EXCAVATING AND BACKFILL FOR UNDERGROUND PLUMBING. ALL SAW CUTTING AND RESTORATION OF CONCRETE FLOOR IS BY GENERAL CONTRACTOR. COORDINATE WITH SAME.
4. PROVIDE NEW PLUMBING VENTS THROUGH ROOF AS REQUIRED BY CODE OR TIE INTO EXISTING WHERE POSSIBLE. SUPPLY AND INSTALL ROOF VENTS AS PER SPECIFICATIONS. ALL ROOFING WORK INCLUDING CUTTING, FLASHING AND MODIFICATIONS TO ROOF MEMBRANE SHALL BE BY GENERAL CONTRACTOR. COORDINATE WITH SAME.
5. PROVIDE ISOLATION VALVES AT ALL FIXTURES.
6. INSULATE ALL NEW DOMESTIC HOT, COLD AND TEMPERED WATER PIPING WITH 1"(25mm) INSULATION. PROVIDE PVC JACKET OVER INSULATION IN EXPOSED AREAS.
7. PROVIDE BALANCING VALVES AT START OF EACH BRANCH OF ALL HOT OR TEMPERED WATER RECIRCULATION LOOPS.
8. PROVIDE SLEEVES FOR PIPES THROUGH ALL NEW BLOCK WALLS. FILL VOIDS AROUND PIPES. ENSURE NO CONTACT BETWEEN DISSIMILAR METALS.
9. PROVIDE FIRE STOPPING AROUND ALL PIPING THROUGH FIRE SEPARATIONS.
10. COORDINATE EXACT LOCATION OF NEW FLOOR DRAINS WITH GENERAL CONTRACTOR TO SUIT FLOOR SLOPE.
11. PROVIDE TRAP SEAL PRIMER FOR ALL FLOOR DRAINS USING PRIMER SPECIFIED IN PLUMBING FIXTURE SCHEDULE. PRIMERS SHALL BE CONCEALED. MOUNT IN CEILING SPACE AND RUN LINE CONCEALED DOWN WALL AND UNDER FLOOR TO DRAIN.
12. PROVIDE CONDENSATE DRAINS C/W TRAPS FOR NEW INDOOR AIR HANDLING EQUIPMENT AND RUN TO CLOSEST PLUMBING DRAIN WITH INDIRECT DRAIN CONNECTION IN A VISIBLE AND ACCESSIBLE LOCATION.
13. LABEL ALL NEW PIPING COMPLETE WITH SERVICE AND FLOW ARROWS. LABELS SHALL BE MAX 3m(10') SPACING AND ON EITHER SIDE OF WALLS.
14. PROVIDE ACCESS DOORS WHERE REQUIRED AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION. REFER TO PLUMBING FIXTURE SCHEDULE.
15. PROVIDE ESCUTCHEONS AROUND WATER AND SANITARY PIPING THROUGH WALL, FLOOR OR MILLWORK AT ALL FIXTURES.
16. LABEL CEILING GRID AT ACCESS TO ALL DEVICES.
17. FLUSH AND PERFORM A VIDEO INSPECTION OF ALL UNDERGROUND PIPING SYSTEMS AFTER CONSTRUCTION AND IMMEDIATELY PRIOR TO APPLYING FOR SUBSTANTIAL COMPLETION.

HVAC MATERIAL SPECIFICATIONS:

1. DUCTWORK:
   .1 IN CONFORMANCE WITH SMACNA, ASHRAE, OBC, NFPA 90A.
   .2 SHEET METAL SHALL BE BEST QUALITY LOCK FORMING GALVANIZED SHEET METAL. GALVANIZING SHALL BE TO ASTM A525 (G90), HAVING A THICKNESS OF 0.054 MM AND WEIGHING NOT LESS THAN 0.31 KG/M2 ON EACH SURFACE.
   .3 ALL ROUND DUCTWORK SHALL BE SPIRAL.

2. DRYER VENT:
   .1 EXHAUST DUCT SHALL BE ROUND, CONSTRUCTED FROM 0.4mm THICK (MIN) METAL DUCT HAVING SMOOTH INTERIOR SURFACES AND JOINTS RUNNING IN DIRECTION OF AIR FLOW. JOINTS SHALL NOT BE FASTENED WITH SHEET METAL SCREWS OR OTHER MEANS WHICH EXTEND INTO THE AIR STREAM.
   .2 IN-LINE LINT TRAP SHALL BE EQUAL TO REVERSOMATIC LT-200-44 WITH 4"(100mm) DUCT CONNECTIONS.

3. DUCT ACCESS DOORS
   .1 DUCT ACCESS DOORS SHALL BE EQUAL TO NAILOR 085CL(SQUARE) OR 0800(OVAL). REFER TO DETAIL.

4. FLEXIBLE CONNECTIONS:
   .1 PROVIDE FLEXIBLE CONNECTIONS AT AIR HANDLING UNITS WITH UL APPROVED FABRIC OF 6"(150mm) MINIMUM WIDTH AND WEIGHING NOT LESS THAN 0.8136 KG/M2.

5. REFRIGERATION PIPING:
   .1 TYPE ACR COPPER, CERTIFIED TO ASTM B280, WITH BRAZED JOINTS.
   .2 PROVIDE P-TRAP AT UNIT, SHUT OFF VALVE, FILTER DRYER, REPLACEMENT CARTRIDGE AND TYPE, AND SIGHT GLASS AT THE CONDENSER. MAKE OIL ADJUSTMENT AS REQUIRED TO SUIT LENGTH OF REFRIGERATION PIPING.
   .3 FOR REFRIGERATION SYSTEMS LARGER THAN 3 TONS OF COOLING OR AIR CONDITIONING SYSTEMS LARGER THAN 5 TONS, CONTRACTOR SHALL SUPPLY A TSSA CERTIFICATE ON COMPLETION OF INSTALLATION AND PROVIDE TO CONSULTANT.
   .4 PROVIDE 1"(25mm) INSULATION ON ALL INDOOR & OUTDOOR REFRIGERATION PIPING. SUCTION AND LIQUID LINES SHALL BOTH BE INSULATED OUTSIDE OF BUILDING.
   .5 PROVIDE UV RESISTANT ALUMINUM JACKET ON OUTDOOR REFRIGERATION PIPING EQUAL TO "3M VENTURECLAD".

6. HOT WATER HEATING PIPING:
   .1 PIPING UP TO INCLUDING 2"(50mm): PIPING SHALL BE BLACK STEEL SCHEDULE 40 WITH MALLEABLE STEEL THREADED SCREW FITTINGS OR COPPER WITH SOLDER JOINTS.
   .2 PIPING 2-1/2"(63mm) AND OVER: PIPING SHALL BE BLACK STEEL SCHEDULE 40 WITH WELDED FITTINGS.
   .3 BRASS ADAPTERS SHALL BE PROVIDED AT ALL CONNECTIONS BETWEEN COPPER TUBING AND FERROUS PIPING.
   .4 PROVIDE AUTOMATIC AIR VENTS C/W BALL VALVE AT ALL HIGH POINTS. REFER TO SPECIFICATIONS BELOW.
   .5 PROVIDE DRAIN VALVES C/W HOSE CONNECTION AND CAP AT ALL LOW POINTS AND AS NOTED ON DETAILS.
   .6 ALLOW FOR ANY CHEMICAL TREATMENT OR GLYCOL FILL TO BRING SYSTEM TO ACCEPTABLE LEVELS AND SUBMIT REPORTS.

7. PIPE HANGERS:
   .1 ADJUSTABLE WROUGHT IRON CLEVIS TYPE AND/OR ADJUSTABLE RING WITH THREADED SUSPENSION RODS.
   .2 FOR COPPER PIPING (INCLUDING PIPING WITHIN WALLFIN ENCLOSURE) PROVIDE COPPER PLATED OR EPOXY TYPE HANGERS OR PROVIDE SEPARATION OF DISSIMILAR METALS WITH APPROVED DIELECTRIC MATERIALS. INSULATING TAPE IS NOT ACCEPTABLE.
   .3 HANGERS SHALL WRAP AROUND OUTSIDE OF PIPE INSULATION. PROVIDE SADDLES TO PREVENT CRUSHING OF INSULATION.
   .4 PIPE HANGER SPACING
      -SIZES UP TO 1-1/4"(32mm) = 8'(2.5m) SPACING
      -SIZES 1-1/2"(38mm) TO 2"(50mm) = 10'(3m) SPACING
      -SIZES 2-1/2"(63mm) AND OVER = 12'(3.5m) SPACING
   .5 PROVIDE HANGER WITHIN 12"(300mm) OF EVERY ELBOW

8. VALVES AND ACCESSORIES:
   .1 ALL VALVES SHALL BE LINE SIZED UNLESS OTHERWISE NOTED. (CBVs GENERALLY NOT LINE SIZE).
   .2 CIRCUIT BALANCING VALVES SHALL BE IMI TA STAS/STAD/STAF SERIES (NO ALTERNATES ACCEPTABLE). MOUNT WITH PORTS UPRIGHT OR AT LEAST 90° UP FROM BOTTOM. SUBMIT SHOP DRAWINGS COMPLETE WITH VALVE SIZING SCHEDULE.
   .3 BALL VALVES SHALL BE EQUAL TO KITZ 58 & 59.
   .4 AUTOMATIC AIR VENTS SHALL BE EQUAL TO:
      -WALLFINS, CONVECTORS, RADS: "MAID-O-MIST" #67 COMPLETE WITH BALL VALVE
      -PIPE MAINS & LINES, MECHANICAL ROOMS, EQUIPMENT, COILS, CEILING SPACES AND ALL OTHER SPACES EXCEPT NOTED ABOVE: "MAID-O-MIST" #71 COMPLETE WITH BALL VALVE

9. WATER TREATMENT:
   .1 ALLOW FOR CHEMICAL TREATMENT TO BRING SYSTEM TO ACCEPTABLE LEVELS AND SUBMIT REPORTS.
   .2 OBTAIN THE SERVICES OF MK SERVICES FOR ALL WATER TREATMENT.

10. DUCT INSULATION:
   .1 ACOUSTIC DUCT INSULATION
      .1 FIBERGLASS INSULATION, COATED TO PREVENT FIBRE EROSION AT AIR VELOCITIES UP TO 400 fpm.
      .2 ALL SUBSTRATE MATERIAL TO BE NON-DARKENED, CONTRASTING COLOUR FROM LINER LAYER.
      .3 THICKNESS: 1" (25mm)
   .2 THERMAL DUCT INSULATION
      .1 INSULATION SHALL BE PRECOVERED, PREFORMED RIGID FIBROUS GLASS INSULATION COMPLETE WITH FOIL OR KRAFT ALL-PURPOSE JACKET.
      .2 0.75 PCF (12 kg/m³) DENSITY, 0.29 K-VALUE WITH 25/50 FLAME SPREAD/SMOKE DEVELOPMENT CLASSIFICATION IN ACCORDANCE WITH CAN/ULC S102.
      .3 SUPPLY, RETURN AND EXHAUST DUCT APPLICATION THICKNESS: 1" (25mm) MINIMUM.
      .4 OUTDOOR AIR INTAKE DUCT APPLICATION THICKNESS: 2"(50mm) MINIMUM
      .5 RECOVERING JACKETS (INTERIOR): ULC LISTED "THERMO CANVAS", TREATED COTTON FABRIC.

11. PIPE INSULATION:
   .1 PROVIDE 1-1/2"(38mm) PIPE INSULATION ON ALL HEATING PIPING SIZES UP TO AND INCLUDING 1-1/4"(32mm)
   .2 PROVIDE 2"(50mm) PIPE INSULATION ON ALL HEATING PIPING SIZES 1-1/2"(38mm) AND OVER
   .3 PROVIDE 1"(25mm) PIPE INSULATION ON ALL VENT PIPING 10'(3m) BACK FROM ROOF
   .4 EXTERNAL PIPE INSULATION SHALL BE RIGID, SECTIONAL FIBERGLASS TYPE AND BE COMPLETE WITH FACTORY SUPPLIED ALL PURPOSE VAPOUR BARRIER. PRE-FORMED INSULATION SHALL BE USED AT PIPE FITTINGS, VALVES, ETC. PROVIDE NON-CRUSHING INSULATION AT ALL PIPE HANGERS AND PROVIDE SADDLES.
   .5 PROVIDE PVC JACKET ON ALL INSULATION IN EXPOSED AREAS.

12. ACCESS DOORS/COVERS
   .1 FLUSH ACCESS DOOR – UNIVERSAL: ACUDOR #UF-5000 UNIVERSAL ACCESS DOORS, 14 GA. (1.7mm) STEEL, BAKED ENAMEL PRIME COAT, CONTINUOUS CONCEALED HINGE, WITH POSITIVE AND SELF-OPENING SCREWDRIVER OPERATED LOCK. DOORS IN WASHROOMS SHALL BE STAINLESS STEEL. ALL OTHER PANELS SHALL BE BAKED ENAMEL PRIME COATED FOR FIELD PAINTING. MINIMUM SIZE OF PANELS SHALL BE 12"x18" (300mmx450mm). WHEREVER POSSIBLE 24"x24" (600mmx600mm) PANELS SHALL BE USED.
   .2 RECESSED ACCESS DOOR – DRYWALL AREA: ACUDOR #DW-5015 SERIES RECESSED ACCESS DOOR, 16 GA. (1.5mm) STEEL, BAKED ENAMEL PRIME COAT, WITH CONCEALED PIVOTING ROD TYPE HINGE AND SELF-OPENING SCREWDRIVER OPERATED LOCK. DOOR TO BE RECESSED 5/8" (14mm) TO RECEIVE DRYWALL. FLANGE OF DOOR TO BE GALVANIZED STEEL TAPING BEADING TO PROVIDE FINISH OF DRYWALL JOINTS FOR FIELD PAINTING.

HVAC NOTES:

1. CONCEAL ALL SERVICES IN CEILING SPACES AND FURRED CONSTRUCTION UNLESS INSTALLED IN UNFINISHED OR EXPOSED AREAS OR IF SPECIFICALLY NOTED TO BE EXPOSED.
2. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
3. REFER TO REFLECTED CEILING PLAN TO CONFIRM EXACT LOCATION OF GRILLES AND DIFFUSERS. LIGHTING TAKES PRECEDENCE.
4. PROVIDE 4" FLEXIBLE CONNECTIONS AT ALL DUCT CONNECTIONS TO AIR HANDLING EQUIPMENT.
5. PROVIDE ACOUSTIC INSULATION IN ALL TRANSFER DUCTS AND AS INDICATED ON DRAWINGS. SEAL ALL EXPOSED ENDS OF INSULATION.
6. PROVIDE TURNING VANES IN ALL SQUARE ELBOWS AND SHORT RADIUS ELBOWS FOR SUPPLY AIR DUCTS.
7. TEMPORARILY SEAL ALL OPEN DUCTS THROUGHOUT CONSTRUCTION TO PREVENT DUST AND DIRT FROM ENTERING THE SYSTEM. WHERE THE CONTRACTOR DOES NOT CONFORM THEY ARE RESPONSIBLE FOR CLEANING OF THE SYSTEMS IN A MANNER APPROVED BY THE CONSULTANT.
8. SEAL ALL JOINTS ON ALL SUPPLY & RETURN AIR DUCTS WITH DURODYNE DUCT SEALER IN CONFORMANCE TO CLASS 'C' ASHRAE 90.1 AND SMACNA STANDARDS. USE CLEAR DUCT SEALER OR SEAL BEHIND JOINTS FOR ALL EXPOSED DUCTWORK.
9. BRANCH DUCTWORK TO DIFFUSERS TO BE SAME SIZE AS DIFFUSER NECK.
10. PROVIDE BALANCE DAMPERS ON ALL BRANCH DUCTS CLOSE TO MAIN TAKE-OFF. REVIEW WITH BALANCING CONTRACTOR TO CONFIRM LOCATIONS OF ALL BALANCE DAMPERS PRIOR TO CONSTRUCTION.
11. INCLUDE FOR THE SUPPLY AND INSTALLATION OF TWO(2) EXTRA BALANCE DAMPERS AFTER CONSTRUCTION AND BALANCING COMPLETION. (PENDING BALANCING RESULTS AND COMMENTS).
12. FLEXIBLE DUCT SHALL ONLY BE USED IN SUPPLY AIR APPLICATIONS FOR CONNECTIONS TO DIFFUSERS IN DROPPED CEILING. FLEXIBLE DUCT SHALL BE MAXIMUM 6' (1.8m) IN LENGTH AND SHALL BE SECURELY FASTENED TO DUCTS AND DIFFUSERS. PROVIDE HANGERS AND FLEXIBLE DUCTWORK WITHOUT SHARP 90°s, SAGGING, OR CRUSHING OF DUCT. FLEXIBLE DUCT IS NOT ACCEPTABLE IN ANY OTHER APPLICATION.
13. PROVIDE EXTERNAL INSULATION ON ALL SUPPLY AIR DUCTS AND ON ALL EXHAUST DUCTS WITHIN 8' (2.4m) OF OUTSIDE WALL/ROOF INCLUDING RIGID AND FLEXIBLE DUCT.
14. CONFIRM EXACT LOCATIONS OF SENSORS WITH ENGINEER AND OWNER. MOUNT SENSORS AT 59" (1500mm) AFF. ENSURE THAT SENSOR LOCATIONS WILL NOT BE AFFECTED BY DIRECT SUNLIGHT, COLD WALLS OR MILLWORK.
15. ALL INDOOR CONTROL WIRING SHALL BE RUN IN EMT CONDUIT OR FT6 (EMT SHALL BE USED IN EXPOSED AREAS). LAST 3' SHALL BE BX WHEN USING CONDUIT. ALL OUTDOOR CONTROL WIRING SHALL BE RUN IN LIQUIDTIGHT. ALL CONTROL WIRING SHALL RUN PARALLEL TO BUILDING LINES AND TIGHT TO ROOF DECK OR WALLS. ALL CONTROL WIRING PASSING THROUGH WALLS SHALL BE RUN IN EMT CONDUIT C/W BUSHINGS AT EACH END.
16. PROVIDE FIRE DAMPERS AT ALL FIRE SEPARATIONS. FIRE DAMPERS SHALL BE TYPE 'B' C/W LINKAGE OUT OF THE AIR STREAM. FIRE DAMPER RATING TO MATCH THE RATING OF THE SEPARATION CROSSED. INSTALLATION MUST CONFORM TO LATEST NFPA/CUA 90A SPECIFICATIONS. ONLY USE ULC APPROVED EQUIPMENT. PROVIDE DUCT ACCESS DOORS AND BREAK AWAY FLANGES FOR ALL FIRE DAMPERS IN CONFORMANCE WITH CODE AND INSTALLATION INSTRUCTIONS. ACCESS DOORS SHALL BE TWIST LOCK TYPE – SCREWED PANELS ARE NOT ACCEPTABLE.
17. PROVIDE SLEEVES FOR PIPES THROUGH ALL NEW BLOCK WALLS. FILL VOIDS AROUND PIPES. ENSURE NO CONTACT BETWEEN DISSIMILAR METALS.
18. SUPPLY DRYWALL ACCESS DOORS FOR CONCEALED FIRE AND BALANCE DAMPERS AND ANY OTHER CONCEALED DEVICES AND TURN OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. DOORS TO BE GALVANIZED STEEL FOR FIELD PAINTING. DOORS SHALL BE RATED WHERE INSTALLED IN FIRE SEPARATIONS.
19. DRAIN HEATING SYSTEMS AS REQUIRED FOR NEW WORK. FILL, FLUSH, TEST AND TREAT (CHEMICAL TREATMENT) AFTER WORK IS COMPLETE. PROVIDE ALL PORTS, VALVES AND GAUGES AS REQUIRED. SUBMIT CHEMICAL TREATMENT REPORT TO ENGINEER. FREEZING OF PIPING TO ALLOW ISOLATION OF WORK AREA IS ACCEPTABLE IN LIEU OF DRAINING.
20. ALL CBVs SHALL BE MOUNTED WITH PORTS IN HORIZONTAL (90°) POSITION.
21. PROVIDE EXTERNAL INSULATION ON ALL HEATING PIPING EXCEPT IN WALLFIN ENCLOSURES.
22. PROVIDE FIRE STOPPING AROUND ALL NEW PIPING THROUGH FIRE SEPARATIONS.
23. LABEL ALL NEW HEATING PIPING COMPLETE WITH FLOW ARROWS. LABELS SHALL BE MAX 3m(10') SPACING AND ON EITHER SIDE OF WALLS. LABELING MUST BE COMPLETE PRIOR TO NEW CEILING BEING INSTALLED OTHERWISE IT IS THE CONTRACTORS RESPONSIBILITY TO REMOVE CEILING TILES FOR INSPECTION AT THE DIRECTION OF THE CONSULTANT.
24. LABEL CEILING TILE WITH PERMANENT ADHESIVE LABELS OR LAMACOID NAMEPLATES FOR ACCESS TO MECHANICAL ITEMS.
25. PROVIDE CONDENSATE DRAINS C/W TRAPS FOR NEW INDOOR AIR HANDLING EQUIPMENT AND RUN TO CLOSEST PLUMBING DRAIN WITH INDIRECT DRAIN CONNECTION IN A VISIBLE AND ACCESSIBLE LOCATION (CEILING SPACE NOT ACCEPTABLE). PROVIDE CONDENSATE PUMP WHERE GRAVITY DRAINAGE IS NOT POSSIBLE.
26. OBTAIN THE SERVICES OF A NEBB, CAABC OR NBCTA ACCREDITED BALANCING COMPANY TO BALANCE THE COMPLETE HVAC SYSTEM. PROVIDE REPORT TO ENGINEER FOR REVIEW. REFER TO SPECIFICATIONS FOR APPROVED AGENTS.
27. PROVIDE TESTING AND STARTUP OF ALL NEW EQUIPMENT AND PROVIDE REPORTS TO THE ENGINEER FOR REVIEW.

GENERAL NOTES:

1. OBTAIN, ARRANGE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
2. THE CONTRACTOR AND ITS SUB-TRADES SHALL ATTEND BI-WEEKLY SITE MEETINGS OR AS ARRANGED BY CONSULTANT OR OWNER.
3. OBTAIN AND REVIEW THE DESIGNATED SUBSTANCE REPORT FROM THE CLIENT AND COORDINATE ANY DESIGNATED SUBSTANCE ISSUES WITH THE CLIENT PRIOR TO ANY WORK BEING DONE.
4. PROVIDE SHOP DRAWINGS ELECTRONICALLY IN PDF FORMAT TO CONSULTANT FOR REVIEW. ALL SHOP DRAWINGS MUST BE REVIEWED, STAMPED AND SIGNED BY THE MECHANICAL CONTRACTOR PRIOR TO SUBMITTING TO THE CONSULTANT. REVIEW SHALL INCLUDE BUT NOT BE LIMITED TO: VERIFYING UNIT VOLTAGE WITH ELECTRICIAN AND/OR SITE, EQUIPMENT PERFORMANCE, DIMENSIONS AND CLEARANCES.
5. THOROUGHLY REVIEW AND COORDINATE WITH SITE CONDITIONS AND COMPLETE DRAWING SET PRIOR TO PRICING AND INSTALLATION.
6. INSTALL ALL WORK IN CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
7. DO NOT USE ANY NEW PERMANENT EQUIPMENT FOR TEMPORARY USE DURING CONSTRUCTION WITHOUT WRITTEN APPROVAL. WHERE SYSTEMS ARE USED AND ARE CONTAMINATED BY DUST OR DIRT, THE CONTRACTOR SHALL CLEAN IN A MANNER ACCEPTABLE TO THE CONSULTANT.
8. MAINTAIN AS-BUILT DRAWINGS ON AN ON-GOING BASIS. DRAWINGS SHALL BE AVAILABLE FOR PERIODIC REVIEW BY THE CONSULTANT DURING CONSTRUCTION.
9. ALL WORK SHALL COMPLY WITH APPLICABLE CODES.
10. REMOVE ALL REDUNDANT EQUIPMENT, MATERIALS AND GARBAGE FROM SITE AND DISPOSE OF IN AN APPROVED MANNER. REDUNDANT EQUIPMENT AND MATERIALS SHALL NOT BE ABANDONED IN PLACE.
11. ALL CUTTING AND CORING SHALL BE BY THIS CONTRACTOR. COORDINATE PATCHING WITH GENERAL CONTRACTOR. TRENCHING, EXCAVATION AND BACKFILL FOR UNDERGROUND PLUMBING SHALL BE BY THIS CONTRACTOR. ALL SAW CUTTING AND RESTORATION OF CONCRETE FLOOR BY GENERAL CONTRACTOR. COORDINATE WITH SAME.
12. COORDINATE ROOFING FOR DUCT AND PIPE ROOF PENETRATIONS WITH GENERAL CONTRACTOR. PROVIDE DOGHOUSE FOR ALL SERVICES THROUGH ROOF.
13. ANY FEED TO NEW ROOFTOP EQUIPMENT SHALL BE INSTALLED WITH DOGHOUSE. SIZE AS REQUIRED TO SUIT FEEDS.
14. MAINTAIN REQUIRED ACCESS AND CLEARANCE TO ALL EQUIPMENT AND SYSTEMS AS REQUIRED BY CODE AND AS PER MANUFACTURER'S REQUIREMENTS.
15. TAG ALL EQUIPMENT WITH LAMACOID NAMEPLATES. TAG ALL VALVES WITH LAMACOID NAMEPLATES OR BRASS TAGS ON CHAINS.
16. LABEL ALL NEW PIPING WITH SERVICE AND FLOW ARROWS EVERY 10'(3m) AND ON EITHER SIDE OF WALLS.
17. THE CONTRACTOR SHALL ARRANGE FOR INSPECTIONS BY THE ENGINEER PRIOR TO CEILINGS AND WALLS BEING CLOSED IN. WHERE THIS HAS NOT BEEN ARRANGED IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE CEILING TILES OR ACCESS DOORS FOR INSPECTION AT THE DIRECTION OF THE CONSULTANT.
18. PERFORM TESTING AND START UP OF ALL SYSTEMS AS REQUIRED BY CODE, THE CONSULTANT, MANUFACTURER'S REQUIREMENTS, AND AUTHORITIES HAVING JURISDICTION. SUBMIT REPORTS TO THE CONSULTANT.
19. INSTRUCT AND DEMONSTRATE TO THE OWNER ON PROPER OPERATION OF THE SYSTEM. RECORD AND SUBMIT A LOG DATED AND SIGNED BY ALL ATTENDEES.
20. UPON COMPLETION OF THE PROJECT THE CONSULTANT WILL DO A FINAL REVIEW. UPON RECEIVING THE FINAL INSPECTION REPORT, THE CONTRACTOR MUST CORRECT AND SIGN BACK THE INSPECTION REPORT INDICATING ALL DEFICIENCIES ARE COMPLETED. A RE-INSPECTION WILL ONLY BE DONE ONCE THE CONSULTANT RECEIVES THIS IN WRITING. WHERE THE CONSULTANT PERFORMS THE RE-INSPECTION AND THE WORK IS NOT COMPLETE, THE CONTRACTOR IS RESPONSIBLE FOR REIMBURSING THE CONSULTANT FOR THE FIELD REVIEW. THE FEE FOR ADDITIONAL REVIEWS WILL BE AT THE CONSULTANT'S HOURLY RATES PLUS MILEAGE AND APPLICABLE TAXES TO BE PAID DIRECTLY TO THE CONSULTANT PRIOR TO PERFORMING THE NEXT FIELD REVIEW.
21. PROVIDE ONE (1) YEAR WARRANTY ON ALL MATERIAL AND LABOUR FROM THE DATE OF SUBSTANTIAL COMPLETION.
22. PROGRESS DRAWS SHALL INCLUDE MINIMUM $2,500.00 FOR MANUALS AND AS-BUILT DRAWINGS. TOTAL AMOUNT SHALL REMAIN UNBILLED UNTIL MANUALS AND AS-BUILT DRAWINGS HAVE BEEN SUBMITTED AND APPROVED.
23. PROVIDE ONE(1) ELECTRONIC COPY OF MAINTENANCE MANUALS ON USB AND BY WEB TRANSFER. MANUAL SHALL INCLUDE:
   - TABLE OF CONTENTS
   - CONTRACTOR INFORMATION
   - WARRANTY LETTER
   - SHOP DRAWINGS
   - O&Ms
   - INSPECTION & TEST REPORTS
   - AS-BUILT DRAWINGS.

   AS-BUILT DRAWINGS SHALL INCLUDE COMPLETE MECHANICAL DRAWING SET WITH ANY CHANGES MARKED CLEARLY AND NEATLY IN COLOUR. AS-BUILTS SHALL BE STAMPED ACCORDINGLY BY THE CONTRACTOR (ALL DRAWINGS). DRAWINGS SHALL BE SUBMITTED HARD COPY IN FULL SIZE. SUBSTANTIAL COMPLETION WILL NOT BE AWARDED UNTIL THE MANUALS AND AS-BUILTS HAVE BEEN SUBMITTED TO THE CONSULTANT AND THE CONSULTANT HAS APPROVED.

BALANCING SPECIFICATIONS:

1. OBTAIN THE SERVICES OF A 3rd PARTY ACCREDITED BALANCING COMPANY TO BALANCE THE RENOVATED AIR AND WATER HVAC SYSTEM.
2. PROVIDE PRELIMINARY REPORT TO ENGINEER FOR REVIEW AND COMMENTS.
3. ALLOW FOR ONE FOLLOW-UP SITE VISIT FOR ADJUSTMENTS.
4. RETURN TO SITE FOR ANY ADJUSTMENTS AND SUBMIT FINAL REPORT TO ENGINEER AND CONTRACTOR. FOR INCLUSION INTO MAINTENANCE MANUAL.
5. ACCEPTABLE AGENTS:
   .1 QUALITY AIR DISTRIBUTION INC
      CONTACT: MIKE NOONAN
      TEL: (289)892-7168
      EMAIL: mike@qualityairdistribution.com
   .2 DESIGN TEST & BALANCE
      CONTACT: SURRINDER SINGH
      TEL: (905)886-6513
      EMAIL: mail@designtest.ca
   .3 FLOWSET BALANCING
      CONTACT: CHRIS PITHER
      PHONE: (416)410-9793 OR (647)321-5114
      EMAIL: chrisp@flowset.com
   .4 COMPLETE SYSTEMS BALANCING
      CONTACT: TREVOR KELLY
      PHONE: 705-760-0390
      EMAIL: trevork@csbalancing.com

HVAC LEGEND

Symbol	Description
	NEW
	EXISTING
	DEMOLITION
	SUPPLY DUCTS (UP / DOWN)
	EXHAUST DUCTS (UP / DOWN)
	ROUND DUCTS (UP / DOWN)
	FLEXIBLE DUCT
	ACOUSTIC LINED DUCT
	TURNING VANES
	BALANCE DAMPER
FD	FIRE DAMPER
SD	SPLITTER DAMPER
	SUPPLY DIFFUSER
	RETURN/EXHAUST CEILING GRILLE
	SUPPLY SIDE WALL/DUCT GRILLE
HS HS	HOT WATER HEATING SUPPLY (HS)
HR HR	HOT WATER HEATING RETURN (HR)
R R	REFRIGERATION LINE
D D	CONDENSATE DRAIN LINE
AS AS	DEMO ABOVEGROUND SANITARY
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RECIRC (DRW)
AS AS	ABOVEGROUND SANITARY LINE
S S	UNDERGROUND SANITARY LINE
ST ST	ABOVEGROUND STORM LINE
	UNDERGROUND STORM LINE
	ELBOW RISING
	ELBOW DROPPING
	BRANCH RISING FROM TEE
	BRANCH DROPPING FROM TEE
	BALL SHUT-OFF VALVE
	GATE SHUT-OFF VALVE
	CHECK VALVE
	GLOBE VALVE
	BAS 2-WAY CONTROL VALVE
	CIRCUIT BALANCING VALVE (CBV)
	CONCENTRIC REDUCER
	STRAINER
	UNION
AAV	AUTOMATIC AIR VENT C/W 1/4" BALL VALVE AND NIPPLE/COUPLING (MINI BALL VALVES NOT ACCEPTABLE)
FD	FLOOR DRAIN
RD RD	ROOF DRAIN / ROOF DRAIN ABOVE
CO CO	STACK / FLOOR CLEANOUT
S	BAS SPACE SENSOR
TYPE / ID	EQUIPMENT SYMBOLS — TYPE OF EQUIPMENT NUMBER DESIGNATION
QTY TYPE / SIZE / AIR	GRILLE SYMBOLS — TYPE SIZE (in) AIR FLOW (cfm)
QTY TYPE / SIZE-1 / SIZE-2 / CAPACITY	RADIATION SYMBOLS — TYPE FIN LENGTH (in) ENCLOSURE LENGTH (in) CAPACITY (MBH)

MECHANICAL ABBREVIATIONS

Abbreviation	Meaning
EX	EXISTING TO REMAIN
CTE	CONNECT TO EXISTING
C/W	COMPLETE WITH
S/A	SUPPLY AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
TMV	THERMOSTATIC MIXING VALVE
TSP	TRAP SEAL PRIMER

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:

LICENSED PROFESSIONAL ENGINEER
B. R. TIMSON
100511696
Jun28/24
PROVINCE OF ONTARIO

ENGINEER:

CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
LEGENDS & NOTES

DISCIPLINE:
MECHANICAL

DRAFTER: MRC	SCALE: NTS
DESIGNER: BRT	DATE: 2024/06/07
APPROVER: BRT	APPROVER: BRT
PROJECT No: Z0013706	DRAWING No: M801
SHEET No: 4 of 6	

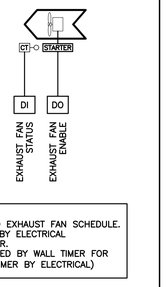
PNEUMATIC DEMOLITION SCOPE OF WORK:

1. THE MECHANICAL CONTRACTOR SHALL RETAIN THE SERVICES OF ANALYSTS OF PNEUMATIC SYSTEMS LTC. (APS) FOR ALL PNEUMATIC DEMOLITION SCOPE OF WORK:

   DAVE STRAIN
   PHONE: 905-640-2333
   analystsofpneumatic@bellnet.ca

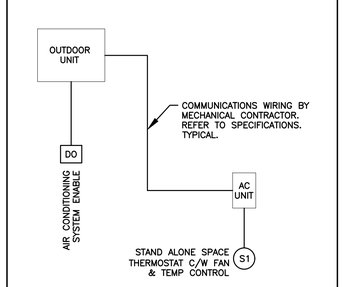
CONTROLS SCOPE OF WORK:

1. THE GENERAL (PRIME) CONTRACTOR SHALL RETAIN THE INSTALLING CONTROLS CONTRACTOR FOR ALL NEW BAS CONTROLS WORK UNDER A CASH ALLOWANCE. ONCE THE CONTRACT IS AWARDED, THE DDSB SHALL SELECT A PRE-QUALIFIED INSTALLING CONTROLS CONTRACTORS BASED ON THE SCOPE OF WORK OUTLINED ON THE DRAWINGS. THE GENERAL (PRIME) CONTRACTOR SHALL CARRY THE SUCCESSFUL INSTALLING CONTROLS CONTRACTOR AS A SUB-TRADE UNDER THE ALLOTTED CASH ALLOWANCE (REFER TO CASH ALLOWANCE SPECIFICATION).
2. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMO ELECTRIC (120V) CONTROLS WORK AND CONTROL WIRING ASSOCIATED WITH THE EXISTING AC UNITS.
3. THE INSTALLING CONTROLS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMO AND NEW BAS CONTROLS WORK.
4. DDSB SHALL SUPPLY ALL REQUIRED SENSORS, RELAYS, CURRENT SWITCHES, CONTROL ENCLOSURES, AND ALL OTHER NECESSARY CONTROL DEVICES FOR A FULLY OPERATIONAL SYSTEM EXCEPT AS NOTED HEREIN AND TURN OVER TO INSTALLING CONTROLS CONTRACTOR FOR INSTALLATION. (THE EXISTING BAS SYSTEM IS SIEMENS CONTROLS).
5. DDSB SHALL SUPPLY ALL ELECTRIC (24V) AND NEW BAS CONTROL VALVES AND TURN OVER CONTROL VALVE BODIES TO MECHANICAL CONTRACTOR FOR INSTALLATION. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PICKING UP VALVES FROM DDSB OFFICE AND TRANSPORTING VALVES TO SITE. COORDINATE WITH DDSB.
6. DDSB SHALL SUPPLY ALL NEW TEMPERATURE SENSOR WELLS AND TURN OVER TO MECHANICAL CONTRACTOR FOR INSTALLATION. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PICKING UP WELLS FROM DDSB OFFICE AND TRANSPORTING WELLS TO SITE. COORDINATE WITH DDSB.
7. SCOPE OF WORK SHALL INCLUDE BUT IS NOT LIMITED TO:
   - .1 REMOVAL OF REDUNDANT CONTROLS.
   - .2 PROVIDE NEW SPACE SENSORS, RELOCATE EXISTING SENSORS, OR REWIRE EXISTING SENSORS TO SUIT NEW CONTROLS AS REQUIRED AND AS INDICATED ON DRAWINGS.
   - .3 PROVIDE NEW OR UPGRADE EXISTING BAS CONTROLLERS AS INDICATED AND FOR COMPLETELY FUNCTIONAL SYSTEMS. TIE NEW CONTROLLERS INTO EXISTING BAS CONTROL NETWORK. RELOCATE EXISTING CONTROLLERS AS REQUIRED AND TIE BACK INTO EXISTING BAS CONTROL NETWORK.
   - .4 PROVIDE CONTROL POINTS AS REQUIRED FOR COMPLETE CONTROL OF NEW AC UNITS.
   - .5 PROVIDE CONTROL POINTS AS REQUIRED FOR COMPLETE CONTROL OF NEW HOT WATER WALLFIN.
   - .6 PROVIDE CONTROL FOR NEW EXHAUST FANS.
8. MECHANICAL CONTRACTOR AND INSTALLING CONTROLS CONTRACTOR SHALL TAKE PRECAUTIONS DURING DEMOLITION AND NEW WORK TO ENSURE BAS COMMUNICATIONS WIRING REMAINS FULLY FUNCTIONAL AND OPERATIONAL DURING RENOVATION. CONTROLS CONTRACTOR SHALL PROVIDE ANY TEMPORARY WIRING REQUIRED TO MAINTAIN SYSTEM UPTIME AND INTEGRITY.
9. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING, REPAIRING, AND SEALING ANY WALLS, CEILINGS, OR EQUIPMENT WHERE EXISTING CONTROLS DEVICES ARE REMOVED. COORDINATE LOCATION AND PATCHING FOR NEW CONTROLS WITH INSTALLING CONTROLS CONTRACTOR.

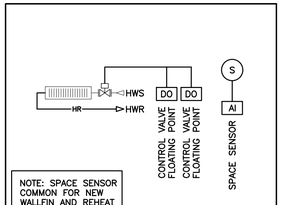


NOTES:
- –REFER TO EXHAUST FAN SCHEDULE.
- –STARTER BY ELECTRICAL CONTRACTOR.
- –HIGH SPEED BY WALL TIMER FOR EF-305 (TIMER BY ELECTRICAL)

EXHAUST FAN CONTROL BY TIME-OF-DAY SCHEDULE
NTS



NEW DUCTED AC UNIT SYSTEM CONTROL
NTS



NOTE: SPACE SENSOR COMMON FOR NEW WALLFIN AND REHEAT COIL.

WALLFIN CONTROL SCHEMATIC
NTS

NEW CONTROL VALVE SCHEDULE (SUPPLIED BY DDSB)

SERVICE		PLP 305	CALMING 305B	PLP 309
APPLICATION		WALLFIN	WALLFIN	WALLFIN
MANUFACTURER		SIEMENS	SIEMENS	SIEMENS
VALVE TYPE/SERIES		POWERMITE 599	POWERMITE 599	POWERMITE 599
ASSEMBLY PART NUMBER		366-02038	366-02034	366-02038
VALVE PART NUMBER		599-02038	599-02034	599-02038
ACTUATOR PART NUMBER		SAS81.33U	SAS81.33U	SAS81.33U
FLOW	gpm	2.76	0.92	2.76
MEDIUM		100% WATER	100% WATER	100% WATER
MAX DESIGN PRES DROP	psi	1.0	1.0	1.0
VALVE CV		2.5	1.0	2.5
ACTUAL PRES DROP	psi	0.77	0.85	0.77
VALVE SIZE	inches	1/2	1/2	1/2
PORTING		2-WAY N.O.	2-WAY N.O.	2-WAY N.O.
TRIM		BRONZE	BRONZE	BRONZE
CONNECTION		FxF NPT	FxF NPT	FxF NPT
FAIL POSITION		N.O.	N.O.	N.O.
ACTUATOR SIGNAL		FLOATING	FLOATING	FLOATING
NOTES		-VALVES AND ACTUATORS SUPPLIED BY DDSB. VALVES TURNED OVER TO MECHANICAL CONTRACTOR FOR INSTALLATION. ACTUATORS WIRED AND INSTALLED BY INSTALLING CONTROLS CONTRACTOR.		

PLUMBING FIXTURE SCHEDULE

WC-1 – WALL HUNG TOILET – EXPOSED FLUSHOMETER – AUTOMATIC – BARRIER FREE

American Standard Afwall Millennium Flowise Elongated #3351.101.020 HET Toilet, white vitreous china with EverClean antimicrobial surface which inhibits the growth of stain and odor causing bacteria mold and mildew, Wall Hung, siphon jet flush action, operates in the range of 4.2 L to 6 L (1.1 US Gal to 1.6 US Gal) per flush, condensate channel, 305 mm x 254 mm (12" x 10") water surface, elongated bowl, 54 mm (2-1/8") fully glazed internal trapway, 38 mm (1-1/2") dia. Top spud.
Centoco #820STS-407 toilet seat, extra heavy duty, for elongated bowl, open front, solid plastic, black finish, stainless steel check hinges.
Provide backrest per OBC requirements.

Zurn AquaSense AV Model #ZER6000AV, Exposed Sensor Operated Flushometer for Top Spud toilet, chrome plated, 6 L (1.6 US Gal) factory set flow, quiet action diaphragm type, non-hold open feature, 6vdc motor actuator with automatic infrared sensor, user-in-view L.E.D., low battery indicator light, courtesy flush button, back-check angle stop (screwdriver operated), flush tube for 292 mm (11-1/2") rough-in, Vacuum Breaker.

Watts #ISCA101S-M11/ISCA101D-M11, single/double horizontal, Adjustable Toilet Carrier, mounted on concrete floor, all epoxy coated cast iron fitting, adjustable ABS slide nipple with integral test cap and neoprene bowl gasket, wasted plated hardware, chrome cap nuts, tiling frame, 102 mm (4") no hub waste, 51 mm (2") no hub vent. For single/horizontal: finished wall to back of pipe space; for double/horizontal: 406 mm (16") finished wall to finished wall.

LV-1 WALL HUNG BASIN – SINGLE HANDLE FAUCET – BARRIER FREE

American Standard Murro with EverClean #0954.004EC.020/0062.000EC.020 Basin, 3 holes, 4" (102 mm) center, 540 mm x 520 mm x 165 mm (21-1/4" x 20-1/2" x 6-1/2") high, Vitreous china, White Finish, for carrier with concealed arms, Rear overflow, recessed self-draining faucet ledge, semi-pedestal P-trap cover, Moen Commercial #8894 M-Press faucet with 4" deck plate, chrome plated brass construction, vandal resistant, ADA lever style handle, cycle time adjustment from 5 to 60 seconds, 0.5 gpm (1.9L/min) vandal-resistant multi-stream laminar flow limits water discharge to a maximum of 0.25 gpc (0.96L/cycle) @ 30 seconds or 0.20 gpc (0.76L/cycle) @ 24 seconds. McGuire #LFH165LKN3 Faucet Supplies, Chrome plated finish polished brass, heavy duty angle stops, 10 mm (3/8") I.P.S. Inlet x 76 mm (3") long rigid horizontal nipples, V.P. Loose keys, Escutcheon and flexible copper risers. McGuire #8872C P-Trap, heavy cast brass adjustable body, with slip nut, 32 mm (1-1/4") size, Shallow wall flange and Seamless tubular wall bend. McGuire PROWRAP #PW2000 Sanitary Covering vandal-resistant, flexible seamless moulded closed-cell PVC resin, formulated with anti-microbial additive to limit the growth of fungus and bacteria to exposed piping (to protect against heat/contusions) as per local codes. Watts #WCA-411 Basin Carrier, concealed arms, wall flanges to attach to backing plate secured in wall with locking device and levelling screws, heavy gauge steel uprights with integral welded feet. For one unit: 102 mm (4") for two to six units in a row: 152 mm (6") finished metal stud wall to back of pipe space.

SK-1 – COUNTERTOP MOUNT SINK – SINGLE BOWL – TWO HANDLE – MANUAL FAUCET

Franke Commercial #LBS6808-1/3 Single Bowl Countertop Mount Sink, 3 holes, 8" (203 mm) center, 508 mm (20") wide x 521 mm (20-1/2") long x 203 mm (8") high deep, Counter mounted, backledge, Grade 18-10 20 GA. (0.9 mm) type 302 stainless steel, self-rimming, Satin finish rim and bowls, Mounting kit provided, Fully undercoated to reduce condensation and resonance, factory applied rim seal, 3-1/2" (89 mm) crumb cup waste assembly with 1-1/2" (38 mm) tailpiece. Moen Commercial #8287 two handle kitchen faucet, deck mount, brass construction with chrome plated finish, vandal resistant torx head screws, lever style handles with hot and cold water colour indicators, 1.5 gpm max (5.7L/min) @ 60 psi, 8" (203 mm) center. McGuire #LFBV170 Faucet Supplies, Chrome plated finish polished brass, commercial duty 1/4 turn ball valve angle stops, 13 mm (1/2") I.D. Inlet x 127 mm (5") horizontal extension tubes, convertible 1/4 turn/loose key handles, Escutcheon and flexible copper risers. McGuire #8912CB P-Trap, heavy cast brass adjustable body, with slip nut, 38 mm (1-1/2") size, Box flange and Seamless tubular wall bend.

TMV-1 – THERMOSTATIC MIXING VALVE – POINT-OF-USE

Lawler TMM-1070, bronze body construction, high temperature limit stop with shut off temperature of 118° (+/- 3°F), integral rubber duck-bill back-flow checks within inlets, temperature adjustment dial, thermostatic mechanical mixing valve with outlet temperature range within 95-115°F (35-46°C), ASSE 1070 approved, valve shall control temperature from a low of 1/2gpm, 1gpm at 10psi and 1.6gpm at 20psi drop across the valve, 3/8Ø compression fit inlets and outlets, ASSE Lead Free Certified.
Alternates: Symmons, Powers, Leonard, RADA.

WB-1 – LAUNDRY METAL WASHER BOX

#MM-500MLB Ice and Laundry Boxes – constructed of 20 GA. (1.0 mm) steel box, white powder coat finish, includes necessary mounting brackets and faceplate, 2"Ø (51 mm) rubber drain pipe coupling for connection, water hammer arrestor-fabricated of type L hard drawn copper, cap machined of free turning brass, composite materials for piston, EPDM seal, Dow-Corning silicone compound #111, FDA listed for use in potable water systems, designed to operate on all domestic and commercial systems. Normal operating pressure 0 to 80psig, max spike pressure 250psig. For system pressures above 80psi, consult factory -40°F to 212°F (-4.4°C to 100°C), quarter turn ball valve.

FD – FLOOR DRAINS – FINISHED AREA – ADJUSTABLE STRAINER

Watts #FD-100-C-7-A5-1 Floor Drain – epoxy coated, cast iron body, reversible flashing clamp with primary and secondary weepholes, trap primer connection with plug, no hub outlet. Watts-A5-1 5" (127mm) diameter, nickel bronze, adjustable, round strainer.
Alternates: Zurn, J.R. Smith

CO – CLEANOUTS / ACCESS COVERS – ADJUSTABLE CLEANOUTS

Watts #CO-200-R-34G Cleanout – epoxy coated, cast iron body, with 5" (127mm) round, adjustable, gasketed, nickel bronze top, ABS plug with neoprene gasket, no hub outlet.
Alternates: Zurn, J.R. Smith

TSP – TRAP SEAL PRIMERS (TSP)

Sioux Chief #695-ES01, surface mount electronic trap primer, single outlet, solenoid valve, vacuum breaker, configurable electronic primer controller, water hammer arrestor, 120VAC power, 1/2" (13mm) inlet and outlet. Provide manifold as required to suit number of traps.

ACCESS DOORS/COVERS – FLUSH ACCESS DOOR – UNIVERSAL

Acudor #UF-5000 Universal Access Doors, 14 GA. (1.7mm) steel, baked enamel prime coat, continuous concealed hinge, with positive and self-opening screwdriver operated lock. Doors in tile walls shall be stainless steel and shall suit tile pattern. All other panels shall be prime painted steel. Minimum size of panels shall be 12" x 18" (300mm x 450mm). Wherever possible 24" x 24" (600mm x 600mm) panels shall be used.

WATER HAMMER ARRESTORS – PPP SC SERIES

SMS INC. #SC Series Water Hammer Arrestors with brass piston in a type 'K' copper casing size according to manufacturer's recommendations to eliminate water hammer and shock from piping system. Provide Water Hammer Arrestors on hot and cold water supplies to all quick valves, solenoids, and plumbing fixtures, and locate in an upright position between the last two fixtures on a line, or horizontally at the end of line closest to supply source. On projects exceeding five stories in height, provide water hammer arrestors on domestic water risers as follows. Locate arrestors at the end of riser opposite supply source.

AIR CONDITIONING UNIT SCHEDULE

TAG		AC-1	AC-2	AC-3
SERVICE		PLP CLASSROOM 305	CALMING ROOM 305B	PLP CLASSROOM 309
MANUFACTURER		DAIKIN	DAIKIN	DAIKIN
TYPE		VISTA 2 TON 2X2 CEILING CASETTE	VISTA 0.75 TON 2X2 CEILING CASETTE	VISTA 2 TON 2X2 CEILING CASETTE
MODEL		FCQ24AAVJU	FFQ09W2VJU9	FCQ24AAVJU
REFRIGERANT		R410A	R410A	R410A
INDOOR COOLING CONDITIONS	°F	80DB/67WD	80DB/67WD	80DB/67WD
OUTDOOR COOLING CONDITIONS	°F	95DB/75WD	95DB/75WD	95DB/75WD
COOLING CAPACITY	btuh	24,000	9,100	24,000
SENSIBLE CAPACITY	btuh	--	--	--
AIR FLOW	cfm	777/618/477	378/339/268	777/618/477
LIQUID PIPE CONNECTION	inches	3/8	1/4	3/8
CONDENSATE CONNECTION	inches	1	1-1/32	1
ELECTRICAL	volt/ph	208/1	208/1	208/1
SYSTEM MCA	amps	0.5	3.94	0.5
SYSTEM MOCP	amps	15	15	15
SOUND PRESSURE LEVEL	dBA	38/32/28	38/35/29	38/32/28
UNIT DIMENSIONS	inches	33-1/16W x 33-1/16D x 9-11/16H	22-5/8W x 22-5/8D x 10-1/4H	33-1/16W x 33-1/16D x 9-11/16H
APPROX. WEIGHT	lbs	51	36	51
CONTROLS		-INDIVIDUAL ZONE CONTROLLER/THERMOSTAT SUPPLIED BY MANUFACTURER -MECHANICAL CONTRACTOR TO SUPPLY AND INSTALL LOW VOLTAGE INTERCONNECT WIRING BETWEEN CONTROLLER, AC UNIT AND CONDENSING UNIT ON ROOF		
ACCESSORIES		-NAVIGATION REMOTE CONTROLLER BRC1E73 -DECORATION PANEL BYCQ125B-W1 -KRP4A71 CONTROLS KIT FOR BAS TIE IN (AC-2) -CONDENSATE PUMP		

CONDENSING UNIT SCHEDULE

TAG		CU-1	CU-2	CU-3
SERVICE		LIBRARY	LIBRARY	LIBRARY
MANUFACTURER		DAIKIN	DAIKIN	DAIKIN
MODEL		RZQ24TBVJUA	RXQ9WMVJU9	RZQ24TBVJUA
REFRIGERANT		R410A	R410A	R410A
EFFICIENCY		12.0 EER2/18.6 SEER2	12.0 EER2/19.8 SEER2	12.0 EER2/18.6 SEER2
COOLING CAPACITY	btuh	24,000	9,100	24,000
ELECTRICAL	volt/ph	208/1	208/1	208/1
MCA	amps	16.5	3.94	16.5
MAX FUSE	amps	20	15	20
UNIT DIMENSIONS	inches	12-5/8D x 37W x 39H	11-3/16D x 26-9/16W x 21-5/8H	12-5/8D x 37W x 39H
OPERATING WEIGHT	lbs	172	63	172
CONTROLS		-UNIT ENABLE/DISABLE BY BAS FOR SCHEDULING AND OUTSIDE AIR TEMPERATURE -MECHANICAL CONTRACTOR TO SUPPLY AND INSTALL LOW VOLTAGE WIRING BETWEEN AC UNITs AND CONDENSING UNIT ON ROOF. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.		
ACCESSORIES		-LOW AMBIENT KIT -INVERTER COMPRESSOR -TERMINALS FOR BAS TIE IN -AIR ADJUSTMENT GRILLE/WIND BAFFLE -VRV SINGLE FAN SNOW HOOD KIT		

FAN SCHEDULE

TAG		EF-305	EF-104
SERVICE		BF WASHROOM	PLP ROOM RELIEF EXHAUST
TYPE		IN-LINE	ROOF MOUNTED
MANUFACTURER		GREENHECK VARI-GREEN	COOK
MODEL		SQ-90-VG	120C15D
AIR FLOW	cfm	250(HIGH)/100(LOW)	1100
EXTERNAL STATIC	in.wc.	0.25	0.4
SOUND		41 dBA/2.9 SONES	58 dBA/8.9 SONES
FAN RPM		2970/878	1273
FAN MOTOR	hp	FRACTIONAL	1/4
FAN TYPE		VARIABLE DIRECT DRIVE	DIRECT DRIVE C/W FSC
AMPS	amps	2.6	-
ELECTRICAL	volt/ph	120/1	120/1
DIMENSIONS	inches	12W x 15L x 12H	29ø x 27 H
APPROX. WEIGHT	lbs	42	140
CONTROLS		-LOW SPEED BY OCCUPANCY SENSOR, HIGH SPEED BY TIMER (BOTH BY ELECTRICAL)	-TIE INTO BAS TO RUN DURING OCCUPIED HOURS
ACCESSORIES		-HANGING ISOLATOR KIT -BACKDRAFT DAMPER -DUAL SPEED VARIGREEN CONTROLLER	-CURB ADAPTER -FAN SPEED CONTROLLER -NEMA-1 DICONNECT -BACKDRAFT DAMPER
ALTERNATE MANUFACTURERS		NO ALTERNATES ALLOWED	GREENHECK, CARNES, ZONEX

CBV SCHEDULE

TAG	ROOM NAME	WATER FLOW (gpm)	CBV SIZE (IN)
WF-1	PLP CLASSROOM 305	2.76	EX
WF-1	CALMING ROOM 305B	0.92	EX
WF-1	PLP CLASSROOM 309	2.76	EX
NOTE: RECALIBRATE EXISTING AND CALIBRATE NEW DIFFERENTIAL PRESSURE SENSORS TO SUIT SYSTEM FLOWS.			

HOT WATER WALLFIN SCHEDULE

TAG		WF
MANUFACTURER		SIGMA
WALLFIN MODEL		SWE-18S (PAINTED)
ELEMENT		ELMT-44C075
TYPE		SLOPE TOP OUTLET LOUVERED BOTTOM INLET
FLUID		WATER (0% GLYCOL)
ENCLOSURE HEIGHT	in.	24
ENCLOSURE DEPTH	in.	5-1/4
ENCLOSURE LENGTH		SITE MEASURE
ENCLOSURE COLOUR		SNOW WHITE (SUBMIT COLOUR CHART)
ELEMENT LENGTH		EXISTING
HEATING CAPACITY	btuh/ft	864
EWT/LWT	°F	160/140
NO OF TIERS/ROWS		1
COPPER TUBING DIA.	in.	EXISTING
ALUMINUM FINS	in.	EXISTING
CONTROLS		-CONTROL VALVE AND SENSOR. REFER TO DETAILS.
ACCESSORIES		-CONTINUOUS COVER C/W SPACERS, JOINERS ETC. AS REQUIRED -SLOPE TOP OUTLET LOUVERED BOTTOM INLET -REMOVABLE SECTION WITH LAP JOINTS AS INDICATED.
NOTES		CONTRACTOR / SUPPLIER SHALL SITE MEASURE ALL WALLFIN AND ENCLOSURE LENGTHS & HEIGHTS PRIOR TO ORDERING MATERIAL. LENGTHS & HEIGHTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.
ALTERNATE MANUFACTURERS		ENGINEERED AIR, E.H. PRICE, TRANE

AIR OUTLET SCHEDULE

TAG	A	A1	B
TYPE	SQUARE CONE DIFFUSER	SQUARE CONE DIFFUSER	EGG CRATE RETURN (T-BAR)
MANUFACTURER	PRICE	PRICE	PRICE
MODEL	SCD-31-3C	SCD-31-3C	80
SIZE	SEE DRAWINGS	SEE DRAWINGS	SEE DRAWINGS
COLOUR	B12	B12	B12
NOTES	-24x24 CEILING MODULE FOR T-BAR MOUNTING	-12x12 CEILING MODULE FOR T-BAR MOUNTING	-NO BORDER
ALTERNATE MANUFACTURERS	NAILOR, TITUS, METALAIRE		

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:

LICENSED PROFESSIONAL ENGINEER
B. R. TIMSON
100511696
Jun28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
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415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

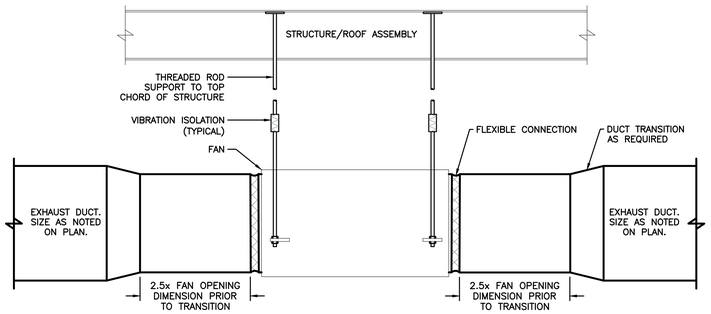
CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

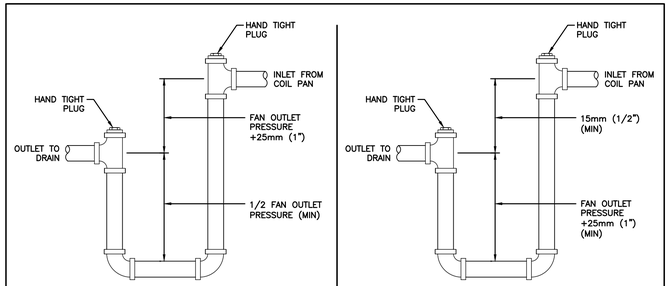
SHEET TITLE:
SCHEDULES & CONTROLS

DISCIPLINE:
MECHANICAL

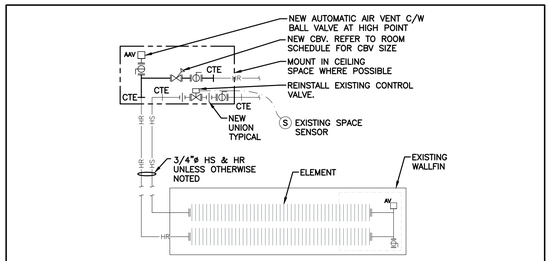
DRAFTER:	SCALE:
MRC	NTS
DESIGNER:	DATE:
BRT	2024/06/07
APPROVER:	APPROVER:
BRT	BRT
PROJECT No:	DRAWING No:
Z0013706	M802
SHEET No:	
5 of 6	



SUSPENDED INLINE EXHAUST FAN DETAIL
NTS



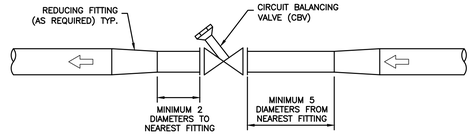
CONDENSATE DRAIN TRAP DETAIL
NTS



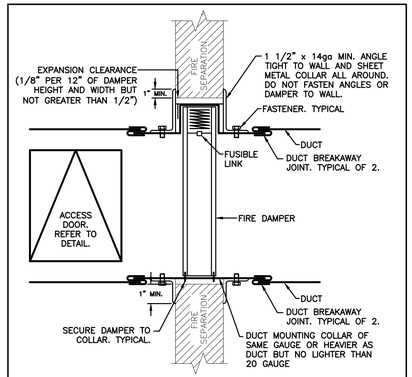
NOTES:

1. PIPE HANGERS SHALL BE EPOXY COATED FOR ALL COPPER PIPING.
2. EXACT PIPING ARRANGEMENT MAY VARY. COORDINATE WITH PIPE RISER LOCATIONS FOR EACH.
3. WHERE RADIATION PIPING IS LARGER THAN SUPPLY AND RETURN USE BRASS ECCENTRIC REDUCING ADAPTERS.

HOT WATER WALLFIN DETAIL
NTS



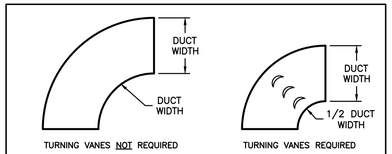
CIRCUIT BALANCING VALVE INSTALLATION DETAIL
NTS

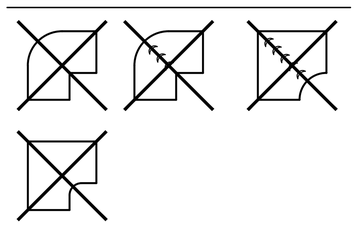


NOTE:

WHERE ACCESS IS BELOW FIRE DAMPERS IN HORIZONTAL INSTALLATIONS, PULL TAB MUST BE SPECIFIED TO ALLOW RESETTING OF LINKAGE FROM BELOW.

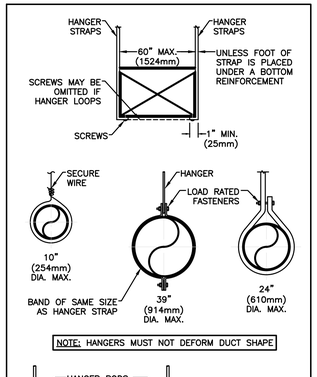
FIRE DAMPER DETAIL
NTS



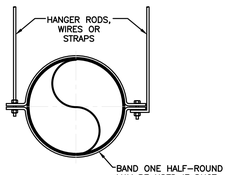


NOT ACCEPTABLE

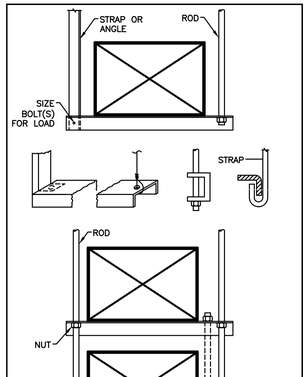
DUCT ELBOW DETAILS
NTS



NOTE: HANGERS MUST NOT DEFORM DUCT SHAPE



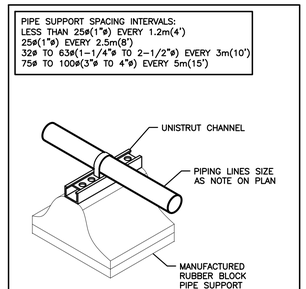
STRAP HANGERS
NTS



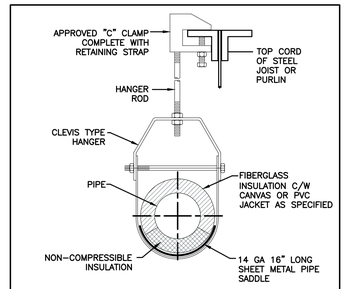
NOTES:

1. REINFORCEMENT MAY BE USED FOR ATTACHMENT IF IT QUALIFIES FOR BOTH DUTIES.
2. DO NOT EXCEED ALLOWABLE LOAD LIMITS.

TRAPEZE HANGERS
NTS

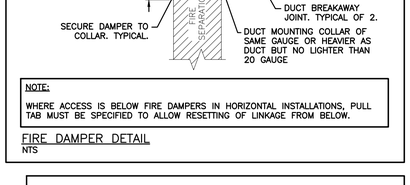


ROOF PIPING SUPPORT DETAIL
NTS



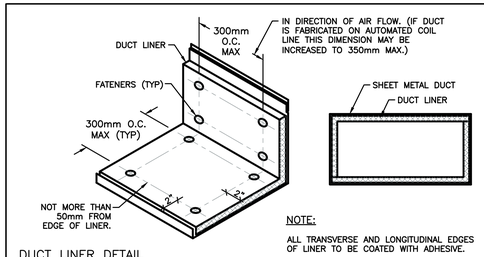
NOTE: <1-1/4"ø HANGERS MAY BE PIPE SIZE

INSULATED PIPE HANGER DETAIL
NTS



ACCESS DOOR EQUAL TO:
SQUARE/RECTANGLE: NAILOR 085CL
FLAT OVAL: NAILOR 0800
SIZE:
SQUARE/RECTANGLE: 16x16"
FLAT OVAL: 18x10"

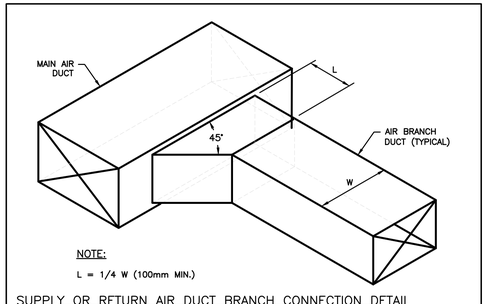
DUCT ACCESS DOOR DETAIL
NTS



NOTE:

ALL TRANSVERSE AND LONGITUDINAL EDGES OF LINER TO BE COATED WITH ADHESIVE.

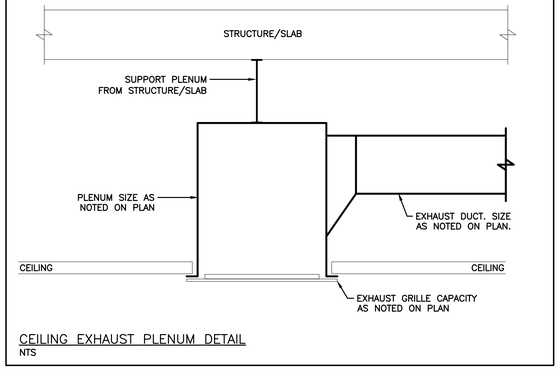
DUCT LINER DETAIL
NTS



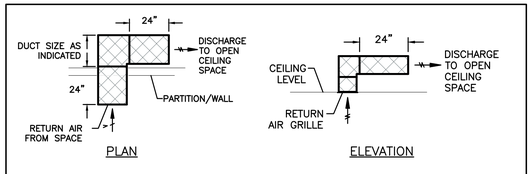
NOTE:

L = 1/4 W (100mm MIN.)

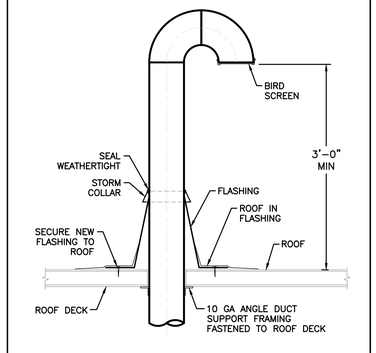
SUPPLY OR RETURN AIR DUCT BRANCH CONNECTION DETAIL
NTS



CEILING EXHAUST PLENUM DETAIL
NTS



TRANSFER DUCT WITH SOUND ATTENUATION DETAIL
NTS



GOOSENECK DUCT THROUGH ROOF
NTS

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	BT

STAMPS:

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100511696
Jun28/24
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ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
DETAILS

DISCIPLINE:
MECHANICAL

DRAFTER: MRC	SCALE: NTS
DESIGNER: BRT	DATE: 2024/06/07
APPROVER: BRT	APPROVER: BRT
PROJECT No: Z0013706	DRAWING No: M901
SHEET No: 6 of 6	

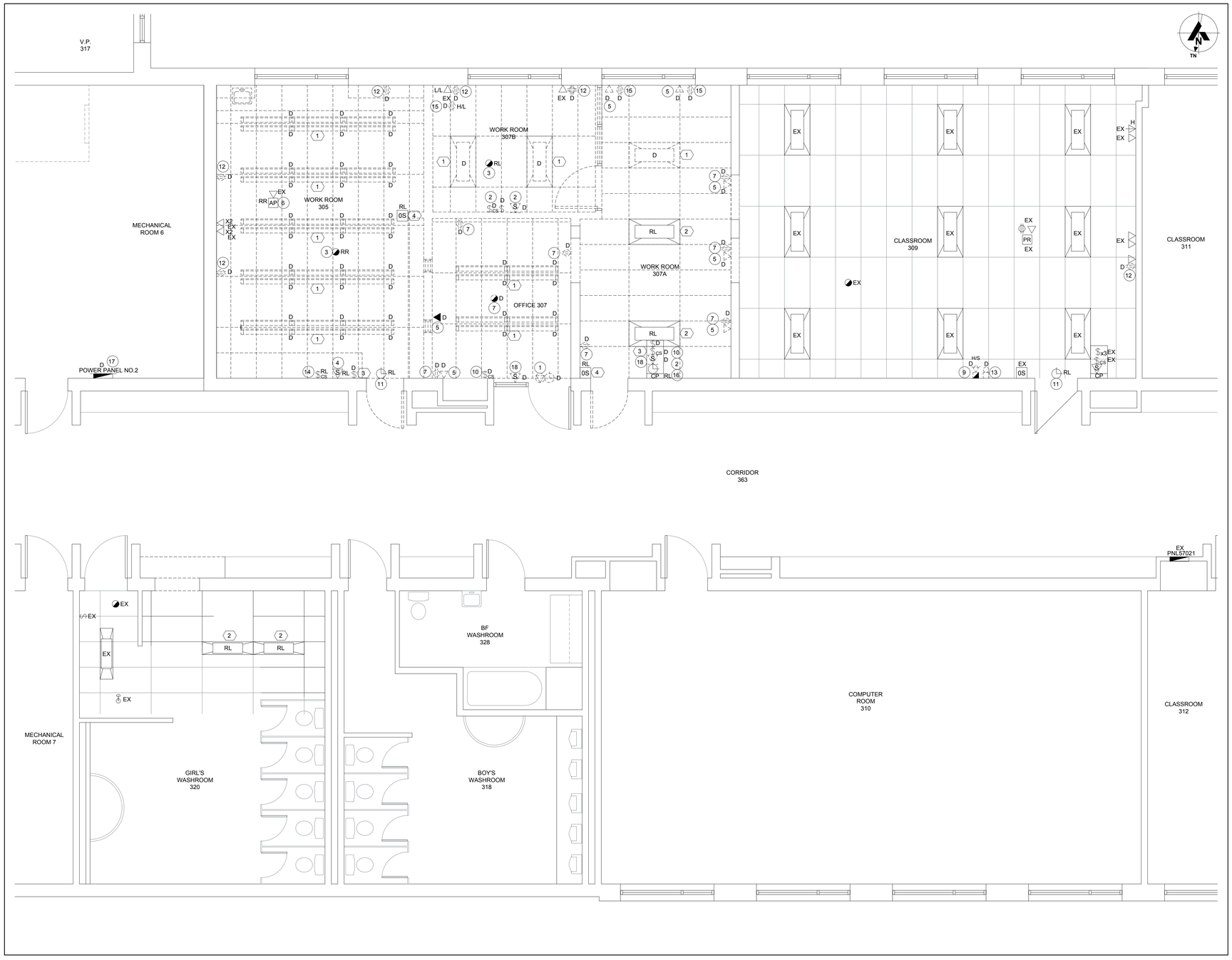
TITLEBLOCK 24x36 VERT ENG 3.0

DEMO POWER WORKING NOTES:

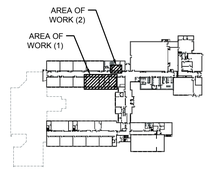
1. DISCONNECT AND REMOVE EXISTING SYNCHRONIZED CLOCK. REMOVE POWER FEED BACK TO SOURCE AND ENSURE CIRCUIT IS MAINTAINED. COORDINATE PATCHING WITH GENERAL CONTRACTOR. PROVIDE COVER PLATE FOR EXISTING BACK BOX IF REQUIRED.
2. DISCONNECT AND REMOVE ALL DEVICES IN CLASSROOM CONTROL PANEL TO RELOCATED.
3. TEMPORARILY DISCONNECT AND REMOVE EXISTING HEAT DETECTOR. RETAIN FOR REINSTALLATION. EXTEND WIRING AS REQUIRED.
4. RELOCATE EXISTING PA SPEAKER. EXTEND WIRING AS REQUIRED.
5. REMOVE DATA OUTLET C/W FEED UP INTO CEILING SPACE, COIL AND LEAVE FOR REUSE BY OWNER. TAG WITH APPROPRIATE IDENTIFIER.
6. TEMPORARILY DISCONNECT ACCESS POINT AND STORE SAFELY. REINSTALL IN SAME LOCATION.
7. REMOVE EXISTING RECEPTACLE. REMOVE FEED BACK TO SOURCE.
8. TEMPORARILY DISCONNECT AND REMOVE DEVICE. RETAIN FOR REINSTALLATION. EXTEND WIRING AS REQUIRED.
9. DISCONNECT AND REMOVE FIRE ALARM DEVICE. TURN OVER TO OWNER. RETAIN WIRING FOR REUSE.
10. DISCONNECT AND REMOVE P.A CALL SWITCH. FEED BACK TO SOURCE.
11. RELOCATE EXISTING BATTER OPERATED CLOCK.
12. DISCONNECT AND REMOVE EXISTING RECEPTACLE. RETAIN WIRING IN JUNCTION BOX TO BE REUSED FOR NEW TAMPER RESISTANT RECEPTACLE.
13. SCHOOL BELL ASSUMED TO BE REDUNDANT. CONTRACTOR TO CONFIRM AND REMOVE. PROVIDE STAINLESS STEEL COVER PLATE FOR BACK BOX. REMOVE FEED BACK TO SOURCE.
14. RELOCATE EXISTING PA CALL SWITCH EXTEND WIRING AS REQUIRED.
15. DISCONNECT AND REMOVE RECEPTACLE C/W FEED BACK TO SOURCE. PROVIDE STAINLESS STEEL COVER PLATE FOR BACK BOX.
16. REMOVE EXISTING BATTERY POWERED CLOCK. TURN OVER TO OWNER.
17. DISCONNECT AND REMOVE EXISTING POWER PANEL TO ALLOW REPLACEMENT. CONTRACTOR TO ALLOW FOR SCOPE TO BE COMPLETED AFTER HOURS. RETAIN FEED FOR REUSE. MEGGER EXISTING FEED AND PROVIDE RESULTS TO CONSULTANT. FED FROM SWITCHBOARD IN MAIN ELECTRICAL ROOM.
18. DISCONNECT AND REMOVE PA SPEAKER. TURN OVER DEVICE TO OWNER.

DEMO LIGHTING WORKING NOTES:

1. DISCONNECT AND REMOVE EXISTING LUMINARIES. REMOVE FEED BACK TO NEAREST JUNCTION BOX. RETAIN WIRING FOR REUSE. DISPOSE OF LUMINAIRE PROPERLY
2. REMOVE EXISTING LUMINAIRE AND RETAIN FOR REINSTALLATION IN NEW LOCATION.
3. REMOVE EXISTING LIGHT SWITCH. REMOVE EXISTING WIRING BACK TO NEAREST JUNCTION BOX. PROVIDE STAINLESS STEEL COVER PLATE FOR BACK BOX.
4. RELOCATE EXISTING OCCUPANCY SENSOR. REMOVE EXISTING OCCUPANCY SENSOR C/W POWER PACK AND RETAIN FOR RELOCATION. REMOVE WIRING BACK TO SOURCE.



1 E101 PLP CLASSROOMS - DEMO ELECTRICAL LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	LC

STAMPS:

LICENSED PROFESSIONAL ENGINEER
L. CONFORTI
100178622
JUN 28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
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415 Baseline Road West, Bowmanville,
ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
DEMOLITION
ELECTRICAL LAYOUT

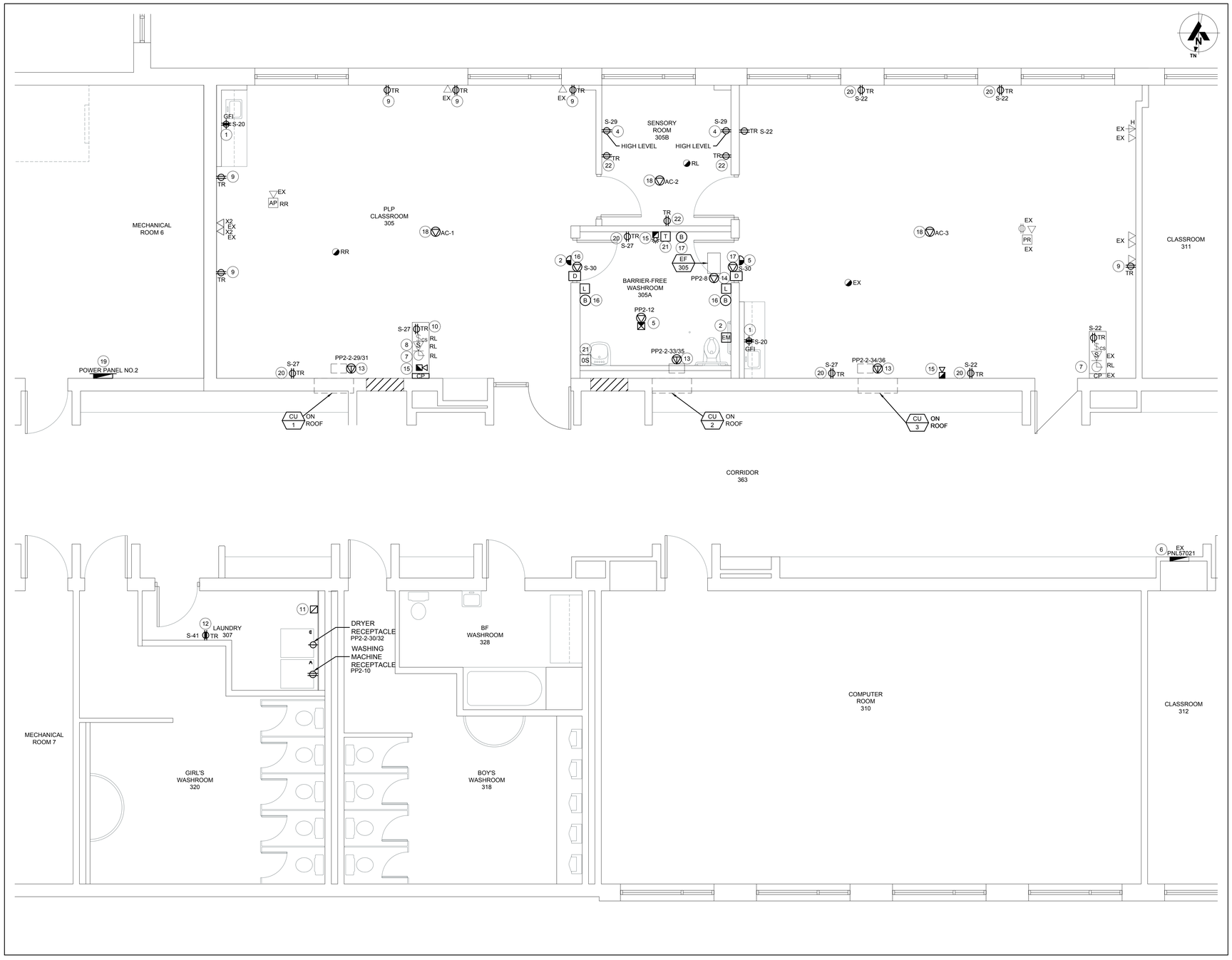
DISCIPLINE:
ELECTRICAL

DRAFTER: YA	SCALE: AS NOTED
DESIGNER: YA	DATE: 2024/06/07
APPROVER: LC	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: E101
SHEET No: 1 of 5	

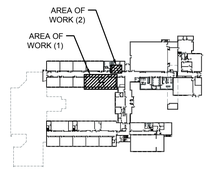
TITLEBLOCK 24x36 VERT ENG 3.0

NEW ELECTRICAL WORKING NOTES:

1. PROVIDE 20A GFI RECEPTACLE MOUNTED 1219mm (48") AFF TO SUIT MILLWORK. COORDINATE WITH GENERAL CONTRACTOR.
2. PROVIDE EMERGENCY PUSH BUTTON AND DOME LIGHT ABOVE EACH WASHROOM DOOR C/W RECESSED BACK BOXES AND 3/4" CONDUIT WITH PULL STRING UP TO CEILING. PROVIDE INTERLOCK WIRING SO BOTH LIGHTS TURN ON WHEN EMERGENCY PUSH BUTTON IS ACTIVATED.
3. RECESS OUTLET AND CONCEAL FEEDER DOWN EXISTING WALL IF POSSIBLE.
4. PROVIDE 15A RECEPTACLE 300mm DOWN FROM CEILING.
5. PROVIDE 120V POWER TO CEILING TRANSFORMER FOR LAV FAUCET.
6. PROVIDE NEW LABEL "PANEL-S" FOR EXISTING PANEL "PNL57021".
7. REINSTALL EXITING BATTERY OPERATED CLOCK.
8. REINSTALL EXISTING PA SPEAKER. EXTEND WIRING AS REQUIRED.
9. PROVIDE NEW TAMPER RESISTANT RECEPTACLE IN EXISTING BACK BOX. RECONNECT FEED.
10. PROVIDE NEW DEVICES IN CONTROL PANEL AS NOTED. REFER TO CONTROL PANEL DETAIL. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR.
11. RECONNECT EXISTING 120V POWER TO NEW EXHAUST C/W MANUAL MOTOR STARTER MOUNTED IN LAUNDRY ROOM. REWORK FEED AS REQUIRED. PROVIDE LAMACOID LABEL FOR STARTER.
12. PROVIDE NEW 20A RECEPTACLE FOR MAINTENANCE C/W WIRING
13. PROVIDE 208V POWER CONNECTION FOR NEW OUTDOOR CU UNIT USING NEW DOGHOUSE FED FROM POWER PANEL NO.2. FEED WITH 3#10 CU + GND IN 1"C.
14. PROVIDE 120V POWER CONNECTION FOR NEW EXHAUST FAN FED FROM POWER PANEL NO.2. COORDINATE WITH MECHANICAL CONTRACTOR.
15. PROVIDE NEW FIRE ALARM SIGNAL DEVICE. CONNECT TO EXISTING CIRCUIT FROM EXISTING FACP.
16. PROVIDE NEW FIRE ALARM SIGNAL DEVICE C/W NEW CIRCUIT FROM EXISTING FACP.
17. PROVIDE 120V POWER FOR BARRIER FREE OPERATORS AND PUSH-TO-LOCK C/W BACK BOXES, CONDUIT AND LOW VOLTAGE WIRING. CENTER LINE HEIGHT FOR ROUGH-IN WALL BOXES FOR PUSH BUTTON TO BE 900mm(35") AND 1100mm(43") AFF, MINIMUM 600mm(23.7") AND MAXIMUM 1500mm(59") FROM LEADING EDGE OF DOOR (WHEN OPEN). COORDINATE EXACT LOCATION WITH GENERAL CONTRACTOR/ARCHITECTURAL ELEVATIONS AND EXACT BACK BOX REQUIREMENT WITH DOOR MANUFACTURER PRIOR TO ROUGH-IN. POWER DOOR OPERATORS AND PUSH PLATES TO BE LOCATED AS PER ARCH DRAWINGS.
18. PROVIDE 208V/1P INTERLOCK POWER WIRING FROM NEW CU-1 TO AC UNITS. FEED TO BE SAME SIZE AS POWER WIRING TO CU.
19. PROVIDE NEW POWER PANEL AND RECONNECT TO EXISTING FEED. PROVIDE NEW LAMACOID NAMEPLATE. CONTRACTOR TO CONFIRM HOW EXISTING FEED IS INSTALLED PRIOR TO ORDERING PANEL. REFER TO PANEL SCHEDULE.
20. PROVIDE NEW RECEPTACLE AS NOTED C/W WIRING.
21. PROVIDE NEW OCCUPANCY SENSOR TO CONTROL LOW SPEED OF EXHAUST FAN EF-305 AND RECESSED WALL TIMER TO CONTROL HIGH SPEED OF EF-305. REFER TO DETAIL.
22. PROVIDE ROUGH-IN ONLY FOR RECEPTACLES.
23. PROVIDE POWER.



1 M201 PLP CLASSROOMS - NEW POWER LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	LC

STAMPS:

LICENSED PROFESSIONAL ENGINEER
L. CONFORTI
100178622
JUN 28/24
PROVINCE OF ONTARIO

ENGINEER:

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ON L1C 5M2 CANADA

CLIENT:

DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

SHEET TITLE:

PLP CLASSROOM
NEW POWER LAYOUT

DISCIPLINE:

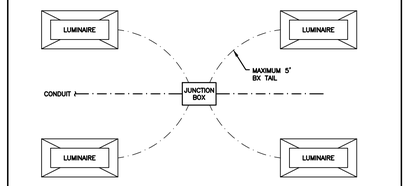
ELECTRICAL

DRAFTER: YA	SCALE: AS NOTED
DESIGNER: YA	DATE: 2024/06/07
APPROVER: LC	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: E201
SHEET No: 2 of 5	

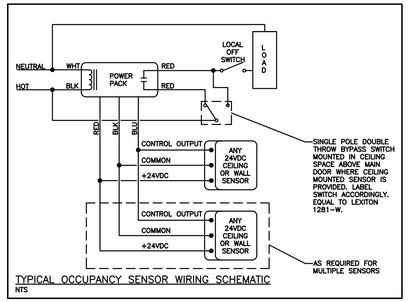
TITLEBLOCK 24x36 VERT ENG 3.0

NEW LIGHTING WORKING NOTES:

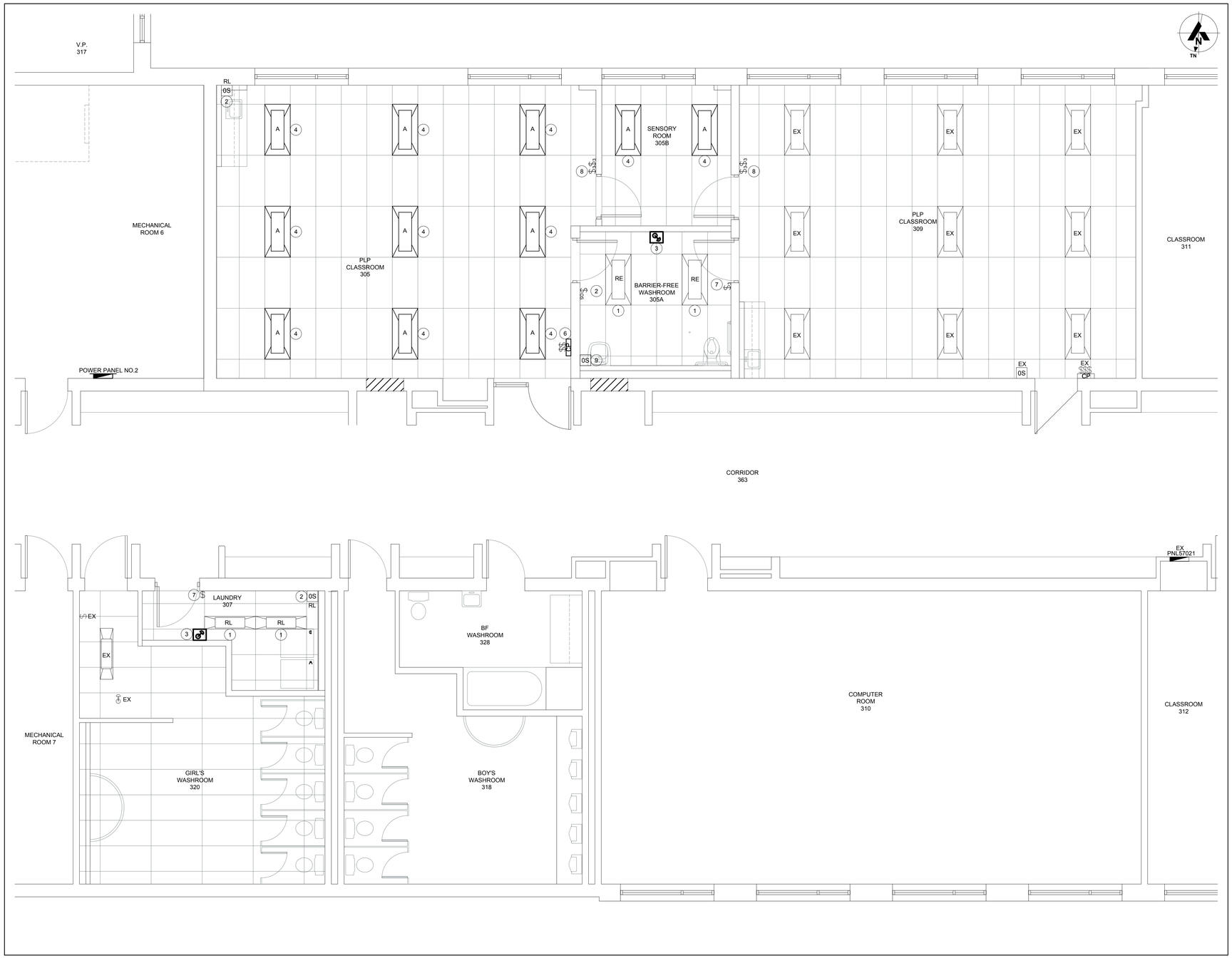
1. REINSTALL EXISTING LUMINAIRES. EXTEND THE WIRE AS REQUIRED.
2. REINSTALL EXISTING OCCUPANCY SENSOR.REWORK WIRING AS REQUIRED. REFER TO OCCUPANCY SENSOR DETAIL.
3. PROVIDE NEW REMOTE EMERGENCY LIGHT AND TIE INTO THE EXISTING DC CIRCUIT.
4. PROVIDE NEW LUMINAIRES. PROVIDE NEW WIRING AS PER WIRING DETAIL. REUSE EXITING POWER FEEDFOR NEW LUMINAIRES. EXTEND WIRING AS NEEDED.
5. PROVIDE NEW OCCUPANCY SENSOR FOR LIGHTING CONTROL. REFER TO OCCUPANCY SPECIFICATIONS AND WIRING DETAIL.
6. PROVIDE NEW SWITCHES IN CONTROL PANEL AS NOTED. DOOR-SIDE SWITCH TO CONTROL INNER BALLAST LAMP. REFER TO CONTROL PANEL DETAIL. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR.
7. PROVIDE NEW LIGHT SWITCH. TIE TO EXISTING LIGHTING FEED SERVING AREA.
8. PROVIDE NEW 3-WAY KEYED SWITCHES IN GANGED BOX FOR DUAL BALLAST LUMINAIRES IN SENSORY ROOM. ONE SWITCH TO CONTROL INNER LAMP OF LUMINAIRES, SECOND SWITCH TO CONTROL TWO(2) OUTER LAMPS.
9. PROVIDE NEW CEILING MOUNTED OCCUPANCY SENSOR TO CONTROL LOW SPEED OF EXHAUST FAN EF-A AND RECESSED WALL TIMER TO CONTROL HIGH SPEED OF EF-A. REFER TO DETAIL.



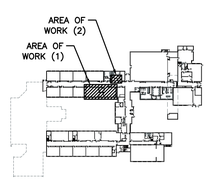
LUMINAIRE WIRING DETAIL
NTS



TYPICAL OCCUPANCY SENSOR WIRING SCHEMATIC
NTS



1 M301 PLP CLASSROOMS - NEW LIGHTING LAYOUT
SCALE: 1/4"=1'



KEY PLAN - SECOND FLOOR

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	LC

STAMPS:

LICENSED PROFESSIONAL ENGINEER
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100178622
JUN 28/24
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ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PLP CLASSROOM
NEW LIGHTING LAYOUT

DISCIPLINE:
ELECTRICAL

DRAFTER: YA	SCALE: AS NOTED
DESIGNER: YA	DATE: 2024/06/07
APPROVER: LC	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: E301
SHEET No: 3 of 5	

TITLEBLOCK 24x36 VERT ENG 3.0

ELECTRICAL NOTES:

1. ALL WORK SHALL CONFORM TO ESA REQUIREMENTS.
2. PROVIDE CHAINS FOR ALL LIGHT FIXTURES. CHAINS SHALL BE PROVIDED AT ALL FOUR CORNERS.
3. BOND ALL METALLIC WATER, DRAIN AND GAS PIPING AS PER ESA REQUIREMENTS.
4. PROVIDE JUNCTION BOXES C/W COVERPLATES AS REQUIRED.
5. COORDINATE INSTALLATION WITH ALL OTHER TRADES.
6. REFER TO "EMT (ELECTRICAL METALLIC TUBING) vs. LIQUIDTIGHT vs. FLEXIBLE CABLE" FOR ACCEPTABLE USE OF EACH.
7. EMT AND BOXES SHALL BE SIZED ACCORDING TO CODE REQUIREMENT BASED ON THE NUMBER OF CONDUCTORS.
8. FOR EMT AND/OR CONDUITS BENDS GREATER THAN OR EQUAL TO 270°, A PULL BOX MUST BE PROVIDED.
9. ALL EMT (ELECTRICAL METALLIC TUBING) SHALL BE FIRMLY FASTENED IN PLACE SO AS TO SUPPORT THE WEIGHT OF CONDUIT AND TO PREVENT ANY STRAIN OR STRESS AT TERMINATIONS ACCORDING TO ELECTRICAL CODE 12-1010.
10. CONTRACTORS SHALL ATTEMPT TO FISH NEW FEEDS DOWN EXISTING WALLS WHERE THIS IS NOT POSSIBLE (ONLY), SURFACE INSTALLATION IS ACCEPTABLE ON EXISTING BLOCK WALLS IN FINISHED AREAS AS FOLLOWS:
    .1 BOXES SHALL BE SHALLOW WIRE MOLD BOX WITH NO KNOCKOUTS.
    .2 CONDUIT SHALL BE WIRE MOLD. COLOUR TO BE WHITE.
11. CONCEAL ALL EMT (ELECTRICAL METALLIC TUBING) AND COMPONENTS IN CEILING SPACE OR WALLS. RUN TIGHT TO ROOF DECK OR FLOOR ABOVE WHERE CEILING IS EXPOSED. RUN TIGHT TO WALL OR COLUMN WHERE WALLS ARE EXPOSED.
12. MOUNTING HEIGHTS
    .1 MOUNT NEW CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO, P.A. CALL SWITCHES, OPERATORS, LIGHT SWITCHES OR SWITCH PLATE OCCUPANCY SENSORS NO LESS THAN 36" (900mm) A.F.F TO BOTTOM OF BOX AND 43"(1100mm) MAXIMUM A.F.F TO TOP OF BOX. UNLESS OTHERWISE NOTED.
    .2 MOUNT NEW RECEPTACLES 16" (400mm) A.F.F. UNLESS OTHERWISE NOTED.
    .4 SPACE SENSORS SHALL BE MOUNTED 59"(1500mm)
13. RECEPTACLES LOCATED WITHIN 5'(1.5m) OF A DAMP OR WET LOCATION SHALL BE GROUND FAULT CIRCUIT INTERRUPTER TYPE.
14. CONTRACTOR TO ALLOW FOR THE RELOCATION OF ANY RECEPTACLE OR DEVICE/EQUIPMENT CONNECTION WITHIN 10' OF LOCATION SHOWN AT NO EXTRA COST.
15. DEVICE COVER PLATES SHALL BE STAINLESS STEEL IN ALL AREAS.
16. BRANCH CIRCUIT BREAKER AMPERE INTERRUPTING CAPACITY TO MATCH BUS RATING. PROVIDE 10% SPARE FOR FUTURE.
17. MAXIMUM VOLTAGE DROP IN BRANCH CIRCUITS TO BE 3%. CONDUCTORS SHALL BE OVERSIZED TO SUIT VOLTAGE DROP WHERE APPLICABLE.
18. CONDUCTORS TO BE COPPER UNLESS OTHERWISE NOTED. CONDUCTORS IN RACEWAYS SHALL BE T75 NYLON (T90 ACCEPTABLE IF DERATED AS PER OESC). ALL CONDUCTORS SHALL BE MINIMUM #10AWG FOR EMERGENCY BATTERY CIRCUITS, #14AWG FOR CONTROL WIRING AND MINIMUM #12AWG FOR ALL OTHER APPLICATIONS.
19. ALL WIRE SIZES INDICATED ON DRAWINGS ARE BASED ON A 75°C TERMINATION TEMPERATURE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE TERMINATION TEMPERATURE OF EACH DEVICE AND MODIFY THE WIRE SIZE TO SUIT OR NOTIFY ENGINEER FOR DIRECTION.
20. IDENTIFY EACH WIRE AND CABLE AT EVERY TERMINATION POINT. IDENTIFY ALL EMT AND/OR CONDUITS WITH "NEAT" COLOUR BANDS AT NO MORE THAN 25'(7.5m) INTERVALS AND ON BOTH SIDES OF WALLS & FLOOR.
21. NON-CURRENT CARRYING METAL PARTS FOR FIXED EQUIPMENT SHALL BE BONDED TO GROUND. INSTALL SEPARATE BONDING IN LIQUIDTIGHT CONDUITS.
22. WHERE CEILING SPACE IS USED AS A RETURN AIR PLENUM, ALL WIRING SHALL CONFORM TO CODES FOR THIS APPLICATION.
23. SUPPLY AND INSTALL 2" EMT CONDUIT SLEEVES COMPLETE WITH BUSHING OVER EVERY DOOR FROM CORRIDOR TO FACILITATE INSTALLATION OF COMMUNICATION AND CONTROL WIRING. COORDINATE ANY ADDITIONAL CONDUIT SLEEVE REQUIREMENTS WITH ALL TRADES AS REQUIRED.
24. FIRE STOP ALL EXISTING AND NEW CONDUIT THROUGH FIRE SEPARATIONS.
25. ARRANGE FOR ESA INSTALLATION PERMIT AND INSPECTION AND FORWARD A COPY OF THE ESA CERTIFICATE TO THE ENGINEER UPON ACCEPTANCE (INCLUDING FIRE ALARM LISTED AS A SEPARATE ITEM). ARRANGE AND PAY FOR OCCUPANCY PERMIT IF FINAL INSPECTION CANNOT BE SCHEDULED BY COMPLETION DATE SET FORTH IN TENDER DOCUMENTS.

EMT vs. LIQUIDTIGHT vs. FLEXIBLE CABLE

EMT (ELECTRICAL METALLIC TUBING) MUST BE USED IN THE FOLLOWING INDOOR APPLICATIONS:

1. T-BAR CEILING SPACES.
2. VERTICAL DROPS TO DEVICES IN NEW WALLS (I.E. SWITCHES RECEPTACLES, DATA/VOICE.)

LIQUIDTIGHT MUST BE USED IN THE FOLLOWING INDOOR AND OUTDOOR APPLICATIONS:

1. LAST 5' (1.5m) FOR FINAL CONNECTION TO INDOOR MECHANICAL EQUIPMENT. LIQUID TIGHT CONDUIT IN CEILING SPACE MUST BE PLENUM RATED.
2. ALL OUTDOOR WIRING.

FLEXIBLE CABLE IS ONLY ACCEPTABLE IN THE FOLLOWING INDOOR APPLICATIONS:

1. LAST 5' (1.5m) FOR FINAL CONNECTION TO LIGHTING AND SMALL EQUIPMENT/COMPONENTS IN CEILING SPACES. DAISY CHAIN OF LUMINAIRES IS NOT ALLOWED.
2. LAST 5'(1.5m) FOR FINAL CONNECTION TO MECHANICAL EQUIPMENT LOCATED IN CEILING SPACE OR ON ROOF.

FIRE ALARM SPECIFICATIONS:

1. THE CONTRACTOR SHALL RELOCATE OR FURNISH NEW LABOUR, SERVICES AND MATERIALS NECESSARY TO PROVIDE A COMPLETE, FUNCTIONAL LIFE SAFETY FIRE SYSTEM. THE SYSTEM SHALL COMPLY IN ALL RESPECTS WITH ALL PERTINENT CODES, RULES, REGULATIONS AND LAWS OF THE LOCAL JURISDICTION. THE SYSTEM SHALL COMPLY IN ALL RESPECTS WITH THE REQUIREMENTS OF THE SPECIFICATIONS, MANUFACTURER'S RECOMMENDATIONS AND UNDERWRITERS LABORATORIES OF CANADA (ULC) LISTINGS. ALL COMPONENTS SHALL BE ULC LISTED.
2. THE EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE CURRENT PROVISIONS OF THE FOLLOWING CODES AND STANDARDS:
    .1 LOCAL AND PROVINCIAL BUILDING CODES
    .2 LOCAL AND PROVINCIAL FIRE CODES
    .3 LOCAL, PROVINCIAL AND CANADIAN ELECTRICAL CODES
    .4 NFPA 72 - NATIONAL FIRE ALARM CODE
    .5 NFPA 101 - LIFE SAFETY CODE
    .6 CAN/ULC-S524 AND OTHER APPLICABLE ULC STANDARDS
    .7 AUTHORITY HAVING JURISDICTION
3. ALL SIGNAL DEVICES SHALL HAVE FIELD ADJUSTABLE DB SETTINGS VIA DIP SWITCHES OR PROGRAMMING FOR LOW, MEDIUM AND HIGH. PERMANENT MODIFICATION TO DEVICE TO CHANGE AUDIBLE LEVEL IS NOT ACCEPTABLE.
4. FIRE DETECTOR MOUNTING:
    .1 FIRE DETECTORS SHALL NOT BE LOCATED CLOSER THAN 1000mm HORIZONTALLY FROM TIP OF A CEILING SUSPENDED (PADDLE) FAN OR CEILING MOUNTED UNIT HEATER MEASURED TO THE EDGE OF THE DETECTOR.
    .2 FIRE DETECTORS SHALL NOT BE LOCATED CLOSER THAN 450mm FROM ANY SUPPLY OUTLET OR EXHAUST OUTLET AS MEASURED TO THE EDGE OF THE DETECTOR.
5. DEVICE MOUNTING HEIGHT:
    .1 PULL STATION(S) TO BE MOUNTED 45" (1150mm) A.F.F. TO CENTER OF DEVICE
    .2 WALL MOUNTED AUDIBLE SIGNAL TO BE MOUNTED MINIMUM 6" (150mm) BELOW CEILING AND NO LESS THAN 90"(2300mm) A.F.F. TO THE TOP OF THE DEVICE
    .3 STROBE(S) TO BE MOUNTED SO THAT ENTIRE LENS IS 78"-94" (2000-2400mm) A.F.F.
    .4 COMBINATION HORN/STROBE(S) SHALL CONFORM TO BOTH 5.2 AND 5.3
    .5 END OF LINE RESISTORS TO BE MOUNTED LESS THAN 70" (1800mm) A.F.F
6. CONDUIT AND WIRE:
    .1 WIRING SHALL BE IN ACCORDANCE WITH LOCAL, PROVINCIAL AND NATIONAL CODES, AND AS RECOMMENDED BY THE MANUFACTURER OF THE FIRE ALARM SYSTEM.
    .2 NUMBER AND SIZE OF CONDUCTORS SHALL BE AS RECOMMENDED BY THE FIRE ALARM SYSTEM MANUFACTURER, BUT NOT LESS THAN 18 AWG (1.02 MM) FOR INITIATING DEVICE CIRCUITS AND SIGNALING LINE CIRCUITS, AND 14 AWG (1.63 MM) FOR NOTIFICATION APPLIANCE CIRCUITS (UNLESS OTHERWISE DIRECTED BY MANUFACTURER).
    .3 ALL WIRE AND CABLE SHALL BE LISTED AND/OR APPROVED BY A RECOGNIZED TESTING AGENCY FOR USE WITH A PROTECTIVE SIGNALING SYSTEM.
    .4 ALL FIELD WIRING SHALL BE ELECTRICALLY SUPERVISED FOR OPEN CIRCUIT AND GROUND FAULT.
    .5 ALL WIRE SHALL BE INSTALLED IN CONDUIT. PROVIDE WIREMOLD FOR ALL WIRING IN EXPOSED AREAS: ALL SURFACE MOUNTED CONDUIT MUST BE APPROVED BY OWNER OR CONSULTANT PRIOR TO INSTALLATION.
    .6 WIRE AND CABLE NOT INSTALLED IN CONDUIT SHALL HAVE A FIRE RESISTANCE RATING SUITABLE FOR THE INSTALLATION AS INDICATED IN NFPA 70 (E.G., FPLR) AND AS PER OBC.
    .7 ALL JUNCTION BOXES SHALL BE PAINTED 'RED' AND IDENTIFIED AS SIGNAL OR INITIATING. ALL LBs SHALL BE PAINTED RED. ANY CONDUIT LENGTH EXCEEDING 10'(3m) SHALL HAVE COUPLING PAINTED RED FOR IDENTIFICATION.
7. ALL AIR HANDLING EQUIPMENT THAT CAN SUPPLY FRESH AIR SHALL BE TIED INTO FIRE ALARM CONTROL PANEL FOR FAN SHUT DOWN. SHUT DOWN BOTH SUPPLY AND RETURN AIR IF APPLICABLE. EXHAUST FANS DO NOT NEED TO BE SHUT DOWN. PROVIDE ALL COMPONENTS TO FACILITATE INTENT.

P.A. SYSTEMS

1. PA CONTRACTOR SHALL BE CARRIED UNDER CASH ALLOWANCE UNDER GENERAL CONTRACTOR.
2. ELECTRICAL CONTRACTOR TO OBTAIN THE SERVICES OF APPROVED CONTRACTOR TO CARRY OUT ALL WORK ASSOCIATED WITH P.A. SYSTEM INCLUDING BUT NOT LIMITED TO DEVICES, BACK BOXES, CONDUIT, WIRING, TESTING AND VERIFICATION.
3. EXISTING SYSTEM ASSUMED TO BE SIMPLEX.
4. ANY NEW DEVICES TO MATCH EXISTING SYSTEM. ALL EXTERIOR PA HORNS TO BE SURFACE MOUNTED. PROVIDE VALCOM V-9809 FOR EXTERIOR SURFACE BACK BOX AND V-1080 HORN FOR INSTALLATION. CORRIDOR SPEAKERS TO BE LAY IN 2'x2' WITH PERFORATED GRILL. ALL NEW PA SPEAKERS AND ASSOCIATED DEVICES SHALL BE VALCOM. PROVIDE SHOP DRAWINGS FOR REVIEW.
5. ALL P.A. WIRING TO RUN BACK TO MAIN CONTROL PANEL AS NOTED.
6. PROVIDE AS-BUILT MARKUPS OF ANY NEW DEVICES AND ANY NEW JUNCTION BOXES PROVIDED TO SUIT.
7. ALL WIRING TO BE CAT3 FT4 RATED AND INSTALLED IN CONDUIT. WHERE IT IS NOT POSSIBLE TO INSTALL IN CONDUIT, PROVIDE NEW CABLE TRAY EQUAL TO CER BT2-4 AND RUN J-HOOKS AND RUN FT6 RATED CABLE. SUPPORT/CABLE TRAY FROM BUILDING STRUCTURE. CABLE TRAY SHALL BE SUPPORTED INDEPENDENT OF ALL OTHER SERVICES.
8. CONFIRM ALL NECESSARY WIRING REQUIREMENTS WITH MANUFACTURER AND DDSB.
9. INSTALL ALL P.A. SYSTEM DEVICES I.E. P.A. CALL SWITCHES, P.A. SPEAKERS AND WIRING TO DDSB STANDARDS.
10. PA SPEAKERS TO BE PROGRAMMED TO SILENCE GENERAL ANNOUNCEMENTS DURING SPECIFIC TIME PERIODS. TIMES TO BE COORDINATED WITH DDSB. PROVIDE SWITCH WITHIN ROOM TO SILENCE PA DURING NAP TIMES.
11. ALLOW FOR REPROGRAMMING ENTIRE SYSTEM TO SUIT NEW ROOM NUMBERING AS PER ARCHITECTURAL DRAWINGS. CONFIRM ROOM NUMBERING IS FINALIZED WITH ARCHITECT AND CLIENT PRIOR TO REPROGRAMMING SYSTEM.
12. CONTRACTOR MUST PROVIDE INSPECTION, INITIAL TEST, REQUIRED ADJUSTMENTS, COMMISSIONING VERIFICATION AND CERTIFICATION OF ALL EXISTING CIRCUITS MODIFIED AND ALL NEW CIRCUITS.
13. SUBMIT REPORT TO CONSULTANT AND INCLUDE IN MANUAL.
14. APPROVED SUB-CONTRACTORS:
ANY CERTIFIED SIMPLEX/VALCOM CONTRACTOR OR PA CONTRACTOR WITH SIMPLEX/VALCOM EXPERIENCE.

GENERAL NOTES:

1. THOROUGHLY REVIEW AND COORDINATE WITH SITE CONDITIONS AND COMPLETE DRAWING SET PRIOR TO PRICING AND INSTALLATION.
2. OBTAIN, ARRANGE AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS AND NOTICE OF PROJECT.
3. THE ELECTRICAL CONTRACTOR AND SUB-TRADES SHALL ATTEND ALL SITE MEETINGS UNLESS OTHERWISE APPROVED.
4. PROVIDE ELECTRONIC SHOP DRAWINGS IN PDF FORMAT TO CONSULTANT FOR REVIEW. ALL SHOP DRAWINGS MUST BE REVIEWED, STAMPED AND SIGNED BY THE ELECTRICAL CONTRACTOR PRIOR TO SUBMITTING TO THE CONSULTANT. REVIEW SHALL INCLUDE, BUT NOT LIMITED TO, VERIFYING VOLTAGE, RATING, DIMENSIONS AND CLEARANCES. SUBMIT SHOP DRAWINGS ELECTRONICALLY TO CONSULTANT.
5. INSTALL ALL WORK IN CONFORMANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
6. MAINTAIN RECORD DRAWINGS ON AN ON-GOING BASIS. DRAWINGS SHALL BE AVAILABLE FOR PERIODIC REVIEW BY THE CONSULTANT DURING CONSTRUCTION.
7. ALL WORK SHALL COMPLY WITH APPLICABLE CODES.
8. REMOVE ALL REDUNDANT EQUIPMENT AND MATERIALS FROM SITE AND DISPOSE OF IN AN APPROVED MANNER. REDUNDANT EQUIPMENT AND MATERIALS SHALL NOT BE ABANDONED IN PLACE.
9. ALL CUTTING, CORING SHALL BE BY THIS CONTRACTOR. COORDINATE PATCHING WITH GENERAL CONTRACTOR.
10. ANY FEED TO NEW ROOFTOP EQUIPMENT SHALL BE INSTALLED WITH GOOSENECK STYLE PITCH POCKET EQUAL TO THALER METAL MEF-2A. SIZE AS REQUIRED TO SUIT FEED. COORDINATE ROOFING WORK WITH GENERAL CONTRACTOR OR OWNER AS REQUIRED PRIOR TO INSTALLATION.
11. ALL CONDUIT SHALL BE CONCEALED AND ALL DEVICES RECESSED. ANY SURFACE MOUNTED CONDUIT MUST BE APPROVED BY OWNER OR CONSULTANT PRIOR TO INSTALLATION.
12. MAINTAIN REQUIRED ACCESS AND CLEARANCE TO ALL EQUIPMENT AND SYSTEMS AS REQUIRED BY CODE AND AS PER MANUFACTURER'S REQUIREMENTS.
13. PROVIDE ACCESS DOORS WHERE REQUIRED TO MAINTAIN ACCESS TO DEVICES, EQUIPMENT, JUNCTION BOXES ETC. COORDINATE AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION. CONTRACTOR TO INSTALL WHERE NOT COORDINATED PROPERLY WITH GENERAL CONTRACTOR.
14. TAG ALL EQUIPMENT (INCLUDING MECHANICAL EQUIPMENT), EQUIPMENT DISCONNECTS/STARTERS AND PANELS WITH LAMACOID NAMEPLATES. PANEL NAMEPLATE SHALL STATE PANEL DESIGNATION, VOLTAGE, AMPERAGE AND SOURCE OF FEEDER. EQUIPMENT SHALL STATE PANEL AND CIRCUIT NUMBER. PROVIDE TYPED PANEL SCHEDULES IN ALL PANELS. CONFIRM WITH CONSULTANT IF UNCLEAR.
15. LABEL ALL RECEPTACLES AND JUNCTION BOXES WITH PANEL AND CIRCUIT NUMBER. USE BLACK MARKER ON CONCEALED JUNCTION BOXES AND CLEAR ADHESIVE LABELS WITH BLACK WRITING ON RECEPTACLES. PAINT ALL JUNCTION BOXES RED FOR FIRE ALARM.
16. THE CONTRACTOR SHALL ARRANGE FOR FIELD REVIEWS BY THE CONSULTANT PRIOR TO CEILINGS AND WALLS BEING CLOSED IN. WHERE THIS HAS NOT BEEN ARRANGED IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE CEILING TILES OR ACCESS DOORS FOR REVIEW AT THE DIRECTION OF THE CONSULTANT.
17. PERFORM TESTING OF ALL SYSTEMS AS REQUIRED BY CODE AND THE CONSULTANT.
18. ASSIST WITH START-UP AND COMMISSIONING OF ALL SYSTEMS AS REQUIRED.
19. INSTRUCT AND TRAIN THE OWNER ON PROPER OPERATION OF THE SYSTEM.
20. UPON COMPLETION OF THE PROJECT THE CONSULTANT WILL DO A FINAL REVIEW. UPON RECEIVING THE FINAL INSPECTION REPORT, THE CONTRACTOR MUST CORRECT AND SIGN BACK THE INSPECTION REPORT INDICATED ALL DEFICIENCIES ARE COMPLETED. A RE-INSPECTION WILL ONLY BE DONE ONCE THE CONSULTANT RECEIVES THIS IN WRITING. WHERE THE CONSULTANT PERFORMS THE RE-INSPECTION AND THE WORK IS NOT COMPLETE, THE CONTRACTOR IS RESPONSIBLE FOR REIMBURSING THE CONSULTANT FOR THE FIELD REVIEW. THE FEE FOR ADDITIONAL REVIEWS WILL BE AT THE CONSULTANT'S HOURLY RATES PLUS MILEAGE AND APPLICABLE TAXES TO BE PAID DIRECTLY TO THE CONSULTANT PRIOR TO PERFORMING THE NEXT FIELD REVIEW.
21. PROVIDE ONE (1) YEAR WARRANTY ON ALL MATERIAL AND LABOUR FROM THE DATE OF SUBSTANTIAL COMPLETION.
22. PROGRESS DRAWS SHALL INCLUDE MINIMUM $1,500.00 FOR MANUALS AND AS-BUILT DRAWINGS. TOTAL AMOUNT SHALL REMAIN UNBILLED UNTIL MANUALS AND AS-BUILT DRAWINGS HAVE BEEN SUBMITTED AND APPROVED AND UNTIL ALL DES FIELD REVIEW REPORTS HAVE BEEN SIGNED AND RETURNED TO DES ALONG WITH PICTURES AS REQUESTED BY CONSULTANT.
23. PROVIDE ONE(1) ELECTRONIC COPY OF USB. CLOSE-OUT DOCUMENTATION INCLUDING CONTRACTOR INFORMATION, WARRANTY LETTER, ESA CERTIFICATE, FIRE ALARM VERIFICATION REPORT, EMERGENCY LIGHTING TEST REPORT, SHOP DRAWINGS, O&Ms, ANY OTHER REQUIRED REPORTS AND AS-BUILT DRAWINGS INCLUDING ALL PANEL SCHEDULES. AS-BUILT DRAWINGS SHALL INCLUDE COMPLETE ELECTRICAL DRAWING SET WITH ANY CHANGES MARKED CLEARLY AND NEATLY IN COLOUR.

FIRE ALARM SCOPE OF WORK:

1. EXISTING FIRE ALARM CONTROL PANEL IS SIMPLEX 4100ES.
2. FIRE ALARM MANUFACTURER TO ATTEND SITE PRIOR TO PRICING TO REVIEW EXISTING SYSTEM FOR CONFORMANCE WITH NEW PROPOSED DEVICES. FIRE ALARM MANUFACTURER TO INCLUDE FOR ALL LABOUR AND COMPONENTS REQUIRED TO CONNECT EXISTING DEVICES TO EXISTING FIRE ALARM CONTROL PANEL IN CONFORMANCE WITH ALL APPLICABLE CODES. ALLOW FOR WIRING BACK TO FIRE ALARM CONTROL PANEL TO SUPPORT NEW ZONE IF REQUIRED.
3. INSTALL NEW ADDRESSABLE DEVICES OF TYPE AS INDICATED ON DRAWINGS.
4. ADD HORN/STROBES AND STROBES AS INDICATED. FIRE ALARM MANUFACTURER TO CONFIRM CIRCUIT LOADING PRIOR TO PRICING IF CONNECTING NEW DEVICES TO EXISTING CIRCUITS.
5. ALL DEVICE AND SIGNAL CIRCUITS TO BE WIRED TO MATCH EXISTING.
6. LABELING:
    .1 PAINT ALL FIRE ALARM JUNCTION BOXES RED. IDENTIFY EACH JUNCTION BOX AS EITHER SIGNAL OR INITIATING CIRCUIT.
7. TEST AND VERIFY THE FIRE ALARM SYSTEM IN CONFORMANCE WITH CAN/ULC-S537-M "STANDARD FOR THE VERIFICATION OF FIRE ALARM SYSTEMS" TO ENSURE SATISFACTORY OPERATION.
8. TEST AND VERIFY FAN SHUTDOWNS AND ALL OTHER INTERLOCKS.
9. PERFORM AUDIBILITY TESTS AS PER ONTARIO FIRE CODE (MINIMUM 65DBA, MAXIMUM 100DBA THROUGHOUT) AND PROVIDE REPORT TO THE CONSULTANT. ALL SPACES WITHIN THE PROJECT AREA MUST BE TESTED. DOORS SHALL BE CLOSED DURING TESTING. CONTRACTOR AND VERIFIER TO ALLOW FOR SYSTEM MODIFICATIONS AND REVERIFICATIONS AS REQUIRED TO MEET AUDIBILITY REQUIREMENTS.
10. PROVIDE VERIFICATION REPORT AND AUDIBILITY TESTS TO THE CONSULTANT FOR REVIEW. SUBMIT FINAL COPY OF REPORT TO THE BUILDING DEPARTMENT/FIRE PREVENTION.
11. ARRANGE FOR A SITE INSPECTION BY THE BUILDING DEPARTMENT/FIRE PREVENTION, CONSULTANT AND ESA AT COMPLETION OF THE PROJECT FOR FINAL ACCEPTANCE. PERFORM ADDITIONAL AUDIBILITY TESTS AS REQUESTED.

LIGHT FIXTURE SCHEDULE

TAG	DESCRIPTION	MAKE / MODEL	ALTERNATE
A	RECESSED 2X4 LED LUMINAIRE, K12 0.125" PATTERN ACRYLIC LENS, 3-14W LED LAMPS, 2 INSTANT START BALLASTS (ONE FOR SWITCHING INNER LAMP, ONE FOR SWITCHING OUTTER LAMPS), 4000K, 120V.	PEERLESS ELECTRIC LACH3-24G-332-12.125-2B 120 IS	VISIONEERING
0S	WALL/CORNER MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR, WHITE, 24V	LEVITON OSW12-M0W	HUBBELL LEGRAND ACUITY CONTROLS LUTRON
$ $_3$	LIGHT SWITCH - '3' DENOTES 3-WAY	HUBBELL 1200 SERIES (120V)	HUBBELL LEGRAND ACUITY CONTROLS
$_{OS}$	SWITCH PLATE MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR WITH BUTTON, WHITE, 24V	LEVITON OSS24-I0W	HUBBELL LEGRAND ACUITY CONTROLS

EMERGENCY LIGHTING SCHEDULE

TAG	DESCRIPTION	MAKE / MODEL
EX	EXISTING CEILING MOUNTED REMOTE SINGLE HEAD EMERGENCY LIGHT	EXISTING
	CEILING MOUNTED REMOTE SINGLE HEAD 4W LED EMERGENCY LIGHT, INJECTION MOLDED IMPACT RESISTANT FLAME RETARDANT THERMOPLASTIC, ADJUSTABLE LENSES, SUITABLE FOR INSTALLATION ON 4" OCTAGON BOX.	EQUAL TO LUMACELL RSQBLD7 (OR VOLTAGE TO MATCH EXISTING BATTERY UNITS)

APPROVED ALTERNATES: BEGHELLI, EMERGI-LITE, AIMLITE, STAN PRO

NOTE:
1. ## DENOTES BATTERY UNIT.
2. 'DS' DENOTES DOUBLE SIDED.
3. ALLOW 20% SAFETY ON BACK-UP BATTERY PACK SIZING.
4. ALL UNITS TO BE CSA CERTIFIED.
5. EMERGENCY LIGHTING LIGHT LEVELS ARE TO BE TAKEN IN FOOT CANDLES BY THE CONTRACTOR AFTER PROJECT COMPLETION. ADVISE CONSULTANT OF TEST DATE FOR WITNESS AND OWN READINGS.

POWER LEGEND

TAG	DESCRIPTION	MAKE/MODEL
TR	15A 120V 1PH GROUNDED DUPLEX RECEPTACLE TAMPER RESISTANT C/W STAINLESS STEEL COVER PLATE	HUBBELL BR15WHITR OR EQUAL
	20A 120V 1PH GROUND FAULT CIRCUIT INTERRUPTING DUPLEX RECEPTACLE C/W STAINLESS STEEL COVER PLATE	HUBBELL GF20WLA OR EQUAL
	208V 1PH GROUNDED RECEPTACLE CONFIGURATION TO SUIT EQUIPMENT	HUBBELL HBL OR EQUAL
	120V 1PH GROUNDED DIRECT EQUIPMENT CONNECTION	N/A
	208V 1PH GROUNDED DIRECT EQUIPMENT CONNECTION	
EM	EMERGENCY PULL STRING	EDWARDS CFA 6537
	EMERGENCY SYSTEM LIGHT/HORN	EDWARDS CFA 6538-G5 (COLOUR TBC BY OWNER
T	TIMER	WATTSTOPPER PW-200

ELECTRICAL ABBREVIATIONS

EX	EXISTING TO REMAIN
D	EXISTING TO BE REMOVED C/W CONDUIT/WIRING BACK TO SOURCE
RL	EXISTING TO BE RELOCATED. EXTEND FEED AS REQUIRED.
RR	EXISTING TO BE REMOVED & REINSTALLED IN SAME LOCATION.
x#	QUANTITY OF DEVICES
H/L	HIGH LEVEL
C/W	COMPLETE WITH

COMMUNICATIONS LEGEND

TAG	DESCRIPTION	MAKE/MODEL
S	EXISTING WALL MOUNTED P.A. SPEAKER	N/A
AP	EXISTING ACCESS POINT	N/A
	EXISTING BATTERY OPERATED CLOCK	N/A
$_{CS}$	P.A. CALL SWITCH	REFER TO SPECIFICATIONS

FIRE ALARM LEGEND

H/S '##' cd	COMBINATION HORN/STROBE. '##' DENOTES STROBE CANDELA RATING. PROVIDE 15cd UNLESS OTHERWISE NOTED.
S '##' cd	STROBE ONLY. '##' DENOTES STROBE CANDELA RATING. PROVIDE 15cd UNLESS OTHERWISE NOTED.
	FIRE ALARM HORN

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	LC

STAMPS:

LICENSED PROFESSIONAL ENGINEER
L. CONFORTI
100178622
JUN 28/24
PROVINCE OF ONTARIO

ENGINEER:

CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville, ON L1C 5M2 CANADA

CLIENT:

DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:

CLASSROOM ALTERATIONS

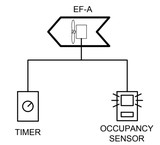
SHEET TITLE:

LEGENDS & NOTES

DISCIPLINE:

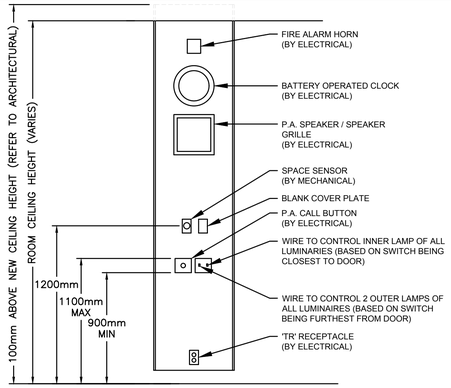
ELECTRICAL

DRAFTER: YA	SCALE: NTS
DESIGNER: YA	DATE: 2024/06/07
APPROVER: LC	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: E801
SHEET No: 4 of 5	



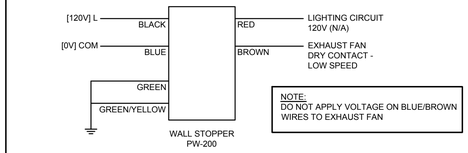
NOTES:
-EXHAUST FAN EF-A CONTROLLED BY OCCUPANCY SENSOR AND TIMER.
-TIMER, OCCUPANCY SENSOR, AND CONTROL WIRING FOR EXHAUST FAN EF-A SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR.

EXHAUST FAN EF-A CONTROL SCHEMATIC (2-SPEED)
NTS



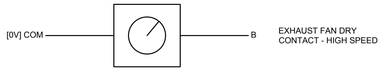
NOTE:
DETAIL IS FOR GENERAL LAYOUT OF ALL DEVICES SHOWN. REFER TO FLOOR PLAN DRAWINGS FOR ACTUAL DEVICES REQUIRED FOR EACH CONTROL PANEL.

CONTROL PANEL DETAIL (SUPPLIED BY GENERAL)
NTS



NOTE:
DO NOT APPLY VOLTAGE ON BLUE/BROWN WIRES TO EXHAUST FAN

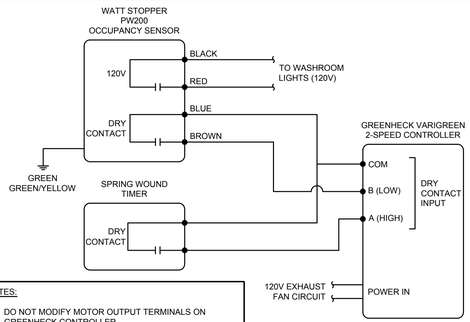
OCCUPANCY SENSOR



- SEPARATE 120V TO EXHAUST FAN AND ISOLATION SWITCH.
- COM/24V/0-10V FROM MOTOR TO CONTROLLER TO REMAIN.

WALL TIMER

2-SPEED EXHAUST FAN CONTROL DETAIL (EF-A)
NTS



NOTES:
- DO NOT MODIFY MOTOR OUTPUT TERMINALS ON GREENHECK CONTROLLER.
- DO NOT CONNECT TO LINE VOLTAGE DIGITAL INPUTS ON GREENHECK CONTROLLER.
- DETAIL IS ACCURATE FOR BASE SPECIFIED EQUIPMENT AT THE TIME OF ISSUANCE. CONTRACTOR IS RESPONSIBLE FOR THE SUPPLY AND INSTALLATION OF ANY ADDITIONAL DEVICES, RELAYS OR WIRING TO SUIT ALTERNATE MANUFACTURERS OR UNFORESEEN PRODUCTION/DEVICE CHANGES.

GREENHECK VARIGREEN 2-SPEED OCCUPANCY SENSOR & TIMER DETAIL
NTS

PANEL 'POWER PANEL NO. 2(TO BE REPLACED)'

EXISTING MANUFACTURER: AMALGAMATED ELECTRIC

200A, 42 CIRCUIT, 3PH, 4W, 120/208 VOLT SURFACE MOUNTED BOLT-ON CIRCUIT BREAKER PANEL BOARD WITH MAIN LUGS ONLY & COPPER BUS, 10 KAIC

* DENOTES BREAKER LOCK-ON DEVICE
** DENOTES 'ARC FAULT' BREAKER
+ DENOTES MISLABELED CIRCUIT. CONTRACTOR TO VERIFY LOAD
++ DENOTES NEW BREAKER REQUIRED

DESCRIPTION	BKR	CCT	S/N	CCT	BKR	DESCRIPTION
LIBRARY EXHAUST ROOM#355	15A	1		2		
CLASSROOM GEN.EXH ROOM #333	15A	3		4	15A*	-
EAST ELEC HEATER UNDR BRIDGE	15A	5		6	15A	ALARM+ENERGY
WEST ELEC HEATER UNDR BRIDGE	15A	7		8	15A	ROOM 307 ROUTER
		9		10		
		11		12		
		13		14		
		15		16		
		17		18		
CLSRM. RAD. PUMP #108-ROOM #333	15A 3P	19		20	15A 3P	CLSRM SUPP.UN.101 ROOM #333
		21		22		
		23		24		
CLSRM. RAD. PUMP #109-ROOM #333	15A 3P	25		26	15A 3P	OFFICE SUPP.UN.105 #109-ROOM #333
		27		28		
		29		30		
CLSRM. WSHRM. EXHAUST RM. #333	15A 3P	31		32	15A 3P	TRANSFORMER ROM.EX
		33		34		
		35		36		
GLYCON CIRC. PUMP #110-RM. 332	15A 3P	37		38	15A 3P	OFFICE RETURN AIR ROOM#333
		39		40		
		41		42		

PANEL 'POWER PANEL NO.2(NEW)'

EXISTING MANUFACTURER: PANEL NAME IF APPLICABLE

200A, 60 CIRCUIT, 1PH, 3W, 120/208 VOLT SURFACE MOUNTED BOLT-ON CIRCUIT BREAKER PANEL BOARD WITH MAIN LUGS ONLY & COPPER BUS, 10 KAIC

* DENOTES BREAKER LOCK-ON DEVICE
** DENOTES 'ARC FAULT' BREAKER
+ DENOTES MISLABELED CIRCUIT. CONTRACTOR TO VERIFY LOAD
++ DENOTES NEW BREAKER REQUIRED

DESCRIPTION	BKR	CCT	S/N	CCT	BKR	DESCRIPTION
LIBRARY EXHAUST ROOM#355	15A	1		2	15A	-
CLASSROOM GEN.EXH ROOM #333	15A	3		4	15A*	ALARM+ENERGY
EAST ELEC HEATER UNDR BRIDGE	15A	5		6	15A	ROOM 307 ROUTER
WEST ELEC HEATER UNDR BRIDGE	15A	7		8	15A	EF-305
SPARE	15A	9		10	15A	WASHING MACHINE
SPARE	15A	11		12	15A	LAV FAUCET
SPARE	15A	13		14		
		15		16		
		17		18		
		19		20		
		21		22		
		23		24		
		25		26		
		27		28		
CU-1	20A 2P	29		30	40A 2P	DRYER REC
		31		32		
CU-2	15A 2P	33		34	20A 2P	CU-3
		35		36		
CLSRM. RAD. PUMP #108-ROOM #333	15A 3P	37		38	15A 3P	CLSRM SUPP.UN.101 ROOM #333
		39		40		
		41		42		
CLSRM. RAD. PUMP #109-ROOM #333	15A 3P	43		44	15A 3P	OFFICE SUPP.UN.105 #109-ROOM #333
		45		46		
		47		48		
CLSRM. WSHRM. EXHAUST RM. #333	15A 3P	49		50	15A 3P	TRANSFORMER ROM.EX
		51		52		
		53		54		
GLYCON CIRC. PUMP #110-RM. 332	15A 3P	55		56	15A 3P	OFFICE RETURN AIR ROOM#333
		57		58		
		59		60		

PANEL '57021'

EXISTING MANUFACTURER: FEDERAL PIONEER TYPE NBLP

225A, 42 CIRCUIT, 3PH, 4W, 120/240 VOLT FLUSH MOUNTED BOLT-ON CIRCUIT BREAKER PANEL BOARD WITH MAIN LUGS ONLY & COPPER BUS, 10 KAIC

* DENOTES BREAKER LOCK-ON DEVICE
+ DENOTES MISLABELED CIRCUIT. CONTRACTOR TO VERIFY LOAD

DESCRIPTION	BKR	CCT	S/N	CCT	BKR	DESCRIPTION
LIGHTS EASY	15A	1		2	15A	RECPT 307
RELAY TRAM FORMER	15A	3		4	15A	RM 309
HALL LIGHTS WEST	15A	5		6	15A*	EMG LIGHTS
RM 310 PLUGS	15A	7		8	15A	LIGHT GRLS/BOYS W/R+LTG CNTL
RM 310 LIGHTS	15A	9		10	15A+	UNKNOWN
RM 310 COMPUTER	15A	11		12	15A	BOYS HAND DRYER
LIGHTS RM 334	15A	13		14	15A	LIGHTS RM 332
HANDICAP GFCI RECP+ BOYS W/R GFCI RECP	15A	15		16	15A	SPARE (OLD H/C HANDRYER)
RECPT IN CORR	15A	17		18	15A	RM 309
LIGHTS	15A	19		20	15A	RM 309 WM
LIGHTS	15A	21		22	15A	RM 309 WM
LIGHTS	15A	23		24	15A	RM 309
RM 309	15A	25		26	15A	HANDICAP HAND DRYER+ BOTTLE FILTER
RM 309 WM	15A	27		28	15A	RM 309
RM 309 WM	15A	29		30	15A	SPARE
OUTSIDE RECPT	15A	31		32	15A	SPARE
RECPT	15A	33		34	15A	DOOR HOLDER
COMPUTER PLUG BUSINESS OFFICE	15A	35		36	15A	RM 305 CIRC. PUMP
COUNTER PLUG RM 310	15A	37		38	15A	PUMP/BRADLEY
		39		40		
		41		42		

REVISED PANEL '57021' "LIGHTING PANEL S"

EXISTING MANUFACTURER: FEDERAL PIONEER TYPE NBLP

225A, 42 CIRCUIT, 3PH, 4W, 120/240 VOLT FLUSH MOUNTED BOLT-ON CIRCUIT BREAKER PANEL BOARD WITH MAIN LUGS ONLY & COPPER BUS, 10 KAIC

* DENOTES BREAKER LOCK-ON DEVICE
+ DENOTES MISLABELED CIRCUIT. CONTRACTOR TO VERIFY LOAD
++ DENOTES NEW BREAKER REQUIRED

DESCRIPTION	BKR	CCT	S/N	CCT	BKR	DESCRIPTION
LIGHTS EASY	15A	1		2	15A	RECPT 307
RELAY TRAM FORMER	15A	3		4	15A	RM 309
HALL LIGHTS WEST	15A	5		6	15A*	EMG LIGHTS
RM 310 PLUGS	15A	7		8	15A	LIGHT GRLS/BOYS W/R+LTG CNTL
RM 310 LIGHTS	15A	9		10	15A+	UNKNOWN
RM 310 COMPUTER	15A	11		12	15A	BOYS HAND DRYER
LIGHTS RM 334	15A	13		14	15A	LIGHTS RM 332
HANDICAP GFCI RECP+ BOYS W/R GFCI RECP	15A	15		16	15A	SPARE (OLD H/C HANDRYER)
RECPT IN CORR	15A	17		18	15A	RM 309
LIGHTS	15A	19		20	20A++	RM 309 & RM 305
LIGHTS	15A	21		22	15A	RM 309 TR REC
LIGHTS	15A	23		24	15A	RM 309
RM 309	15A	25		26	15A	HANDICAP HAND DRYER+ BOTTLE FILTER
RM 305/309/BF-WR REC	15A	27		28	15A	RM 309
RM SENSORY	15A	29		30	15A	WASHROOM DOOR OPERATORS
OUTSIDE RECPT	15A	31		32	15A	SPARE
RECPT	15A	33		34	15A	DOOR HOLDER
COMPUTER PLUG BUSINESS OFFICE	15A	35		36	15A	RM 305 CIRC. PUMP
COUNTER PLUG RM 310	15A	37		38	15A	PUMP/BRADLEY
		39		40		
LAUNDRY 307 REC	20A++	41		42		

No.	Date	Description	By
A	24-06-28	Issued for Permit & Tender	LC

STAMPS:

LICENSED PROFESSIONAL ENGINEER
L CONFORTI
100178822
JUN 28/24
PROVINCE OF ONTARIO

ENGINEER:
CIMA+
T 905 697-4464
415 Baseline Road West, Bowmanville, ON L1C 5M2 CANADA

CLIENT:
DURHAM DISTRICT SCHOOL BOARD
BROCK HIGH SCHOOL
DURHAM REGIONAL ROAD 12
CANNINGTON, ON

PROJECT NAME:
CLASSROOM ALTERATIONS

SHEET TITLE:
PANEL SCHEDULES & DETAILS

DISCIPLINE:
ELECTRICAL

DRAFTER: YA	SCALE: NTS
DESIGNER: YA	DATE: 2024/06/07
APPROVER: LC	APPROVER: LC
PROJECT No: Z0013706	DRAWING No: E901
SHEET No: 5 of 5	