ONTARIO NORTHLAND

TRANSPORTATION COMMISSION

Request for Proposals No. RFP 2025 067

For

RRC Whitson Office Renovation

REPLY BY DATE: Wednesday, September 24, 2025 at 2:00:00 p.m.

Primary Contact:

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PART 1

REQUEST FOR PROPOSALS

SECTION 1 - INTRODUCTION 2

1.1 General

(1) Ontario Northland Transportation Commission ("ONTC") is issuing this Request for Proposals ("**RFP**") to obtain proposals from a vendor/service provider(s) for the provision of the goods and/or services described in the RFP Specifications (the "**Goods and/or Services**").

(2) In this RFP:

"Applicable Laws" means the statutes, regulations, orders, by-laws and other laws of Ontario, Quebec, Manitoba, Canada and any municipal government relevant to the RFP and the subject matter of the RFP;

"Addendum" means the written supplementary information provided to potential Respondents prior to the Submission Deadline, which information becomes part of the RFP Documents;

"Business Day" means any day except Saturday, Sunday or a statutory holiday;

"Final Agreement" means the agreement for the supply of the Goods and/or Services entered into by ONTC and the Successful Respondent;

"Material" means a document or information that must be included in the Proposal including without limitation the information requested in the RFP Data Sheet, and is essential to allow ONTC to evaluate a Proposal and that if not included will result in the disqualification of the Proposal;

"Non-compliant" means the Proposal or the Respondent does not meet a requirement of the RFP Documents;

"Proposal" means the response to the RFP submitted by a Respondent to ONTC;

"Respondent(s)" means the entity submitting a Proposal and includes prospective respondents, whether or not that entity submits a Proposal. If the context requires it, "Respondent(s)" includes any of the Respondent's respective shareholders, owners, officers, agents, consultants, partners, contractors, subcontractors, advisors, employees, or representatives;

"RFP Data Sheet" means the information and requirements contained in Schedule 2-A of Part 2;

"RFP Documents" means the documents listed in RFP Section 2.1 (1) and any additional documents issued through Addenda;

"Short-listed Respondent(s)" means the Respondent(s) selected to proceed to the next step in the evaluation process pursuant to section 6.2 (2) of the RFP;

"Substantially Compliant(s)" means Proposal does not meet the requirements of the RFP Documents; however, the Proposal includes all of the Material items, as identified in the RFP Data Sheet;

"Successful Respondent(s)" means the Respondent(s) selected by ONTC to enter into the Final Agreement.

(3) The process to select the Short-listed Respondents for the supply of the Goods and/or Services (the "**RFP Process**") will commence with the issuance of these RFP Documents and will terminate at the earlier of:

(a) when ONTC and the Successful Respondent(s) execute the Final Agreement; or

(b) upon the termination of the RFP Process in accordance with the terms and conditions of this RFP.

1.2 Ontario Northland Transportation Commission

ONTC is an agency of the Province of Ontario that provides reliable and efficient transportation services to northern and rural communities. For over 120 years, the company has provided integrated and impactful transportation services including rail freight, passenger rail, motor coach transportation, rail repair, and remanufacturing services.

ONTC's rail services are vital in maintaining a reliable supply chain in Northern Ontario by connecting freight customers to global economies. The forestry industry, mining operations, farming communities, and manufacturers count on ONTC's services to deliver large volumes across vast distances. The company's 675 miles of mainline track span throughout northeastern Ontario and northwestern Quebec.

ONTC motor coaches connect rural Ontario to major centres providing access to education, medical appointments, shopping, and seamless connections to other transportation providers. The Polar Bear Express passenger train connects Moosonee and Cochrane, Ontario, providing an all-season land link for Indigenous communities on the James Bay Coast.

Improving and repairing transportation equipment is also part of ONTC's service offering. ONTC's unique mechanical skillset attracts new business and secures skilled trades jobs in Northern Ontario by remanufacturing and repairing locomotives, passenger rail cars, freight cars, and more.

ONTC makes provincial dollars reach further by creating innovative solutions that help drive economic growth sustainably, responsibly, and with future generations in mind. Throughout the agency, modernization is underway with many exciting projects that will improve how we operate. ONTC employs over 1,000 people including Locomotive Engineers, Motor Coach Operators, skilled tradespeople, and business professionals.

Employees work together to improve and deliver services that provide value to the regions served.

SECTION 2 - THE RFP DOCUMENTS

2.1 Request for Proposals Documents

(1) The Request for Proposals documents consist of:

Part 1 - Request for Proposals

Part 2 - Requests for Proposals Summary of Requirements

(a) Schedule 2-A - RFP Data Sheet
(b) Schedule 2-B - Participation Registration Form

Part 3 - RFP Specifications

(a) Schedule 3-A-1 - Scope of Work
(b) Schedule 3-A-2 - Technical Specifications
(c) Schedule 3-A-3 - Issue for Tender Drawings
(d) Schedule 3-A-4 - Reference Reports
(e) Schedule 3-A-5 - Policies and Procedures

Part 4 - Form of Proposal

(a) Proposal Form 1 - Proposal Submission Form
(b) Proposal Form 1-A - Schedule of Prices
(c) Proposal Form 2 - Respondent's General Information
(d) Proposal Form 3 - Acknowledgment to Comply with Part 3 - Request for Proposals Specifications
(e) Proposal Form 4 - References
(f) Proposal Form 5 - Compliance with Contract Documents
(g) Proposal Form 6 - Respondent's Site Visit Registration Form
(h) Proposal Form 7 - Health, Safety and Environment
(i) Proposal Form 8 - Schedule and Proposed Approach
(j) Proposal Form 9 - List of Equipment
(k) Proposal Form 10 - List of Personnel and Resumes
(l) Proposal Form 11 - Contractor's Qualification Statement
(m) Proposal Form 12 - Schedule of Materials
(n) Proposal Form 13 - Schedule of Progress Payments
(o) Proposal Form 14 - Current Labour Agreements
(p) Proposal Form 15 - Claims

Part 5 - CCDC 2 - 2020 Supplementary Conditions

(2) The RFP Documents shall be read as a whole. The Schedules and Addenda, if any, constitute an integral part of this RFP and are incorporated by reference.

(3) Respondents shall verify the RFP Documents for completeness upon receipt and shall inform the Contact Person (identified in RFP Section 3.2(7)), immediately:

(a) should any documents be missing or incomplete; or

(b) upon finding any discrepancies or omissions.

(4) Complete sets of the RFP Documents are available at our company website at www.ontarionorthland.ca and MERX**.**

(5) The RFP Documents are made available only for the purpose of Respondents submitting Proposals. Availability and/or use of the RFP Documents do not confer a license or grant for any other purpose.

2.2 Priority of Documents

(1) If there are any inconsistencies between the terms, conditions or other provisions of the RFP Documents, the order of priority of RFP Documents, from highest to lowest, shall be:

(a) Any Addenda modifying the RFP Documents issued during the RFP Process;
(b) The RFP Data Sheet;
(c) Part 1 - Request for Proposals;
(d) Part 3 - Specifications; and
(e) Any other RFP Documents.

2.3 Distribution of Documents - Electronic Distribution

(1) ONTC will use an online electronic distribution system to distribute all RFP Documents.

(2) Respondents are solely responsible for making appropriate arrangements to receive and access the RFP Documents through that electronic distribution system.

2.4 Information Provided by ONTC

(1) Respondents are solely responsible for conducting their own independent research, due diligence, and any other work or investigations and seeking any other independent advice necessary for the preparation of their Proposal, negotiation or finalization of the Final Agreement and the subsequent delivery of all the Goods and/or Services to be provided by the Successful Respondent(s). Nothing in the RFP Documents is intended to relieve the Respondent(s) from forming their own opinions and conclusions with respect to the matters addressed in this RFP.

(2) No guarantee, representation or warranty, express or implied, is made and no responsibility of any kind is accepted by ONTC or its representatives for the completeness or accuracy of any information presented in the RFP Documents, if any, during the RFP Process or during the term of the Final Agreement. By submitting a Proposal, Respondents agree that ONTC and its representatives shall not be liable to any person or entity as a result of the use of any information contained in the RFP Documents or otherwise provided by ONTC or its representatives during the RFP Process or during the term of the Final Agreement.

SECTION 3 - THE RFP PROCESS

3.1 RFP Process

(1) The deadline for the submission of Proposals (the "**Submission Deadline**") is set out in the RFP Data Sheet.

(2) ONTC may amend, extend or shorten any of the dates and/or times prescribed in this RFP, at any time, at its sole discretion, including without limitation the Submission Deadline. If ONTC extends the Submission Deadline, all requirements applicable to Respondents will thereafter be subject to the new, extended Submission Deadline.

3.2 Questions and Communications Related to the RFP Documents

(1) Respondents shall submit all questions, requests for clarifications, and other communications regarding the RFP Documents and the RFP Process by email to the Contact Person set out in section 3.2(7) no later than four (4) full Business Days before the Submission Deadline.

(2) ONTC will endeavor to provide the Respondents with written responses to questions that are submitted in accordance with this RFP Section 3.2, by no later than two (2) full Business Days before the Submission Deadline. Responses to any questions or requests for clarifications, will be collected and distributed with answers to be delivered to all Respondents who have submitted the Participation Registration Form by way of emailed addenda from ONTC in accordance with the timeline set out in this Section 3.2(2).

(3) The responses to questions form part of the RFP Documents.

(4) ONTC may, in its sole discretion:

(a) answer questions that ONTC deems to be similar from various Respondents only once;

(b) edit any question(s) for the purpose of clarity;

(c) respond to questions submitted after the deadline for submission of questions if ONTC believes that such responses would be of assistance to the Respondents generally; and

(d) exclude any questions that, in the sole opinion of ONTC, are ambiguous, incomprehensible, or are deemed by ONTC to be immaterial to the RFP Process, the RFP Documents, or the Goods and/or Services.

(5) If Respondents find discrepancies, omissions, errors, departures from laws, by-laws, codes or good practice, or information considered to be ambiguous or conflicting, they shall bring them to the attention of the Contact Person in writing, and not less than four (4) full Business Days before the Submission Deadline, so that ONTC may, if ONTC deems it necessary, issue instructions, clarifications or amendments by addendum to all Respondents prior to the Submission Deadline. ONTC will endeavor to, but is not required to, issue such Addenda at least two (2) full Business Days prior to the Submission Deadline. It is the Respondents' responsibility to seek clarification from ONTC of any matter it considers to be unclear in the RFP Documents or the description of the Goods and/or Services and the Respondent(s) may seek clarification in accordance with this Section 3.2. Neither ONTC nor the Government of Ontario shall be responsible for any misunderstanding by a Respondent of the RFP Documents, the RFP Process or the Goods and/or Services.

(6) If ONTC gives oral answers to questions at any meeting (Section 3.4), these answers will not be considered final, and may not be relied upon by any of the Respondents, unless and until such answers are provided by way of an addendum in accordance with this Section 3.2.

(7) The Contact Person designated by ONTC for this RFP is ***Nicole Laplante, Procurement Contracts Specialist, 555 Oak Street East, North Bay, Ontario P1B 8L3 (705) 472-4500 ext. 588, nicole.laplante@ontarionorthland.ca*** (the "Contact Person"). The above Contact Person is the sole contact for this RFP. A Respondent may be disqualified where contact is made with any person other than the Contact Person.

(8) ONTC will not be responsible for statements, instructions, clarifications, notices or amendments communicated orally by ONTC to one or more of the Respondents. Statements, instructions, clarifications, notices or amendments by ONTC, which affect the RFP Documents, may only be made by addendum.

3.3 Addenda/Changes to the RFP Documents

(1) ONTC may, in its sole discretion, amend, supplement, or change the RFP Documents prior to the Submission Deadline. ONTC shall issue amendments, supplements, or changes to the RFP Documents by Addendum only. No other statement or response(s) to questions, whether oral or written, made by ONTC or any ONTC advisors, employees or representatives, including, for clarity, the Contact Person, or any other person, shall

8amend, supplement or change the RFP Documents. Addenda will be distributed in the same manner as the RFP and shall become part of the RFP Documents.

(2) Respondents are solely responsible for ensuring that they have received all Addenda issued by ONTC. Respondents may, in writing by email to the Contact Person, seek confirmation of the number of Addenda, issued under this RFP.

3.4 Respondents' Meeting

(1) To assist Respondents in understanding the RFP Documents, and the RFP Process, ONTC may conduct an information meeting (the "**Respondents' Meeting**") for all Respondents. Whether or not ONTC will conduct a Respondents' Meeting is set out in the RFP Data Sheet. If ONTC is conducting a Respondents' Meeting, the meeting will be held on the date and at the time and location set out in the RFP Data Sheet.

(2) Attendance by Respondents at a Respondents' Meeting may not be mandatory but, if one is held, Respondents are strongly encouraged to attend. Whether or not the Respondents' Meeting is mandatory will be identified on the RFP Data Sheet. When a Respondents' meeting is mandatory, all attending persons or entities will be required to sign the "Site Meeting Log" to confirm their attendance and provide a valid email address for the purpose of receiving information.

(3) If ONTC gives oral answers to questions at the Respondents' Meeting, these answers will not be considered final and may not be relied upon by any of the Respondents, unless and until such answers are provided by way of an Addendum in accordance with Section 3.2.

(4) If pre-registration for the Respondents' Meeting is necessary, the deadline for registration will be set out in the RFP Data Sheet and details regarding the registration process will be set out in the RFP Data Sheet.

3.5 Prohibited Contacts

(1) Respondents and their respective advisors, employees and representatives are prohibited from engaging in any form of political or other lobbying, of any kind whatsoever, to influence the outcome of the RFP Process.

(2) Without limiting the generality of Section 3.5(1) above, neither Respondents nor any of their respective advisors, employees or representatives shall contact or attempt to contact, either directly or indirectly, at any time during the RFP Process, any of the following persons or organizations on matters related to the RFP Process, the RFP Documents, or their Proposals:

(a) any member of the Evaluation Team (as defined in Section 6.1), except the Contact Person;

(b) any advisor to ONTC or the Evaluation Team, except the Contact Person; or

(c) any directors, officers, employees, agents, representatives or consultants of:

(i) ONTC, except the Contact Person;
(ii) Ontario Ministry of Transportation;
(iii) The Premier of Ontario's office or the Ontario Cabinet office;
(iv) A Member of Provincial Parliament (including the Premier); or
(v) Any other person or entity listed in the RFP Data Sheet.

(3) If Respondents or any of their respective shareholders, owners, officers, agents, consultants, partners, contractors, subcontractors, advisors, employees, representatives, or other third parties acting on behalf or with the knowledge of the Respondent(s); in the opinion of ONTC, contravenes RFP Section 3.5(1) or 3.5(2), ONTC may, but is not obliged to, in its sole discretion:

(a) take any action in accordance with RFP Section 7.2; or

(b) impose conditions on the Respondent's continued participation in the RFP Process that ONTC considers, in its sole discretion, to be appropriate.

3.6 Media Releases, Public Disclosures, Public Announcements and Copyright

(1) Respondents shall not, and shall ensure that their shareholders, owners, officers, agents, consultants, partners, contractors, subcontractors, advisors, employees, representatives, or other third parties acting on behalf or with the knowledge of the Respondent(s) do not, issue or disseminate any media release, social media or Internet post, public announcement or public disclosure (whether for publication in the press, on the radio, television, internet or any other medium) that relates to the RFP Process, the RFP Documents or the Goods and/or Services or any matters related thereto, without the prior written consent of ONTC.

(2) Neither the Respondents or any of their respective shareholders, owners, officers, agents, consultants, partners, contractors, subcontractors, advisors, employees, representatives, or other third parties acting on behalf or with the knowledge of the Respondent(s) shall make any public comment, respond to questions in a public forum, or carry out any activities to either criticize another Respondent or Proposal or to publicly promote or advertise their own qualifications, interest in or participation in the RFP Process without ONTC's prior written consent, which consent may be withheld, conditioned or delayed in ONTC's sole discretion. Respondents, and their respective advisors, employees and representatives are permitted to state publicly that they are participating in the RFP Process but shall not publicly identify other Respondents without the prior written consent of ONTC.

(3) Respondents shall not use the name of ONTC or any of ONTC's logos, designs, colours or registered trademarks and names used, owned or registered by ONTC, during the RFP 10Process, if selected as the Successful Respondent(s), or at any time prior to, during, or

following the supply of the Goods and/or Services, except with the prior written consent of ONTC.

3.7 Confidentiality and Disclosure Issues - Respondent Information

(1) Respondents are advised that ONTC may be required to disclose the RFP Documents, any other documentation related to the RFP Process and a part or parts of any Proposal pursuant to the *Freedom of Information and Protection of Privacy Act* (Ontario) ("FIPPA"). Respondents are also advised that FIPPA does provide protection for confidential and proprietary business information. Respondents are strongly advised to consult their own legal advisors as to the appropriate way in which confidential or proprietary business information should be marked as such in their Proposals. Subject to the provisions of FIPPA, ONTC will use reasonable commercial efforts to safeguard the confidentiality of any information identified by the Respondent(s) as confidential but shall not be liable in any way whatsoever to any Respondent(s) if such information is disclosed based on an order or decision of the Information and Privacy Commissioner or otherwise as required under the Applicable Laws.

(2) The Respondents agree that ONTC may disclose Proposals, and all information submitted in or related to the Proposals, to the Government of Ontario.

(3) ONTC may provide the Proposals to any person involved in the review and/or evaluation of the Proposals on behalf of ONTC and ONTC may:

(a) make copies of the Proposal; and/or

(b) retain the Proposal.

(4) ONTC may disclose any information with respect to the Respondents, the Proposals and the RFP Process as required by the Applicable Laws.

(5) The Respondents shall not require ONTC or any of its representatives to sign a non-disclosure agreement in respect of any step taken or information provided as part of this RFP Process, provided that if the nature of the subject matter of the RFP is such that, in the opinion of ONTC, it would be appropriate to enter into a non-disclosure agreement with a Respondent or Respondents, ONTC and/or the Respondent(s) shall enter into such agreement in a form and with the content satisfactory to ONTC.

3.8 Confidential Information

(1) In this RFP, "**RFP Information**" shall mean all material, data, information or any item in any form, whether oral or written, including in electronic or hard-copy format, supplied by, obtained from or otherwise procured in any way, whether before or after the RFP Process, from ONTC or any Ministry or Agency of the Government of Ontario, in connection with the RFP Documents or the Goods and/or Services excluding any item which:

(a) is or becomes generally available to the public other than as a result of a disclosure resulting from a breach of this RFP Section 3.8;

(b) becomes available to the Respondent(s) on a non-confidential basis from a source other than ONTC, so long as that source is not bound by a non-disclosure agreement with respect to the information or otherwise prohibited from transmitting the information to the Respondent(s) by a contractual, legal or fiduciary obligation; or

(c) The Respondents are able to demonstrate was known to them on a non-confidential basis before it was disclosed to the Respondent(s) by ONTC.

(2) RFP Information:

(a) shall remain the sole property of ONTC or the Government of Ontario, as applicable, and the Respondent(s) shall maintain the confidentiality of such information except as required by law;

(b) shall not be used by the Respondent(s) for any other purpose other than submitting a Proposal or performing obligations under any subsequent agreement with ONTC relating to the Goods and/or Services;

(c) shall not be disclosed by the Respondent(s) to any person who is not involved in the Respondents' preparation of its Proposal or in the performance of any subsequent agreement relating to ONTC, or the Government of Ontario, as applicable, without prior written authorization from ONTC;

(d) shall not be used in any way detrimental to ONTC or the Government of Ontario; and

(e) if requested by ONTC, shall be returned to the Contact Person or destroyed by the Respondent no later than ten (10) calendar days after such request is received in writing by the Respondent(s).

(3) Respondents shall be responsible for any breach of the provisions of this RFP Section 3.8 by any person to whom it discloses the RFP Information.

(4) Respondents or Short-listed Respondents acknowledge and agree that a breach of the provisions of this RFP Section 3.8 would cause ONTC, the Government of Ontario and/or their related entities to suffer loss which could not be adequately compensated by damages, and that ONTC, the Government of Ontario and/or any related entity may, in addition to any other remedy or relief, enforce any of the provisions of this RFP Section 3.8 upon application to a court of competent jurisdiction without proof of actual damage to ONTC, the Government of Ontario or any related entity.

(5) Notwithstanding RFP Section 9.3, the provisions of this RFP Section 3.8 shall be binding and shall survive any cancellation or termination of this RFP and the conclusion of the RFP Process.

(6) ONTC may, in its sole discretion, require that Respondents execute a legally binding non-disclosure agreement in a form and substance satisfactory to ONTC prior to receiving the RFP Information.

3.9 Governing Laws and Attornment

(1) This RFP Process and the Final Agreement entered into pursuant to this RFP Process shall be governed and construed in accordance with the laws of Ontario, the laws of Quebec, the laws of Manitoba, if relevant to the subject matter of this RFP, and the applicable laws of Canada, excluding any conflict of laws principles.

(2) Respondents agree that the courts of the Province of Ontario shall have exclusive jurisdiction to entertain any action or proceeding based on, relating to or arising from this RFP process.

3.10 Licenses and Permits

(1) If Respondents are required by the Applicable Laws to hold or obtain a license, permit, consent or authorization to carry on an activity contemplated in their Proposal, neither acceptance of the Proposal nor execution of the Final Agreement shall be considered to be approval by ONTC of carrying on such activity without the requisite license, permit, consent or authorization.

3.11 Respondents' Costs

(1) The Respondents shall bear all costs and expenses incurred by the Respondent(s) relating to any aspect of their participation in this RFP Process, including, without limitation, all costs and expenses related to the Respondents' involvement in:

(a) the preparation, presentation and submission of its Proposal;

(b) due diligence and information gathering processes;

(c) attendance at any Respondents' Meeting(s) or presentations;

(d) preparation of responses to questions or requests for clarification from ONTC;

(e) preparation of the Respondent's own questions during the clarification process;

(f) preparation of prototypes, proof of concept and/or demonstrations; and

(g) any discussions or negotiations with ONTC regarding the Final Agreement.

(2) Without limiting the generality of Section 9.1(2) of this RFP, in no event shall ONTC or the Government of Ontario be liable to pay any costs or expenses or to reimburse or compensate a Respondent under any circumstances for the costs or expenses set out in Section 3.11(1), regardless of the conduct or outcome of the RFP Process.

3.12 Delay and Costs of Delay

(1) By submitting a Proposal, the Respondents waive all claims against ONTC and the Government of Ontario including any claims arising from any error or omission in any part of the RFP Documents or RFP Information or any delay, or costs associated with delays, in the RFP Process.

3.13 Clarification and Verification of Respondent's Proposal

(1) Following submission of a Proposal, ONTC may:

(a) request a Respondent to clarify or verify the contents of its Proposal, including by submitting supplementary documents; and/or

(b) request a Respondent to confirm an ONTC interpretation of the Respondent's Proposal.

(2) Any information received by ONTC from a Respondent pursuant to a request for clarification or verification from ONTC as part of the RFP Process may, in ONTC's discretion, be considered as an integral part of the Proposal even if such information should have been submitted as part of the Respondent's Proposal and may, in ONTC's discretion, be considered in the evaluation of the Respondent's Proposal.

(3) ONTC may, in its sole discretion, verify or clarify any statement or claim contained in any Proposal or made subsequently in any interview, presentation, or discussion. That verification or clarification may be made by whatever means that ONTC deems appropriate which may include contacting the persons identified in the contact information provided by the Respondent and contacting persons or entities other than those identified by any Respondent.

(4) By submitting a Proposal, the Respondents are deemed to consent to ONTC verifying or clarifying any information and requesting additional information from third parties regarding the Respondents and their directors, officers, shareholders or owners and any other person associated with the Respondents as ONTC may determine is appropriate.

(5) ONTC is not obliged to seek clarification or verification of any aspect of a Proposal, or any statement or claim made by Respondents.

(6) Requests for clarifications shall not be construed as acceptance by ONTC of a Proposal.

3.14 Two-Envelope Process

(1) ONTC may elect to complete a Two-Envelope Process. Whether Respondents will be required to submit their Proposals using a Two-Envelope Process will be identified on the RFP Data Sheet.

(2) If ONTC elects to complete a Two-Envelope Process, the Proposal shall be broken down into two components; a technical submission and a financial submission.

(3) If ONTC elects to complete a Two-Envelope Process, ONTC will identify a minimum score that must be attained on the technical submission on the RFP Data Sheet. Proposals that do not meet the minimum score for the technical submission following evaluation of the technical submission, will not proceed further in the evaluation process, provided that ONTC may, in its sole discretion, based on the overall scores of all the technical submissions, revise the minimum score required to proceed further in the evaluation process. Financial submissions will only be opened and evaluated for the Proposals that meet the minimum score for the technical submission.

SECTION 4 - PROPOSAL CONTENT AND FORMAT

4.1 Format and Content of Proposal

(1) Respondents shall submit their Proposal in one envelope or, if submitting electronically, one electronic folder. Where required by the RFP Data Sheet to follow the two-envelope process, Respondents shall submit the technical submission and the financial submission in two separate envelopes or, if submitting electronically, two separate electronic folders.

(2) Unless otherwise specified in the RFP Data Sheet, Respondents shall not submit pre-printed literature with their Proposals. Any unsolicited pre-printed literature submitted as part of a Proposal will not be reviewed by the Evaluation Team.

(3) Each Respondent will:

(a) in a clear, concise and legible manner, complete and submit all documentation and information required by Part 2, Part 3, and Part 4 to the RFP;

(b) for a hard copy submission, complete any handwritten portions of the proposal forms in ink;

(c) provide all information requested and ensure that an authorized person or persons sign all forms where indicated. Failure to provide all requested information on the proposal forms and failure to fill in all blank spaces may result in a Proposal being determined to be non-compliant; and

(d) use only the proposal forms issued as part of the RFP documents unless otherwise indicated.

(4) Information provided by Respondents on hard copy proposal forms may be amended prior to the Proposal submission, provided the amendments are initialed by an authorized representative of the Respondent. Un-initialed pre-submission amendments may result in the Proposal being declared non-compliant.

(5) Proposals that are not originals (if hard copy), are unsigned, improperly signed, incomplete, conditional or illegible, may be declared non-compliant.

(6) The Harmonized Sales Tax (HST) shall not be included in the price. Any taxes or increases to taxes announced prior to the date of the issuance of the RFP Documents and scheduled to come into effect subsequent to it shall be taken into consideration at time of invoicing.

(7) **Price**

(a) Price shall be an all-inclusive lump sum price **(excluding HST)**, unless otherwise indicated in the RFP Documents; and,

(b) Where the RFP requires the Respondent to provide a breakdown of the price in Proposal Form 1-A, the price as stated in Proposal Form 1 shall govern in the case of conflict or ambiguity between the price and the sum of the breakdown of the price.

(8) **Listing of Subcontractors**

Respondents shall complete the “Subcontractors” section of Proposal Form 2 - Respondent’s General Information, naming the Subcontractors which the Respondent will employ to perform an item of the work called for by the RFP Documents. Failure of the Respondent to list Subcontractors where required, may result in the Proposal being declared non-compliant.

4.2 Proposal Submission Form

(1) Respondents will complete and submit the forms included in Part 4 - Form of Proposal. Failure of the Respondent(s) to complete and submit one or more of the forms included in Part 4 - Form of Proposal, may result in the Proposal being declared non-compliant.

(2) Respondents shall execute the Proposal Submission Form as follows:

(a) in the case of a sole proprietorship, the sole proprietor will sign the Proposal Submission Form and have the signature witnessed;

(b) in the case of a corporation, an authorized signing officer will sign the Proposal Submission Form; or

(c) in the case of a partnership, a partner or partners authorized to bind the partnership will sign the Proposal Submission Form and have their signatures witnessed.

4.3 Bid Performance Security

(1) The Respondent shall provide with its Proposal, Bid Performance Security in one of the following forms:

(a) Irrevocable stand-by Letter of Credit ("**LOC**"); or

(b) Bid bond

(the "**Bid Performance Security**").

The Bid Performance Security shall be:

(a) in the Respondent's own name;

(b) if a bid bond, issued by a surety licensed to conduct surety and insurance business in Ontario;

(c) in a form satisfactory to ONTC;

(d) for a term of at least ninety (90) calendar days after the Submission Deadline; and

(e) in the amount of ten percent of the total bid price excluding HST.

The Bid Performance Security is for the benefit of ONTC and will be retained by ONTC to compensate ONTC for the damages it will suffer if the Successful Respondent fails to provide the Contract Securities (defined in Section 4.3(2), below) and evidence of insurance and other documents required by this RFP or by the Final Agreement, or fails to execute the Final Agreement within the time required by the RFP Documents.

The Bid Performance Security of the Successful Respondent will be returned after the Successful Respondent delivers to ONTC compliant Contract Securities and evidence of insurance and other documents required by this RFP or by the Final Agreement and the Successful Respondent has executed the Final Agreement, all within the time required by the RFP Documents.

The Bid Performance Security of all other Respondents shall be returned to the Respondents upon the occurrence of the earlier of:

(a) execution by both parties of the Final Agreement between ONTC and the Successful Respondent;

(b) the expiry of the 90-day period following the Submission Deadline;

(c) the cancelation of the RFP process without an award of the contract; or

(d) the disqualification of all Proposals.

(2) Agreement to Bond

The Respondent shall provide with its Proposal an agreement to bond issued by a surety company undertaking to provide a fifty percent (50%) Performance Bond and a fifty percent (50%) Labour and Material Bond (the "**Contract Securities**") in the form prescribed by the *Construction Act*, both to be provided to ONTC by the Successful Respondent following award of the contract.

(3) Proposals not accompanied by the required Bid Performance Security and the required agreement to bond will be declared non-compliant.

The Respondent shall include the actual cost of all bonds, with no mark-up, in the Proposal price.

4.4 References and Past Performance Issues

(1) If specified in the RFP Data Sheet, Respondents shall provide reference information. Unless otherwise set out in the RFP Data Sheet, all references shall be, where possible, with respect to similar goods and/or services, as applicable, during the five (5) years immediately prior to the Submission Deadline. Unless otherwise set out in the RFP Data Sheet, the Respondents shall provide a minimum of three (3) references.

(2) ONTC may, in its sole discretion, confirm the Respondent's experience and ability to provide the Goods and/or Services by contacting the Respondent's references. However, ONTC is under no obligation to contact references submitted by any Respondent. References and information received from references, if contacted, will be taken into account in the evaluation process as identified in the RFP Data Sheet.

(3) ONTC may take into account in the evaluation process reliable information received from the Government of Ontario or its Agencies regarding past performance of a Respondent, provided information evidencing past poor performance by a Respondent is provided to the Respondent (subject to any restrictions or disclosure imposed by applicable law) and the Respondent is afforded an opportunity to respond to the information.

(4) If ONTC receives information from referees of a Respondent's past poor performance, ONTC shall advise the Respondent (subject to any restrictions on disclosure imposed by applicable law) and afford the Respondent an opportunity to respond to the information prior to considering this information as part of the evaluation process.

4.5 Conflict of Interest

(1) For the purposes of this Section 4.5, the term "**Conflict of Interest**" includes, but is not limited to, any situation or circumstance where the interests, conduct, other commitments or relationships of a Respondent, a Respondent's family member or an officer, director or employee of the Respondent could or could be perceived to, directly or indirectly, compromise, impair or be in conflict with the integrity of the RFP Process, the subject matter of the RFP or ONTC.

(2) Respondents shall promptly disclose any potential, perceived or actual Conflict of Interest of the Respondent(s) to the Contact Person in writing. If ONTC discovers a Respondent's failure to disclose a Conflict of Interest, ONTC may, in its sole and absolute discretion disqualify the Respondent(s) or terminate the Final Agreement if such Respondent(s) is the Successful Respondent(s).

(3) ONTC may, in its sole discretion, and in addition to any other remedy available at law or in equity:

(a) waive any Conflict of Interest;

(b) impose conditions on a Respondent that require the management, mitigation and/or minimization of the Conflict of Interest; or

(c) disqualify the Respondent from the RFP Process if, in the sole and absolute opinion of ONTC, the Conflict of Interest cannot be managed, mitigated or minimized.

SECTION 5 - PROPOSAL SUBMISSION, WITHDRAWAL, MODIFICATION

5.1 Submission of Proposals and Late Proposals

(1) Respondents shall submit their proposal in the format prescribed in the RFP Data Sheet. ONTC will not accept any proposal submission that is not submitted in the format prescribed in the RFP Data Sheet.

ONTC may elect to accept Electronic Bid Submissions, Physical Bid Submissions or a combination of both.

(a) If ONTC elects to use Electronic Bid Submissions, submissions shall be submitted on, and in accordance with, forms supplied by ONTC. **All responses are to be submitted to ONTC through the use of MERX**

Electronic Bid Submission (EBS). Respondents shall be solely responsible for the delivery of their Proposals in the manner and time prescribed in the RFP Data Sheet.

Questions concerning submitting through MERX should be addressed to:

- MERX Customer Support
- Phone 1-800-964-6379
- Email merx@merx.com

Any Proposal from a Respondent whose name does not appear on the official MERX document request list (i.e., who has not downloaded the documents themselves) will be declared invalid, and the Proposal will not be considered.

MERX EBS does not allow submissions to be uploaded after the bid submission deadline; therefore, the Respondent should ensure they allow plenty of time to upload the documents.

Where required by the RFP Data Sheet to use a two-envelope process, Respondents shall include two separate and clearly identifiable attachments: 1) Technical and, 2) Financial. The file names for the technical and financial attachments should be sufficiently distinguishable such that ONTC does not need to open the attachments to differentiate between them.

(b) If ONTC elects to use Physical Bid Submissions, Respondents shall submit one original and the number of copies of its Proposal (in hard copy) specified in the RFP Data Sheet and the number of electronic copies of its Proposal (on a properly labelled CD or USB key in PDF format) specified in the RFP Data Sheet, at the correct location for submission and on or before the Submission Deadline. If there is any difference whatsoever between the electronic copy of the Proposal and the original hard copy, the original hard copy of the Proposal, as submitted, will govern. The electronic copy of the Proposal is solely for the convenience of ONTC.

Respondents shall submit their Proposals to the attention of the Manager, Public Procurement by prepaid courier or personal delivery at the following address:

Ashley Commanda
Manager, Public Procurement
Ontario Northland Transportation Commission
555 Oak Street East
North Bay, Ontario P1B 8E3

Respondents shall place their Proposal Submission in a sealed envelope or package with the Respondent's full legal name and return address, the RFP Number, the Submission Deadline and the label "Proposal Submission" clearly displayed on the outside of the envelope.

Where required by the RFP Data Sheet to use a two-envelope process, Respondents shall have one sealed envelope as prescribed above that contains two individual sealed envelopes inside that are clearly marked "Technical Submission" and "Financial Submission".

(c) For the convenience of the Respondents, and only when identified in the RFP Data Sheet, ONTC may allow either an Electronic Bid Submission through MERX or a Physical Bid Submission. The Respondents shall only use one method and follow the same procedure prescribed above.

(2) Proposals must be received before the time noted in the RFP Data Sheet.

(3) Proposals will be date and time stamped at the place receiving the Proposals. Late Proposals will be returned unopened.

(4) Proposals which are submitted by facsimile transmission, email, or by electronic means other than MERX will NOT be considered.

(5) Respondents are solely responsible for the method and timing of delivery of their Proposals.

(6) ONTC reserves the right to make copies of the Respondent's Proposals as it may be required for the purpose of conducting a full evaluation of the Proposal submitted.

(7) The Respondents should identify and mark any trade secret or proprietary intellectual property in their Proposal.

5.2 Late Proposals

(1) ONTC will reject Proposals that are received after the Submission Deadline.

5.3 Withdrawal of Proposals

(1) When submitting a Physical Bid Submission, a Respondent may withdraw its Proposal at any time before the Submission Deadline by notifying the Contact Person in writing. ONTC shall return, unopened, a Proposal that has been withdrawn.

(2) When submitting an Electronic Bid Submission, MERX will allow withdrawal of Proposals up to the Submission Deadline.

5.4 Amendment of Proposals

(1) When submitting a Physical Bid Submission, Respondents may amend their Proposals after submission but only if the original Proposal is withdrawn and the amended Proposal is submitted before the Submission Deadline.

(2) Electronic Bid Submissions through MERX will allow amendments up to the closing date and time; however, **Respondents are responsible for ensuring they allow sufficient time to upload the amended documents**.

(3) If more than one Proposal is received from the same Respondent before the Submission Deadline, only the last Proposal received before the Submission Deadline will be considered.

5.5 Proposal Irrevocability

(1) Subject to the Respondent's right to withdraw or amend the Proposal before the Submission Deadline, the Respondent's Proposal is irrevocable and shall remain in effect and open for acceptance for ninety (90) days after the Submission Deadline.

5.6 One Proposal per Person or Entity

(1) Except as set out in the RFP Data Sheet or with ONTC's approval:

(a) a person or entity shall submit or participate in only one Proposal either individually or as a Respondent team member; and

(b) a person or entity shall not be a subcontractor of a Respondent and also submit a Proposal individually or as a Respondent team member in the same RFP Process.

(2) If a person or entity submits or participates in more than one Proposal in contravention of RFP Section 5.6(1), ONTC may, in its sole discretion, disqualify any or all of the Proposals submitted by that person or entity or in which that person or entity is a participant.

SECTION 6 - PROPOSAL EVALUATION

6.1 Evaluation Team

(1) ONTC will establish an evaluation team for the purpose of evaluating Proposals (the "**Evaluation Team**").

(2) The Evaluation Team may, in its sole discretion, delegate certain administrative functions related to the evaluation of Proposals to a separate team of individuals who are not members of the Evaluation Team, who will be supervised by the Evaluation Team. Without limiting the generality of the foregoing, but for greater particularity, the Evaluation Team may seek the advice and assistance of third-party consultants and the Government of Ontario. Each Respondent acknowledges that the RFP documents may have been prepared with the assistance of a third-party consultant and that the consultant may participate in the evaluation of the Proposals.

6.2 Evaluation of Proposals

(1) The Respondents' Proposals will be reviewed and evaluated by the Evaluation Team on the basis of the evaluation criteria set out in the RFP Data Sheet (the "**Evaluation Criteria**").

(2) After selection of the Short-listed Respondent(s), ONTC may, in its sole discretion, negotiate changes, amendments or modifications to the Short-listed Respondent's Proposal or the Final Agreement.

(3) If ONTC is of the opinion that any of the following apply, then ONTC may, in ONTC's sole discretion, decline to select that Respondent to be a Short-listed Respondent:

(a) a Respondent has submitted a price that is clearly insufficient to perform the supply of Goods and/or Services;

(b) a Respondent has previously provided poor performance to ONTC or a subsidiary of ONTC;

(c) a Respondent is disqualified from participating in the RFP Process per RFP Section 7.2 (1)(i);

(d) ONTC cannot, to ONTC's satisfaction, prior to the conclusion of the RFP Process, verify independently or through a third party or parties any and/or all information, statements, representations and/or warranties contained in the Proposal;

(e) a Respondent or any subcontractor of the Respondent is not financially sound, or ONTC is unable to obtain from the Respondent or third-party sources reasonable assurances of the financial position of the Respondent or any of its subcontractors;

(f) the overall cost to ONTC would be significantly increased with that Respondent;

(g) the Respondent failed to meet the mandatory requirements specified in the RFP Data Sheet; or

(h) the Respondent failed to attain the minimum score required for the Technical Submission, where the RFP Data Sheet called for a two-envelope process.

6.3 Short-Listing

(1) The Evaluation Team will establish the list of Short-listed Respondents based on the Evaluation Criteria.

(2) The number of Respondents short-listed is in the sole discretion of ONTC.

6.4 Interviews, Site Visits, Demonstrations and Presentations

(1) ONTC may, in its sole discretion, conduct interviews, demonstrations, site visits or presentations as part of the evaluation process if set out in the RFP Data Sheet.

(2) The evaluation of any interviews, demonstrations, site visits or presentations will be conducted in accordance with the process set out in the RFP Data Sheet.

(3) ONTC may conduct interviews, demonstrations, site visits or presentations with some or all Respondents, or may restrict participation to only the Short-listed Respondent(s).

SECTION 7 - GENERAL EVALUATION AND DISQUALIFICATION PROVISIONS

7.1 ONTC's Discretion

(1) ONTC may determine, in its sole discretion:

(a) the membership of the Evaluation Team;

(b) if a Proposal is compliant with the RFP Documents;

(c) if a failure to comply is material;

(d) if a Proposal or a Respondent is disqualified;

(e) the evaluation results and ranking for each Respondent; and

(f) which Respondent, if any, and how many Respondents, based on the evaluation process, will be Short-listed Respondents.

7.2 Disqualification

(1) ONTC may, in its sole discretion, disqualify a Respondent or a Respondent's Proposal or cancel its decision to identify a Respondent as a Short-listed Respondent or a Successful Respondent, at any time prior to the execution of the Final Agreement by ONTC, if:

(a) The Respondent fails to cooperate in any attempt by ONTC to clarify or verify any information provided by the Respondent in its Proposal;

(b) The Respondent contravenes RFP Section 3.5, RFP Section 3.6 or RFP Section 5.6(2);

(c) The Respondent fails to comply with the Applicable Laws;

(d) The Proposal contains false or misleading information, or the Respondent provides false or misleading information in any part of the RFP Process;

(e) The Proposal, in the sole discretion of ONTC, reveals a Conflict of Interest that cannot be managed, mitigated or minimized;

(f) There is evidence that the Respondent colluded with one or more other Respondents in the preparation or submission of Proposals;

(g) The Respondent has previously breached or been in default of compliance with any term of any agreement with ONTC and such breach or default has not been waived by ONTC or the Respondent has not cured the default;

(h) The Respondent has been convicted of an offence in connection with any services rendered by the Respondent to ONTC, or to any Ministry, Agency, Board or Commission of the Government of Ontario or the Government of Canada;

(i) The Respondent, at the time of issuance of this RFP or any time during the RFP Process, has an outstanding claim or is engaged in an ongoing legal dispute with ONTC, other than an adjudication under the Construction Act;

(j) The Proposal is not Substantially Compliant;

(k) The Respondent has failed to notify ONTC of, or ONTC has not approved, a post-submission change in the control of the Respondent or in the circumstances of the Respondent that may materially negatively impact the Respondent's ability to perform its obligations if selected as the Successful Respondent; or

(l) The Respondent has received a Vendor Performance Evaluation as part of ONTC's Vendor Performance Policy, and received a total rating on the Final Performance Form that disqualifies the Respondent from participating in the RFP Process.

(2) Notwithstanding Section 7.2 (1), ONTC shall retain the right to select as the Successful Respondent, any Respondent(s) which, in ONTC's sole and absolute discretion, has submitted a substantially compliant Proposal(s).

7.3 General Rights of ONTC

(1) ONTC may, in its sole discretion and at any time during the RFP process:

(a) reject any or all of the Proposals;

(b) accept any Proposal or any portions of any Proposals for any reason whatsoever;

(c) reject any Proposals or any portions of Proposals for any reason whatsoever,

(d) if only one Proposal is received, elect to either accept it, reject it, or enter into negotiations with the applicable Respondent;

(e) elect not to proceed with, cancel, or terminate the RFP;

(f) alter the Submission Deadline or any other deadlines associated with the RFP Process;

(g) change the RFP Process or any other aspect of the RFP Documents; or

(h) cancel this RFP Process and subsequently conduct another competitive process for the same Goods and/or Services that are the subject matter of this RFP or subsequently enter into negotiations with any person or persons with respect to the Goods and/or Services that are the subject matter of this RFP.

(2) If ONTC, in its sole discretion, is of the opinion that all of Proposals submitted are not substantially compliant, ONTC may:

(a) take any action in accordance with Section 7.3. (1);

(b) carry out a process whereby all Respondents are directed to correct the deficiencies in their Proposals for re-submission; or

(c) negotiate an agreement for the whole or any part of the Goods and/or Services with a Respondent which has submitted a Non-compliant Proposal.

SECTION 8 - AGREEMENT FINALIZATION AND DEBRIEFING AND SUCCESSFUL RESPONDENT

8.1 Finalization of the Agreement

(1) ONTC may, in its sole discretion, retain more than one Respondent to provide the Goods and/or Services.

(2) ONTC reserves the right in its sole discretion to sub-divide and/or bundle the Goods and/or Services which are the subject of this RFP and award one or any number of separate contracts for the Goods and/or Services.

(3) ONTC may, in its sole discretion, enter into negotiations with one or more Respondent(s) for the purpose of selecting a Successful Respondent(s) and finalizing an agreement.

(4) Either ONTC or a Respondent may withdraw from negotiations at any time prior to the Successful Respondent(s) being identified.

(5) The Successful Respondent is expected to enter into the relevant CCDC form of agreement which shall include the Supplementary Conditions in Part 5. Proposal Form 5 - Compliance with Contract Documents allows a Respondent to submit suggested changes to the Supplementary Conditions. ONTC does not have any obligation to accept any proposed changes to the Supplementary Conditions and will do so in its sole discretion. ONTC may, in ONTC's sole discretion; (i) consider only a minimal number of changes to the Supplementary Conditions; (ii) consider significant material proposed changes to negatively impact the evaluation of the Respondent's proposal; or (ii) disqualify any Respondent where the changes or the number of changes made by the Respondent to the Supplementary Conditions would be, in ONTC's sole discretion, too onerous to successfully negotiate within the timeframe set out in Section 8.1 (6) below or are unacceptable to ONTC.

In any event, ONTC will not accept any material changes to the clauses in the Supplementary Conditions relating to the Confidentiality, Personal Information, Intellectual Property ownership and infringement, Indemnification, Limitation of Liability or rights of ONTC on termination. ONTC, as an Ontario Crown corporation, is unable to provide indemnities pursuant to s.28 of the *Financial Administration Act* (Ontario).

If a Respondent does not submit any proposed amendments in Proposal Form 5, it will be deemed to have accepted and will be required to execute the Final Agreement in the form attached to this RFP. If a Respondent has submitted proposed amendments to the Final Agreement, negotiations respecting those amendments shall be conducted within the timeframe set out in Section 8.1(6).

(6) If a Successful Respondent fails or refuses to enter into and execute the Final Agreement within ten (10) Business Days of being notified they are the Successful Respondent (ONTC may extend such period of time in ONTC's sole discretion), or a Successful Respondent fails or refuses to provide the documentation in accordance with Section 8.1(7), ONTC may, in its sole discretion, take any one of the following actions:

(a) terminate all negotiations and cancel its identification of that Respondent as a Successful Respondent;

(b) select another Respondent or Short-Listed Respondent as the Successful Respondent;

(c) retain the bid security described in Section 4.3 to compensate for any damages suffered by ONTC as a result of the Successful Respondent's failure or refusal to enter into the Final Agreement;

(d) take any other action in accordance with Section 7.3; or

(e) pursue any other remedy available to ONTC at law.

(7) Prior to supplying any Goods and/or Services pursuant to the Contract, the Successful Respondent(s) shall deliver to ONTC:

(a) The performance bond and the labour and material bond described in the RFP Documents. The form of such bonds shall comply with the requirements prescribed in the *Construction Act*. Refer to the link below for the appropriate form (Form 31 and 32).

https://ontariocourtforms.on.ca/en/construction-lien-act-forms/

(b) Certificates of insurance as specified in the Supplementary Conditions;

(c) Executed Contractors Health and Safety Responsibility Agreement;

(d) Respondent's Health and Safety, and Environmental Policies; and

(e) A current Clearance Certificate issued by the Workplace Safety and Insurance Board, if applicable.

8.2 Notification If Successful or Not

(1) The Successful Respondent(s) and unsuccessful Respondents will be notified by ONTC in writing regarding their success or failure in the RFP Process.

8.3 Debriefing

(1) Respondents may request a debriefing after receipt of a notification pursuant to RFP Section 8.2. All Respondent requests should be in writing to the Contact Person no later than 60 calendar days after receipt of the notification. ONTC will conduct debriefings in the format prescribed by the OPS Procurement Directive.

SECTION 9 - LEGAL MATTERS AND RIGHTS OF ONTC

9.1 Limit on Liability

(1) The total liability of the Respondent to ONTC for loss and damage arising from the Respondent who is selected as the Successful Respondent but then fails to deliver the Contract Security, evidence of insurance or other documents required under Section

8.1(7) within the time period specified in Section 8.1(6) or fails to execute the Final Agreement shall be limited to the value of the Bid Performance Security provided by the Respondent pursuant to Section 4.3. The liability of the Respondents for any other loss or damage suffered by ONTC as part of this RFP Process shall be without limit.

(2) By submitting a Proposal,

(a) each Respondent acknowledges ONTC's rights as stated herein and absolutely waives any right of action against ONTC for ONTC's failure to accept the Respondent's Proposal whether such right of action arises in contract, negligence, bad faith, or any other cause of action;

(b) each Respondent covenants and agrees that, under no circumstances, shall ONTC, or any of its employees, officers, representatives, agents or advisors, be liable to any Respondent, whether in contract, tort, restitution, or pursuant to any other legal theory, for any claim, action, loss, damage, cost, expense or liability whatsoever and howsoever arising from this RFP Process, a Respondent's Proposal in response to this RFP Process, or due to the acceptance or non-acceptance of any Proposal, or as a result of any act or omission by ONTC and/or its employees, officers, representatives, agents or advisors, including any information or advice or any errors or omissions that may be contained in the RFP Documents, or any other documents or information provided to a Respondent, or arising with respect to the rejection or evaluation of any or all of the Proposals, any negotiations with any of the Respondents, or the selection of any Respondent as a Short-listed Respondent or the Successful Respondent; and

(c) each Respondent shall indemnify and hold harmless ONTC, its employees, officers, representatives, agents and advisors, from and against any and all claims, demands, actions or proceedings brought by third parties, including but not limited to the Respondent's subcontractors or suppliers, in relation to this RFP Process.

9.2 Power of Legislative Assembly

(1) No provision of the RFP Documents (including a provision stating the intention of ONTC) is intended to operate, nor shall any such provision have the effect of operating, in any way, that would interfere with or otherwise fetter the discretion of the Legislative Assembly of Ontario in the exercise of its legislative powers.

9.3 RFP Not a "Bidding Contract" or a Tender

(1) Notwithstanding any other provision of this RFP, this RFP is not a tender call, ONTC does not intend to create any contractual relations or obligations with any of the Respondents by virtue of issuing this RFP, and this RFP is not an offer to enter into a contract (often referred to as "Contract A"). Except as provided in RFP Section 3.8, 4.3 and 9.1, neither

this RFP nor the submission of a Proposal by a Respondent shall create any legal or contractual rights or obligations whatsoever on any of the Respondent, ONTC, the Government of Ontario or any Ministry of the Government of Ontario.

SECTION 10 - VENDOR PERFORMANCE

10.1 General

(1) ONTC has established a Vendor Performance Policy, which provides a framework for ONTC to maximize the value for money of its Vendors by:

(a) proactively managing the performance of Vendors in accordance with ONTC's Purchasing Policy; and

(b) creating a record of past performance for use by ONTC when selecting Vendors for the supply of goods and services.

10.2 Vendor Performance Evaluation

(1) Successful Respondents who enter into a Final Agreement with ONTC may be required to participate in the Vendor Performance Evaluation process.

10.3 Vendor Ratings for Proposal Evaluation Purposes

(1) ONTC may access a Respondent's Vendor Performance Evaluations for previous contracts as part of the Evaluation Process. The manner in which the Respondent's ratings will be used, will be identified in the Evaluation Criteria of the RFP Data Sheet.

SECTION 11 - TRANSPARENCY AND FAIRNESS

11.1 General

(1) ONTC is committed to procuring goods and services through a process that is conducted in a fair and transparent manner, providing equal opportunity to vendors.

(2) ONTC endeavors to provide specifications that meet the requirements of the procurement without naming specific brands. However, there may be instances where a third-party consultant prepares a specification on behalf of ONTC, and a specific brand is named. In these instances, alternate materials or products may be used if ONTC determines the proposed materials or products are equivalent to the materials or products in the specifications. Respondents shall submit proposed alternate materials or products with their Proposal submission to be considered.

SECTION 12 - INTERPRETATION

12.1 General

(1) In this RFP, the singular shall include the plural and the plural shall include the singular, except where the context otherwise requires.

(2) All references in this RFP to “discretion” or “sole discretion” means in the sole and absolute discretion of the party exercising the discretion.

(3) For clarity, where the expression “Government of Ontario” is used in this RFP, it includes all Ministries and Agencies of the Government of Ontario.

PART 2

REQUEST FOR PROPOSALS

SUMMARY OF REQUIREMENTS

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A
RFP DATA SHEET

RFP 2025 067 **RRC Whitson Office Renovation**	
Contact Details	
Contact Person	Nicole Laplante, Procurement Contracts Specialist
Contact Information	555 Oak Street East North Bay, Ontario, P1B 8L3 nicole.laplante@ontarionorthland.ca (705) 472-4500 ext. 588
Proposal Detail	
Site Visit	There **will be** a Non-Mandatory On-Site Respondents' Meeting which will be held at the RRC Administration Office Building located at 435 Whitson Street, North Bay, ON, which runs along the back side the ONTC RRC Facility, on Thursday, September 4, 2025 at 2:00pm. Respondents must complete the Respondents' Meeting Registration Form and Release of Liability Form and return it via email by Wednesday, September 3, 2025 at 4:00 p.m. to Nicole Laplante at nicole.laplante@ontarionorthland.ca.
Validity of Proposals	90 days following the Submission Deadline
Format of Submission	Respondents shall submit their Proposal through MERX Electronic Bid Submissions (EBS). Refer to Part 1, Request for Proposals, Section 5.1 (1) (a). **MERX EBS does not allow Proposals to be uploaded after the Submission Deadline; therefore, Respondents shall ensure they allow sufficient time to upload the documents.** Proposals which are submitted by facsimile transmission, by email or by electronic means other than MERX **will NOT** be considered.
Two-Envelope Process	This procurement **will** be a two-envelope process. Please submit Proposal Form 1 and Proposal Form 1-A - Schedule of Prices and Proposal Form 13 - Schedule of Progress Payments in Envelope 2 - Price Proposal. The balance of the Proposal should be contained in Envelope 1 - Technical Proposal. Please **do not** include any pricing information in Envelope 1 - Technical Proposal
Distribution Method	The RFP Documents will be posted on the ONTC website and MERX. Any addenda to the RFP will be posted in both of these locations.

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A
RFP DATA SHEET *cont'd*

RFP 2025 067 **RRC Whitson Office Renovation**			
Proposal Detail *cont'd*			
Submission Requirements	Respondents are required to submit **all** of the material documents listed below as part of their Proposal. Respondents shall confirm they have included the documents listed below with their Proposal by placing a checkmark in the column "Included in Proposal". If the Respondent fails to include a document listed below as being "Material", the respondent may be disqualified in accordance with section 6.2 (3) of the RFP.		
	Item	**Included in Proposal (indicate with □)**	**Item is classified as Material**
	This checklist		
	Proposal Form 1 - Proposal Submission Form		Material
	Proposal Form 1-A - Schedule of Prices		Material
	Proposal Form 2 - Respondent's General Information		Material
	Proposal Form 3 - Acknowledgment to Comply with Part 3 - Request for Proposals Specifications		Material
	Proposal Form 4 - References		Material
	Proposal Form 5 - Compliance with Contract Documents		
	Proposal Form 7 - Health, Safety and Environment		Material
	Proposal Form 8 - Schedule and Proposed Approach		Material
	Proposal Form 9 - List of Equipment		Material
	Proposal Form 10 - List of Key Personnel and Resumes		Material
	Proposal Form 11 - Contractor's Qualification Statement		Material
	Proposal Form 12 - Schedule of Materials		
	Proposal Form 13 - Schedule of Progress Payments		Material
	Proposal Form 14 - Current Labour Agreements		
	Proposal Form 15 - Claims		
	Bid Performance Security and Agreement to Bond (Scanned Copy Acceptable)		Material

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A *cont'd*
RFP DATA SHEET

<table>
<tr><th colspan="4">RFP 2025 067
RRC Whitson Office Renovation</th></tr>
<tr><td colspan="4">Important Dates</td></tr>
<tr><td>Publication Date</td><td colspan="3">Friday, August 22, 2025</td></tr>
<tr><td>Participation Registration Form</td><td colspan="3">Complete and submit to the Contact Person as soon as possible</td></tr>
<tr><td>Deadline for Additional Information Request</td><td colspan="3">Four (4) full Business Days prior to the Submission Deadline</td></tr>
<tr><td>Submission Deadline Date and Time</td><td colspan="3">Wednesday, September 24, 2025 at 2:00:00 p.m. (EDT)</td></tr>
<tr><td>Target Completion Date</td><td colspan="3">Friday, January 30, 2026</td></tr>
<tr><td colspan="4">Notes Pertaining to Final Agreement</td></tr>
<tr><td>Liquidated Damages</td><td colspan="3">The per diem rate calculated in relation to Section 10.4 of the Supplementary Conditions is $500 for each calendar day of delay beyond the prescribed date for Substantial Performance of the Work until Substantial Performance of the Work is achieved and certified, pursuant to the terms of the Contract.</td></tr>
<tr><td colspan="4">Procedure of Selection</td></tr>
<tr><td rowspan="4">Mandatory Requirements</td><td colspan="3">Respondents must satisfy all of the Mandatory Requirements listed below. Respondents will receive a pass/fail for each Mandatory Requirement. Respondents who fail any of the Mandatory Requirements <u>will be</u> disqualified from the RFP Process.</td></tr>
<tr><td>Mandatory Requirement</td><td>Pass</td><td>Fail</td></tr>
<tr><td>Respondent has participated in the Mandatory Respondents' Meeting</td><td></td><td></td></tr>
<tr><td>Respondent has provided sufficient evidence to pass the Contractor Safety Pre-Qualification (Part 4 - Form of Proposal, Proposal Form 7, Health, Safety and Environment)</td><td></td><td></td></tr>
<tr><td></td><td>Bid Performance Security and Agreement to Bond as prescribed in Part 1, Request for Proposals, Section 4.3 (Scanned Copy Acceptable)</td><td></td><td></td></tr>
</table>

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A *cont'd*
RFP DATA SHEET

<table>
<tr><th colspan="3">RFP 2025 067
RRC Whitson Office Renovation</th></tr>
<tr><td colspan="3">Procedure of Selection cont'd</td></tr>
<tr><td>Evaluation General Procedure</td><td colspan="2">Respondents must score a minimum of 50% for both Experience and Qualifications and Schedule and Proposed Approach to qualify for shortlist consideration. Respondents who fail to score a minimum of 50% in both of these categories may be disqualified from the RFP Process.</td></tr>
<tr><td rowspan="3">Evaluation Criteria</td><td>Description</td><td>Weight</td></tr>
<tr><td>Price
ONTC will use the following to calculate the initial score for price:

Lowest price of all Proposals / price of Respondent x 45 = Score

This information shall be provided under Proposal Form 1-A - Schedule of Prices

ONTC reserves the right in its sole discretion to consider the best overall value when evaluating price and adjust the score accordingly. If ONTC, in its sole discretion, is of the opinion that the Respondent has submitted a price that is too low to adequately complete the scope of work, then ONTC reserves the right not to use that price as the "Lowers price of all Proposals".</td><td>45</td></tr>
<tr><td>Experience and Qualifications
ONTC will assess Respondents' experience and qualifications using the information supplied in Part 4 of this RFP. The following sub-weights will apply:

• Respondents shall provide a Company Profile (including Subcontractors, if any) demonstrating a minimum of ten (10) years' experience in related work with a proven track record of successfully delivering construction projects - 4 points

• Resumes of key personnel (including subcontractor(s) if any):

o Site Supervisor - 2 points
o All other personnel - 2 points

Project Profile 1 to 3, inclusive, demonstrating experience in renovations of existing buildings - 12 points (4 points each)

This information shall be provided under Proposal Form 11 - Contractor's Qualification Statement

ONTC may or may not contact references as part of the evaluation and may use this information as part of this score</td><td>20</td></tr>
</table>

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A *cont'd*
RFP DATA SHEET

RFP 2025 067 **RRC Whitson Office Renovation**		
Procedure of Selection *cont'd*		
	Description	**Weight**
Evaluation Criteria	**Schedule and Proposed Approach** ONTC will assess the Respondent's Schedule and Proposed Approach based on the following: • Is the Schedule in the format requested and are the milestone dates aligned with the completion dates for each phases of the Project? **- 3 points** • Has the critical path been identified? - **2 points** • Is the schedule and proposed approach logical and do they have sufficient detail, including durations for each task? Provide a detailed written narrative covering Proposed Approach - **5 points** • Describe how you will provide an uninterrupted supply of the required goods and/or services to avoid any adverse impact on the project schedule. Respondents must identify any anticipated product delays and build this into the schedule - **10 points** *This information must be provided under Proposal Form 8 - Schedule and Proposed Approach*	20
	Environmental and Sustainability • Respondents shall describe their waste management policy and provide details on how they intend on disposing of materials. Respondents shall also provide copies of asbestos abatement training - **5 points** • Respondents shall provide a copy of their Health, Safety and Environmental Protection Policy - **5 points** *This information shall be provided under Proposal Form 7 - Health, Safety and Environmental*	10

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-A *cont'd*
RFP DATA SHEET

RFP 2025 067 **RRC Whitson Office Renovation**		
Procedure of Selection *cont'd*		
	Description	**Weight**
Evaluation Criteria	**Local Benefit and Knowledge** Respondents shall describe how and when they will use Ontario's local workforce, local vendors, local manufacturers, local contractors, and local apprentices/trainees to achieve the project goals and provide the requested services. Please list any local subcontractors or suppliers being used for the successful completion of this project - **5 points** *This information must be provided under Proposal Form 11 - Contractors' Qualification Statement*	5
	Total	**100**

PART 2 - REQUEST FOR PROPOSALS
SUMMARY OF REQUIREMENTS
SCHEDULE 2-B
PARTICIPATION REGISTRATION FORM

Required in order to register and receive any communications in relation to the requirement referenced below.

Date:	
Reference Number:	RFP 2025 067
Description of Requirement:	RRC Whitson Office Renovation

I, the undersigned, am registering to participate in the above referenced requirement and will be the primary contact for any communications in relation to this process and project until further advised.

Company Name:	
Address:	
Name of person registering to represent company referenced above (please print):	
Email Address:	
Phone Number: (Main Office Number)	
Cell Number:	

Signature of Primary Contact: _____

Return form to the Contact Person as referenced below via email as an attachment:

Thank you.

Nicole Laplante
Procurement Contracts Specialist
Ontario Northland Transportation Commission
Phone: 705-472-4500 Ext. 588
Email : nicole.laplante@ontarionorthland.ca
Website: www.ontarionorthland.ca

PART 3

REQUEST FOR PROPOSALS

SPECIFICATIONS

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1
SCOPE OF WORK

1. Scope of Services

Summary

- The North Bay RRC Administrative Office Building is located at 435 Whitson Street, North Bay, ON. It was purchased by ONTC in 2025 and backs onto the RRC parking lot located at 915 McIntyre Street East. The main floor was built in 1963 and the second-floor addition added in 1999. The building was previously used as Ricci's printing. The building will be renovated to be used as additional offices for RRC operations.

- This project aims to renovate the building so that it can be occupied by ONTC staff by December 15, 2025. The building is currently vacant and personnel will not move into the building until the interior renovations are complete.

Project Location

GPS Coordinates: Lat 46.300433° Long -79.453134°



Project Map - Aerial View

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1 *cont'd*
SCOPE OF WORK

2. General Requirements and Project Scope

***Note: The following list of items is to be used as a guideline only and may not include all the tasks to complete the work.*

Work to be completed by Contractor:

- Remove old flooring on all levels. Remove asbestos containing tiles.
- Remove existing ductwork and furnace and discard.
- Remove hot water tank and discard.
- Remove staircase and build/install new.
- New flooring and baseboard. Concrete slab to be leveled prior to installing flooring.
- New concrete pad in front of main entrance door.
- New front door with AODA compliant opener.
- Door FOB access compatible with ONTC system.
- Remove wall panels on main level.
- Remove walls as per drawing. Note an opening is to be made in the structural block wall on the main floor.
- Remove all windows and replace. Add new windows. Lower window height on main level.
- Run all new plumbing including new sewer pipes from the city connection and throughout the building.
- Remove brick facia, canopy, exterior signs, and unfinished back overhang. The roof overhang at the back to be finished with sofit and facia.
- Build new walls and install drywall. Finish all walls.
- Paint all surfaces.
- Install new electrical outlets, dimmable light switches, faceplates, lighting.
- Install new electrical panels and work with North Bay hydro to upgrade electrical service.
- Run network cables for each workstation, printer, security camera, PA speaker, and meeting room TV. Terminate all cables. (TVs, computers, printers, and workstation furniture to be supplied and installed by ONTC or an ONTC representative. Note cameras and speakers only require network cable connection.) Contractor to work with ONTC and furniture supplier to ensure all workstations have un-impeded access to electrical outlets and network drops. Network and power cables to be run under the floor and connected to the two boardroom tables so there are no cable tripping hazards.
- Supply and install wall mounts for two (2) boardroom 75-inch TVs. Supply and install recessed entertainment box in the wall behind where each TV is to be located. (Leviton model #47617-021 or equivalent)

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1 *cont'd*
SCOPE OF WORK

- Install (2) security cameras on front of building, (2) security cameras on back of building, and (1) security camera on Worthington side of building (ONTC to supply cameras and mounting hardware). The end being installed in the camera to be terminated with a male RJ45 connector. Cameras to be mounted as high as possible to sofit.
- Install IT rack or cabinet supplied by ONTC. Contractor to supply patch panels as required.
- Install network lines for wireless access points, terminated with keystones and/or surface mount box.
- Network lines to be terminated with keystones, labeled, and tested. Wall plates or installation directly into desks will depend on furniture (and may require shorter keystones). Network room side to be installed into contractor provided patch panels.
- Contractor to supply BIX panels/racks and terminate.
- Install new HVAC system including ERVs. Pour concrete pad behind building as per drawing.
- New Washrooms including all fixtures.
- Emergency lighting and fire extinguishers. .
- Install and connect ceiling speakers for emergency announcements. ONTC to supply speakers.
- Install and connect emergency push buttons (ONTC to supply buttons). Buttons are connected using #22 AWG Copper 6 conductor wire.
- Complete building envelope as per drawing.
- Exterior lighting as per drawing.
- Reinforce roof truss as per drawing.
  Supply and connect two (2) 30 inch wide full size fridges with water filling spout.
- Landscaping around building including removal of all vegetation. Remove all garbage and old building materials. Positive grading around building on entire lot. Add gravel as required to all unpaved areas around the building. Pave accessible parking spot and 5 ft. wide walkway from front of building to gate in chain link fence as shown in Drawing A1.2.

Fibre and Cable

- Contractor responsible for running fibre and cable from Main Stores building to car shop, security trailer, and 435 Whitson on existing poles. ONTC owns the hydro poles. Contractor is responsible for the design and install of: messenger wires, brackets, termination, and penetrations (watertight and weatherproof) into buildings. Distance is approximately 750 ft. Final termination must be completed after 4:30 pm or on a weekend.
- Cables to be tested by contractor as per industry standards. Test reports to be provided to ONTC for review and approval.
- Copper/BIX
  - Aerial 6 pair run made from Main Stores Data Centre to 435 Whitson's Electrical Room on the first floor.

  - Aerial 6 pair run made from Main Stores Data Centre to the Security Trailer
  - Lightning protection at both ends
- Fibre – Aerial 6 fibre (minimum, 12 is also acceptable) run made from the Main Stores Data Centre to the first floor Electrical Room at 435 Whitson
  - 1Gbps SM or MM
  - Supply and install rack mounted fibre patch panels
  - Terminated with LC connectors
  - 20 ft min service loop at each end.



ONTC responsible for:

- Supply and install TVs, computer for TV, and printers.
- Supply and install of office furniture.
- Supply and install IT switch.
- Supply IT rack or cabinet.
- Supply emergency buttons, cameras.
- ONTC to supply IP PoE InformaCast compatible speakers.

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1 *cont'd*
SCOPE OF WORK

Designated Substances

Asbestos containing materials are present in the building. Low level lead paints were found in the building. See Designated Substance Survey by Thomas Contracting for details.

All light fixtures including fluorescent light tubes have been removed. Above ground plumbing and plumbing fixtures have been disconnected.

General Requirements

1. The Contractor will be required to complete the work in accordance with all applicable federal, provincial, and municipal laws.

2. The Contractor shall coordinate Work with the owner's representative.

3. The Contractor will be required to obtain and pay for all necessary permits, fees, and ministry notifications required for the project including, but not limited to, the following:

    - Filing notice of project with the Ontario Ministry of Labour.
    - Registering as Constructor with the Ontario Ministry of Labour.

4. ONTC is a crown corporation and does not require Building Permits. ONTC will complete a change of use permit with the City of North Bay. All other permits required for the work are to be obtained by the contractor.

5. The Contractor shall provide qualified personnel to perform the work.

6. The Contractor will be required to secure their work area (create construction islands) for the duration of the project. The Contractor will be responsible for all activities at 435 Whitson Street, including health and safety. ONTC employees will not be working at this location during interior renovations. ONTC employees will move into the building by December 15, 2025. The contractor can continue on the exterior work and must restrict exterior building access where work is being completed.

7. The Contractor shall establish a site-use plan acceptable to ONTC providing an organized, safe, and efficient means of personnel transport, material handling, storage/laydown areas, construction trailer locations, access points and methods of access, and limits of construction within the premises.

8. The Contractor shall clean up and demobilize areas upon completion of the work.

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1 *cont'd*
SCOPE OF WORK

9. The Contractor shall supply all necessary tools, machinery, and equipment to perform the work including, but not limited to, forklifts, mobile cranes, hoisting equipment, scaffolding, ladders, man lifts, temporary lighting, heating, welding machines, ventilation, consumables, and any other material or equipment required to complete the work. The Contractor shall provide all necessary vehicles and qualified personnel to transport people and materials.

10. The Contractor shall remove all demolished material from ONTC property and pay for all disposal fees, including any excavated material.

11. The Contractor will have access to the construction island, 24 hours per day, seven days per week. The Contractor will be required to maintain a record of all persons accessing the site that at a minimum includes the name of the person, time-in, time-out and their site contact with the Contractor.

12. Supply their own on-site facilities, including construction trailers, washrooms, and eating area.

13. Supply all personal protective equipment (PPE) and consumable supplies as required to meet all applicable legislation, ONTC policies and Contractor Policies.
    Note: Safety glasses with side shields, safety boots, hard hats, and high visibility clothing must be worn at all times on ONTC property. Any employees not wearing the required PPE will be immediately escorted off ONTC property.

14. Designate a site supervisor who will be responsible for managing the project and be responsible for on-site safety, including all sub-contractors and suppliers. This site supervisor will be the single point of contact for the duration of the project. This site supervisor will be required to communicate with ONTC supervision to ensure the work is completed safely with minimal impact on the operation of the facility.

15. Purchase and deliver to the site all Contractor supplied materials, equipment, facilities, and manpower necessary to accomplish the work within the schedule.

16. The Contractor shall be familiar with proper equipment shut down procedures and follow "Lock Out and Tag Out" procedures. Power to the building has been turned off by North Bay Hydro due to the building being vacant. Natural gas to the building has been turned off by Enbridge. Contractor to coordinate with hydro having the power turned back on, or bring a power source. **ONTC to pay all North Bay Hydro fees and electric bills.**

17. Provide regular updates to ONTC project manager, including daily progress reports.

Any changes or deviation must be agreed to and approved by ONTC.

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-1 *cont'd*
SCOPE OF WORK

3. Deliverables

3.1 Preconstruction Phase

- Notice of project
- Registration of Constructors Form 1000
- Site use plan (laydown area, parking to be used, temporary facilities)
- Health and Safety project specific plan
- Project risk assessment
- Construction schedule

3.2 Construction Phase

- Weekly report with photos documenting progress and any issues.
- Safety inspection report.
- Project logs

3.3 Close-out Phase

- Proper disposal slips
- Project Records. (Certificates, Warranties, and other documentation)
- Substantial completion form and certificate of publication
- As-built drawings PDF and CAD files in dwg format

4. Schedule of services

Construction to start on October 6, 2025 and be substantially completed by December 15, 2025. Final completion: January 30, 2026.

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-2
TECHNICAL SPECIFICATIONS

Refer to the Technical Specifications, as outlined below, and which are attached to this Schedule 3-A-2.

SECTION	TITLE
Div 00	
00 31 00	Available Project Information
Div 01	
01 11 00	Summary of Work
01 14 00	Work Restrictions
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 41 00	Regulatory Requirements
01 43 00	Quality Assurance
01 45 00	Quality Control
01 51 00	Temporary Utilities
01 52 00	Construction Facilities
01 56 00	Temporary Barriers and Enclosures
01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 73 00	Execution
01 74 00	Cleaning
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 79 00	Demonstration and Training
01 91 13.13	Commissioning Plan
01 91 13.16	Commissioning Forms
Bertrand Wheeler Architecture	
Div 02	
Div 02-10	Technical Divisions

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 DEFINITIONS

.1 Available Project Information: information identified in this section, of any type, and in any form, and identified as Reference Documents. Available Project Information, or any part thereof, does not form part of the Contract Documents unless specifically incorporated into Contract Documents by means of copying, transcribing, or referencing, or is listed in the Agreement as a Contract Document.

.2 Contractor: synonymous with Respondent

1.03 USE AND RELIANCE UPON AVAILABLE PROJECT INFORMATION

.1 Available Project Information is made available to Respondents for the purpose of disclosing information that is available to the Consultant and Owner.

.2 Per CCDC, Available Project information is made available to Respondents to fulfill the Owner's duty to disclose all relevant Project information to Respondents.

.3 Do not consider the Available Project Information as a representation or warranty that the information is necessarily accurate, complete, or appropriate.

.4 Respondents are responsible for interpreting and forming their own conclusions about the Available Project Information, including consideration of the time the document was created. Respondents are encouraged to obtain specialist advice if necessary. The Owner and Consultant assume no responsibility for interpretations or conclusions made.

.5 In the event there is a conflict between the Contract Documents and the recommendations contained in the Available Project Information, the Contract Documents shall govern.

1.04 AVAILABLE PROJECT INFORMATION

.1 The following Available Project Information is not incorporated into the Contract Documents, but is made available to Respondents:

. .1 Designated Substance Survey by Thomas Contracting 2025

.2 The following Available Project Information is incorporated into the Contract Documents:

.

1. ONTC Contractor and Subcontractor.

2. HSP-008 Lockout Tag Out Procedure.

3. ONTC Hot Work Program

1.05 RELATED INSTRUCTIONS

.1 Report any irregularities or changed surface conditions at the Place of the Work to the Owner a minimum of 7 days before RFP close.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Refer to Specification Index for Sections applicable to this work.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract includes the following:

.1 Renovation of building for additional RRC offices.

.2 The Summary of Work provided above is for reference only:

.1 The contractor shall undertake the Work starting October 2025, with all Work to be completed by January 30, 2026.

1.04 SUBMITTALS

.1 Submit for review and Acceptance in accordance with Section 01 33 00 - Submittal Procedures.

.2 In addition to Submittals identified throughout the Specifications, submit the following:

.1 Submit Project Construction Schedule in accordance with Section 01 32 16.16 - Construction Progress Schedule.

.2 Submit Construction Waste Management Plan highlighting recycling and salvage requirements in accordance with Section 01 74 19 - Waste Management And Disposal.

.3 Submit site-specific Health and Safety Plan in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.4 Submit a Construction Project Management Plan, including communication, risk, and Quality Management Plans.

1.05 WORK BY OTHERS

.1 The Work under this Contract shall be performed by the Contractor.

.2 Contractor shall co-operate with other contractors retained by the Owner in carrying out their respective works and carry out instructions from the Owner and the Consultant. Refer to Contract Documents for additional requirements.

1.06 WORK SEQUENCE

.1 Construct Work in a manner that accommodates Owner's and public continued and/or intermittent use of premises during construction. Refer to Section 01 14 00 - Work Restrictions.

.2 Co-ordinate Construction Schedule and Owners use of premises during construction.

.3 Do not close off Owner or public usage of premises until use of one stage of Work will provide alternate usage.

.4 Maintain fire access/control.

.5 Protect workers and public safety.

.6 Work near rail tracks shall be preapproved by the Owner and completed as per Owner's procedures and policies.

1.07 CONTRACTOR USE OF PREMISES

.1 Contractor shall establish a Construction Area where the Contractor assumes the role of Constructor and will be responsible for the Construction Area until Ready for Takeover. The Contractor will be required to secure the Construction Area for the duration of the Project. The Contractor will be responsible for all activities inside the Construction Area, including health and safety. The Contractor shall coordinate the Work with the Owner to ensure that work being done by the Owner in the areas outside of the Construction Area is not interrupted. Access by the Contractor shall be restricted to the Construction Area only.

.2 In some circumstances, Contractor shall coordinate and limit its access to Construction Area to allow:

.1 Owner occupancy.

.2 Partial owner occupancy.

.3 Work by other contractors or utilities providers.

.4 Public usage.

.5 Third Party Property Owner occupancy and use.

.3 Co-ordinate use of premises under the direction of the Owner.

.4 Refer to Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities and Section 01 56 00 - Temporary Barriers and Enclosures, for temporary facilities, access roads and parking areas, traffic regulations, and utilities.

1.08 OWNER OCCUPANCY

.1 Owner may occupy premises (adjacent buildings, railway tracks) during the entire construction period for execution of normal operations.

.2 Co-operate with the Owner in scheduling of the Work to minimize conflict and to facilitate Owner

occupancy and usage of the premises.

1.09 Products Supplied by Others

.1 Contractor is responsible for receiving, unloading, if required, and handling Products Supplied by Others at the project site; setting or installing the Products in place; making any required connections to the mechanical, plumbing, electrical systems, and any other systems; and disposal of shipping or packing materials. Owner and/or Consultant and Contractor shall jointly inspect the Products for damage upon delivery to the Place of the Work. If this inspection determines that the furnished Products are damaged or defective, the Owner will arrange for the necessary replacement or repairs. Contractor is responsible for protecting the Products Supplied by Others from damage during storage and handling and is responsible for damage caused to those Products during storage and handling.

.2 Contractor to install all Products Supplied by Others in accordance with the manufacturer's installation instructions and the design Drawings, Specifications and Contract Documents.

.3 Contractor to review manufacturer's installation instructions and advise the Consultant of any discrepancies or issues in a timely manner to avoid any potential delays.

.4 Contractor to obtain manufacturer and Consultant approval before making any modification to Products Supplied by Others.

.5 Upon completion of the installation of the Products Supplied by Others, the Contractor, the Consultant and/or the Owner will inspect the Work. Manufacturers and or Suppliers may participate in the inspection as required by their contract obligations. Upon Acceptance, the Contractor will provide a workmanship warranty in accordance with the Contract Documents.

1.10 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING AND STRUCTURES

.1 Execute Work with least possible interference or disturbance to premises, site, Owner operations, occupants, public and normal use of premises. Arrange with the Consultant and Owner to facilitate execution of Work.

.2 Use only elevators existing in the building for moving workers and material.

1. Investigate the status of existing elevators in building(s) to determine if they are functional and safe for moving workers and materials before the Work starts.

2. Provide the required protection for passenger elevators walls and obtain the Owner approval before using these elevators.

3. Accept liability for damage, safety of equipment and overloading of existing equipment.

1.11 EXISTING SERVICES

.1 Notify the Owner, the Consultant, Third Party Property Owners when applicable, and utility companies of intended interruption of existing services and obtain required permissions when applicable.

.2 Where Work involves breaking into or connecting to existing services, provide the Owner at least five (5) Working Days' notice of necessary interruptions of mechanical or electrical service during the Work. Minimize the duration of interruptions. Carry out Work at times as directed by Authorities Having Jurisdiction and the Owner to ensure minimum disturbance to pedestrian and vehicular traffic and the Owner operations.

.3 Provide alternative safe and protected routes for personnel, pedestrian and vehicular traffic.

.4 Establish location and extent of service lines in the Place of the Work before starting Work. Notify the Consultant of findings.

.5 Submit schedule for Acceptance by the Consultant ten (10) Working Days before any scheduled work for any shut-down or closure of active service or facility including power and communications services. Adhere to Accepted schedule and provide notice to affected parties. Refer to Section 01 14 00 - Work Restrictions.

.6 Provide temporary services when directed by the Owner to maintain critical operations, building and tenant services. Refer to Section 01 14 00 - Work Restrictions.

.7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.8 Where unknown services are encountered, immediately advise the Consultant and confirm findings in writing.

.9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in a manner approved by Authorities Having Jurisdiction and the Consultant.

.10 Record locations of maintained, re-routed and abandoned service lines.

.11 Construct barriers, as required, in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.12 Locate and trace existing underground services before any excavation.

.13 Any damage to existing services during the Work will be the responsibility of the Contractor.

1.12 DOCUMENTS REQUIRED

.1 Maintain at the Place of the Work, one copy of each document as follows:

.1 Contract Documents.

.2 Contract Drawings.

.3 Technical Specifications.

.4 Accepted Shop Drawings, Product data and samples.

.5 List of Outstanding Shop Drawings.

.6 Change Orders.

.7 Other Contract Amendments.

.8 Field Test Reports.

.9 Copy of Accepted Construction Schedule.

.10 Health and Safety Plan and Other safety related documents.

.11 As-Built Drawings.

.12 Other documents as specified.

2 EXECUTION

2.01 General Requirements:

.1 Contractor will be required to complete the Work in accordance with applicable federal, provincial, and municipal laws.

.2 The Contractor shall designate a Project Manager with overall responsibility for the Work. The Contractor will also designate a site supervisor who will be responsible for managing the Work at each site and be responsible for on-site safety, including all Sub-contractors and Suppliers. The site supervisor will be the single point of contact at each site. This site supervisor will be required to communicate with the Consultant and Owner as required to ensure the Work is completed safely with no impact on Owner operations.

.3 The Contractor will be required to coordinate their hours of work with the Owner.

.4 The Contractor’s employees, Subcontractors, and Suppliers will be required to sign in and sign out every time they enter or leave the Place of the Work using a sign-in/sign-out log book which will be held by the site supervisor in charge of that site.

.5 Contractor shall supply all necessary tools, machinery, and equipment to perform the Work including, but not limited to, forklifts, mobile cranes, hoisting equipment, scaffolding, ladders, man lifts, temporary lighting, heating, welding machines, ventilation, consumables, and any other material or equipment required to complete the Work. The Contractor shall provide all necessary vehicles and qualified personnel to transport people and materials.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)

   .1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 ONTC Hot Work Program

.2 ONTC Contractor/Subcontractor Policy.

.3 ONTC Lockout / Tag Out Procedure

.4 Section 01 73 00 - Execution

1.03 ACCESS AND EGRESS

.1 Design, construct and maintain temporary “access to” and “egress from” Construction Areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with the applicable laws of Authorities Having Jurisdiction.

1.04 USE OF SITE AND FACILITIES

.1 Execute Work with least possible interference or disturbance to normal use of premises. Make arrangements with Consultant to facilitate Work as stated.

.2 Where security is reduced by the Work provide temporary means to maintain security.

1.05 SPECIAL REQUIREMENTS

.1 Ensure Contractor’s personnel on site are familiar with and obey the policies and safety, fire, traffic and security regulations and have completed the ONTC site orientation training.

.2 Keep within limits of Work and avenues of ingress and egress.

.3 **Additional requirements**:

.2 Limit access to the Construction Area.

.3 Employ just-in-time delivery methods to minimize required storage and laydown space.

.4 Park vehicles in locations approved by ONTC Representative.

.5 Where the excavation, cutting and/or patching is required closely or immediately adjacent to, and/or drilling into, the existing building foundation assess impact and provide for Acceptance a site plan which demonstrates structure is not affected and specifies reinstatement prior to undertaking the Work.

.6 Inform ONTC Representative of large deliveries and arrange the delivery in a manner that will not affect ONTC operations or the safety of public.

.7 Obey site traffic rules and speed limits.

1.06 SMOKING ENVIRONMENT

.1 Comply with smoking and vaping restrictions. Smoking and vaping are not permitted.

1.07 VIDEO SURVEILLANCE:

.1 Video surveillance cameras are installed on Ontario Northland-owned and leased property to ensure the safety and security of passengers, employees, visitors, assets, infrastructure and the public. In accordance with the Freedom of Information and Protection of Privacy Act (FIPPA), the use of video surveillance cameras is carried out in a manner that respects and minimizes privacy intrusion. Recorded video footage only is protected, used or disclosed for investigative purposes related to a health and safety matter, a railway occurrence or for an incident of suspected crime, property damage, motor vehicle damage or personal injury.

1.08 COMMUNICATION PROHIBITION:

.1 Owner will lead and make any announcements relating to the Work. The Contractor shall not make any announcement of any kind, including press releases, social media posts, public declarations, or any form of publication or announcement, in relation to the Work unless prior written consent is given by Owner. If the Contractor is contacted by any media outlet or other person or entity wishing to make any form of publication or announcement or seeking any information in relation to the Work, the Contractor shall not provide any information and shall refer the person to Owner and immediately notify Owner.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

1.03 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the Work in accordance with the Specifications and at the call of the Owner or the Consultant.

.2 Prepare agenda for meetings.

.3 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.4 Reproduce and distribute copies of minutes within three (03) Working Days after meetings and transmit to meeting participants and, affected parties not in attendance.

.5 Representatives of the Contractor, Subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

1.04 PRECONSTRUCTION MEETING

.1 Within (10) Working Days after award of Contract and before Contractor mobilization to the Place of the Work, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities related to the Work.

.2 The Owner, Consultant, Contractor, major Subcontractors, field inspectors and supervisors and other parties, as applicable and at their discretion, will be in attendance.

.3 Arrange with the Consultant the time and location of meeting and notify parties concerned minimum five (5) Working Days before meeting.

.4 Agenda to include, but not limited to:

.1 Appointment of official representative of participants in the Work.

.2 Construction Schedule: in accordance with Section 01 32 00 – Construction Progress Documentation.

.3 Schedule of submission of Shop Drawings, samples, colour chips. Submit Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site signage, offices, storage sheds, utilities, site set-up/Utility connections, laydown areas, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Delivery schedule of specified equipment in accordance with Specifications.

.6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.7 Proposed changes, Change Orders, procedures, Acceptance required, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.

.8 Products Supplied by Others

.9 Record As-Built Drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 Operations and Maintenance manuals in accordance with Section 1 78 00 - Closeout Submittals.

.11 Take-over procedures, Acceptance, and warranties in accordance with Section 01 78 00 - Closeout Submittals.

.12 Monthly progress, claims, administrative procedures, photographs, holdbacks, commissioning, and training.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

.15 Site Safety and Fire protection in accordance with section 01 35 29.06 Health And Safety Requirements.

.16 Existing conditions and ONTC site use/operations.

.17 Cleaning and Waste Management

.18 Invoicing and payment procedures

.19 Lines of Communication, use of Social Media and distribution List.

1.05 PROGRESS MEETINGS

.1 During course of Work and up to the completion date, schedule regular monthly progress meetings.

.2 Contractor, major Subcontractors involved in Work, the Owner, and the Consultant are to be in attendance. Other parties may attend subject to the agreement of the Consultant.

.3 Agenda to include, but not limited to, the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede Construction Schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain baselined Construction Schedule.

.7 Proposed revisions to Construction Schedule.

.8 Progress against Construction Schedule, during succeeding work period.

.9 Review Submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for effect on Construction Schedule and on completion date.

.12 Safety concerns and issues.

.13 Open items, Request For Information (RFI) and Supplemental Instructions (SI).

.14 Other business.

1.06 COMMISSIONING MEETINGS

.1 Arrange pre-commissioning meetings for the commissioning of equipment and systems in accordance with 01 91 13 – General Commissioning Requirements. The Owner, the Consultant and Contractor commissioning team shall be in attendance.

.2 The meeting's intent is to ensure all parties are fully aware of the Commissioning expectations and requirements.

.3 Meeting Agenda to include, but not limited to:

.1 Review Commissioning plan, Specification, and process.

.2 Review Commissioning documentation.

.3 Review all factory testing that will be required.

.4 Review training requirement/schedule.

.5 Discuss future Commissioning meetings.

.6 Issues/risks.

1.07 SUBSTANTIAL COMPLETION MEETINGS:

.1 Arrange pre-Substantial Completion meetings. The Contractor, the Owner and the Consultant shall be in attendance.

1.08 OTHER MEETINGS:

.1 The Contractor shall, as directed by the Consultant, attend Project coordination meetings, which may be required in addition to the specific meetings listed herein. Meetings may include topics

related to site and railway safety, orientation and training, design compliance, Work progress and issues, installation of Products Supplied by Others, coordination of Subcontractors, quality, delivery and Acceptance activities, warranty, dispute resolution, and environmental issues.

.2 Arrange meetings with the Consultant to coordinate large deliveries and in advance of complex installation.

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 This Section specifies Contractor's responsibilities for the preparation and submission of Construction Schedule updates, and other documentation related to tracking progress of the Work.

1.02 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.03 RELATED SECTIONS

.1 Section 01 31 19 - Project Meetings.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 77 00 - Closeout Procedures.

.4 Section 01 32 00.16 - Construction Progress Schedule – Critical Path Method (CPM).

1.04 SUBMISSION

.1 Submit, for review and Acceptance a Construction Schedule within ten (10) Working Days from Contract award. The Construction Schedule shall be based on the Contractor's initial schedule submitted at the RFP phase. Notify the Consultant of any major changes from the initial schedule.

.2 ONTC Representative will review the Construction Schedule and return review copy within ten (10) Working Days after receipt.

.3 If changes are required, resubmit, the Construction Schedule for Acceptance within five (5) Working Days after return of review copy.

.4 The Accepted Construction Schedule shall be baselined and all progress updates shall be made against this version. The baselined Accepted Construction Schedule shall not be changed without the agreement of the Consultant and shall be subject to review and Acceptance prior to becoming the new baselined Construction Schedule.

1.05 CONSTRUCTION SCHEDULE UPDATES

.1 Show projected percentage of completion of each item as of the last date of the month.

.2 Indicate progress of each activity to date of submission schedule.

2 PRODUCTS:

2.01 RECORDING ACTUAL SITE CONDITIONS ON AS-BUILT DRAWINGS

.1 Clearly label each As-Built Drawing as “AS-BUILT DRAWING”. Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.2 Record actual construction including:

.1 Measured depths of elements of foundation in relation to finish first floor datum;

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements;

.3 Measured locations of pipes, ducts, conduits, outlets, fixtures, access panels, and appurtenances, referenced to visible and accessible features of construction;

.4 Field changes of dimension and detail;

.5 Changes made by Change Orders and Supplemental Instructions;

.6 References to Shop Drawings, where Shop Drawings show more detail.

.7 Referenced Standards to related Shop Drawings and modifications.

.8 Details not on original Contract drawings.

.3 Do not use As-Built Drawings for construction purposes.

.4 Following construction, Contractor shall prepare As-Built Record Drawings in accordance with Section 01 78 00 Closeout Submittals.

3 EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

.1 Contractor's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities.

.2 Distribution: Distribute copies of Accepted Construction Schedule to ONTC Representative.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Section 01 32 33 – Photographic Documentation

.2 Section 01 43 00 - Quality Assurance.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Submit to the Consultant Submittals listed in Specifications for review and Acceptance.

.2 Do not proceed with Work affected by Submittal until review is complete and Acceptance has been provided.

.3 Review Submittals before submission to the Consultant. Stamp Submittals as “Approved by Contractor” prior to submitting to the Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each Submittal has been checked and coordinated with requirements of Work and Contract Documents and Contractors own quality procedures. Submittals not stamped, signed, dated and identified as to specific Project will be returned without being examined and considered rejected.

.4 Notify the Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.5 Verify site measurements and affected adjacent Work are coordinated.

.6 Keep one Accepted copy of each Submittal on site.

1.04 SHOP DRAWINGS, PRODUCT DATA AND OTHER SUBMITTALS

.1 Refer to CCDC 2 GC 3.8 Shop Drawings and Supplementary General Conditions.

.2 Refer to Specifications for all other required Submittals.

.3 Submit for review and Acceptance Shop Drawings stamped and signed by professional engineer licensed in Province of Ontario, Canada.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to Contract Drawings and Specifications.

.5 Allow ten (10) Working Days for Consultant review of each Submittal, unless otherwise specified.

.6 Adjustments requested on Shop Drawings by the Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Consultant and

do not proceed with Work. Such adjustment shall be approved by a Change Directive or Change Order issued by the Owner in accordance with the Contract Documents.

.7 Make changes in Shop Drawings as the Consultant may require, consistent with Contract Documents. When resubmitting, notify the Consultant in writing of revisions other than those requested.

.8 After the Consultant review and Acceptance, distribute copies.

.9 Submit electronic copy of Shop Drawings for requirements requested in Specifications and as the Consultant may reasonably request. Submit electronic copies of Product data sheets or brochures for requirements requested in Specifications and as requested by the Consultant where Shop Drawings will not be prepared due to standardized manufacture of Product.

.1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams used to illustrate standard manufactured products or any other specified information.

.2 Delete information not applicable to Project.

.3 Supplement standard information to provide details applicable to Project.

.4 Cross-reference Product data information to applicable portions of Contract Documents.

.10 Submit electronic copies of test reports for requirements requested in Specifications and as requested by the Consultant.

.1 Report signed by authorized official of testing laboratory that material, Product or system identical to material, Product or system to be provided has been tested in accord with specified requirements.

.11 Submit electronic copies of certificates for requirements requested in Specifications and as requested by the Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of Product, system or material attesting that product, system or material meets Specification requirements.

.2 Certificates must be dated after the award of the Contract, complete with the Project name.

.12 Submit electronic copies of manufacturers' instructions for requirements requested in Specifications and as requested by the Consultant.

.1 Pre-printed material describing installation of Product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.

.13 Submit electronic copies of manufacturer's site reports for requirements requested in Specifications and as requested by the Consultant.

.1 Material describing installation of Product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.14 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.15 Submit electronic copies of Operation and Maintenance Data for requirements requested in

Specifications and as requested by Owner, after a review of an electronic copy has been completed and Accepted by the Consultant.

.1 Submit four (04) hard copies, unless otherwise specified, of reviewed and Accepted Operation and Maintenance Data.

.16 Supplement standard information to provide details applicable to Project.

.17 If upon review by the Consultant, no major corrections are requested, electronic copies will be returned as Accepted or Accepted with comments (in the case of minor corrections) and fabrication and installation of Work may proceed. Requested minor corrections shall be made in a timely manner. If Shop Drawings are rejected, noted copy will be returned and resubmission of corrected Shop Drawings for review and Acceptance, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.18 Acceptance of the Shop Drawings does not mean confirmation that the Submittal does not include errors or omissions, defects or deficiencies.

1.05 SAMPLES

.1 Submit for review and Acceptance samples in duplicate as requested in respective Specifications. Label samples with origin and intended use.

.2 Deliver samples prepaid to the Consultant at the address provided during the Pre-Construction Meeting.

.3 Notify the Consultant in writing at the time of submission of deviations in samples from the requirements of Contract Documents. Deviations may be rejected and the Contractor shall resubmit either a sample compliant with the Contract Documents or an alternative sample with written deviations.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by the Owner or the Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Consultant and do not proceed with Work. Such adjustment shall be approved by a Change Directive or Change Order issued by the Owner.

.6 Make changes in samples which the Consultant may require, consistent with Contract Documents.

.7 Reviewed and Accepted samples will become standard of workmanship and material against which installed Work will be verified.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.1 R.S.C., 1985, c. L-2

.2 Province of Ontario

.1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [1990, c.0.1, as amended and O. Reg. 213/91 as amended] - Updated August 8, 2023.

.3 National Building Code of Canada (NBC):

.1 Part 8, Safety Measures at Construction and Demolition Sites.

.4 The Canadian Electric Code (as amended)

.5 Canadian Standards Association (CSA) as amended:

.1 CSA Z797-2009 Code of Practice for Access Scaffold.

.2 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.

.3 CSA Z462- Workplace Electrical Safety Standard.

.6 National Fire Code of Canada 2015 (as amended)

.1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.

.7 American National Standards Institute (ANSI):

.1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.8 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Section 01 31 19 – Project Meetings

.2 Section 01 33 00 - Submittal Procedures

.3 Section 01 35 43 – Fire Safety Requirements

.4 Section 01 35 43 - Environmental Procedures

.5 Section 01 51 00 - Temporary Utilities

.6 Section 01 56 00 - Temporary Barriers and Enclosures

.7 ONTC Contractor Subcontractor Policy.

.8 ONTC HOT WORK Program.

.9 ONTC Electrical Safety Policy.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 The ONTC Representative's review and Acceptance of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.3 Submit to the Owner and the Consultant electronic copies of incident and accident reports.

.4 Submit to the Consultant WHMIS Safety Data Sheets (SDS) and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements. Include and an update the Health and Safety Plan as required.

1.04 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

.2 Provide copies of all notices to the ONTC Representative.

1.05 SAFETY ASSESSMENT

.1 Conduct a site-specific hazard assessment based on review of Contract Documents, required Work, and Project site. Identify any known and potential health risks and safety hazards.

.2 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications and , include, but not be limited to, the following:

.1 Primary requirements:

.1 Contractor's and ONTC safety policy.

.2 Identification of applicable compliance obligations.

.3 General safety rules for Project.

.4 Job-specific safe work procedures.

.5 Inspection policy and procedures.

.6 Incident reporting and investigation policy and procedures.

.7 Occupational Health and Safety Committee/Representative procedures.

.8 Occupational Health and Safety meetings.

.9 Occupational Health and Safety communications and record keeping procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the Work.

.3 List hazardous materials to be brought on site as required by Work.

.4 Indicate engineering and administrative control measures to be implemented at the Place of Work for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all Subcontractors. Ensure that work/activities of Subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit for Acceptance in accordance with 01 33 00 – Submittal Procedures

.5 Review and Acceptance: the review and Acceptance of site-specific Health and Safety Plan shall not relieve the Contractor of responsibility for errors or omissions in final site-specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract Documents.

1.06 REGULATORY REQUIREMENTS

.1 Conduct the Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.07 PROJECT/SITE CONDITIONS

.1 Work at site may involve contact with:

.1 ONTC employees.

.2 Consultants.

.2 The Contractor is solely responsible for all utility detection and clearances prior to starting the Work.

.3 The Contractor will not rely solely upon the Drawings or other information provided for utility locations.

.4 Carry out any activities involving asbestos in accordance with applicable Provincial / Federal

Regulations.

.5 Removal and handling of asbestos will be in accordance with applicable Provincial / Federal Regulations.

.6 Refer to reports in Attachment 1 to the Specifications for further site conditions and assessment reports for any noted hazardous or contaminated materials or substances present at Place of the Work. Contractor should their own assessments prior to commencing Work.

1.08 GENERAL REQUIREMENTS

.1 In accordance with 01 56 00 – Temporary Barriers and Enclosures, provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.09 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Contractor will be responsible and **assume the role of Constructor** as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

.3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.4 Provide first aid, hygiene, and medical facilities at the Place of the Work in accordance with requirements of provincial and local governmental occupational health, safety, and workers' compensation statutes, public health guidance publications (where warranted) and Contract Documents.

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

.2 Comply with all Federal and Provincial laws relating to Health and Safety including Acts and Regulations as well as Lower Tier Municipality By-Laws.

.3 Comply with all applicable industry safety standards.

.4 Comply with legislative requirements for work performed including, but not limited to:

.1 Qualifications of workers;

.2 Training;

.3 Supervision, and;

.4 Use of onsite equipment.

.5 Provide any and all personal protective equipment for Contractor's own workers where prescribed by legislation.

1.11 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise Contractor's nominated Health and Safety Coordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise the Consultant verbally and in writing.

1.12 CONTRACTOR HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:

.1 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel that do not successfully complete required training are not permitted to enter site to perform Work.

.2 Maintain a training record/log of Contractor employee including all Subcontractors, suppliers and other parties retained by the Contractor for the execution of the Work, at the jobsite and electronic copy, available for the Owner and the Consultant review at request.

.3 Be responsible for implementing, revising, enforcing daily and monitoring site-specific Contractor's site-specific Health and Safety Plan.

.4 Visit each Place of the Work regularly, at least biweekly or as required by health and safety laws and regulations, to ensure Work is being completed in compliance with Contractor's Health and Safety programs and all applicable laws and regulations.

.2 Contractor's nominated site supervisor may complete some of daily tasks of the Health and Safety Coordinator provided the site supervisor has the proper qualifications to complete those tasks.

1.13 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by Authority Having Jurisdiction (AHJ), the Consultant or by Owner.

.2 Provide the Consultant with written report of action taken to correct non-compliance of health and safety issues identified.

.3 The Owner or the Consultant may stop Work if non-compliance of health and safety regulations is

not corrected. The Contractor/Subcontractors will be responsible for any costs arising from such a “stop work order”.

1.14 BLASTING

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by the Owner.

1.15 POWDER ACTUATED DEVICES

.1 Use powder-actuated devices only after receipt of written permission from Owner.

1.16 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

.2 Before undertaking any Work, coordinate required energizing and de-energizing of new and existing circuits with the Owner.

.3 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.17 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Owner or the Consultant.

.3 Keep the documents and lockout tags at the site and list in a logbook for the full duration of the Contract. Upon request, make such data available for viewing by the Owner, the Consultant or by any authorized safety representative.

1.18 HOT WORK:

.1 Contractor must follow ONTC Hot Work Program.

1.19 SILICA

.1 Preventive measures to apply to the work site:

.1 Source reduction methods

.1 Work in wet environment or use tools with inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high efficiency filter

not to propagate dust in the environment.

.2 Clean surfaces and tools with water, never with compressed air.

.3 Sand and pickle surfaces by using an abrasive containing less than 1 % of silica.

.4 When required, install shields or other containment device to prevent silica dust from migrating toward other workers or the public.

.2 Protection: Wear respiratory protection equipment (mask) during all operations that could generate silica dust.

1.20 WORK STOPPAGE

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

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 This Section references laws, bylaws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction (AHJ), and other legally enforceable requirements applicable to the Work and that are or become enforced during performance of the Work.

1.02 REFERENCE STANDARDS AND REFERENCE DOCUMENTS

.1 If specified referenced standards do not indicate an edition or version, the latest edition or revision issued by the publisher at the time of RFP closing shall apply, except as follows:

.1 If a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the edition or version in the regulatory reference shall apply.

.2 The specified reference standards establish minimum requirements. If Contract Documents indicate requirements that conflict with a reference standard, the more stringent requirements shall apply.

.3 If multiple reference standards are specified and the standards establish different requirements, the most stringent requirement shall apply.

.4 In case of discrepancy or uncertainties, refer to the Consultant for interpretation or clarification.

.5 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.03 CODES

.1 Building Code: Perform Work in accordance with the Ontario Building Code including amendments up to the time of RFP closing and other codes of provincial or local application.

.2 Fire Code: Perform Work in accordance with the Ontario Fire Code 2020 including amendments up to the time of RFP closing and other codes of provincial or local application.

.3 Energy Code: Perform Work in accordance with the National Energy Code of Canada for Buildings (NECB) 2020 and Part 12 of OBC Resource Conservation and Environmental Integrity and Supplementary Standard SB-10 whichever is more stringent, including amendments up to the time of RFP closing and other codes of provincial or local application.

.4 Plumbing Code: Perform Work in accordance with Ontario Plumbing Code Part 7 of OBC. including amendments up to the time of RFP closing and other codes of provincial or local application.

.5 If there is a conflict or discrepancy between codes, the most stringent requirements shall apply.

.6 Specific design and performance requirements listed in Specifications and indicated on Drawings may exceed minimum requirements established by referenced Codes; these requirements will govern over the minimum requirements listed in the referenced Codes.

1.04 FEES

.1 Except as otherwise specified, Contractor shall apply for, obtain, and pay fees associated with permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:

.1 Regulatory requirements and fees in force at the time of RFP closing, and

.2 A change in regulatory requirements or fees scheduled to become effective after the time of RFP closing and of which public notice has been given before the time of RFP closing.

2 PRODUCTS

2.01 EASEMENTS AND NOTICES

.1 Owner will obtain permanent easements and rights of servitude that may be required for performance of the Work.

.2 Contractor shall give notices required by regulatory requirements.

2.02 PERMIT REQUIREMENTS

.1 Construction Related Permits:

.1 **Municipal building permit is not required**.

.2 If required, MTO Building and Land Use Permits will be obtained by the Owner.

.3 Obtain and pay for all other required Certificates, Licenses and other permits required by regulatory municipal, provincial or federal authorities to complete the Work.

.4 Contractor will require that specific Subcontractor[s] obtain and pay for permits required by authorities having jurisdiction (AHJ), where their work is affected by work requiring permits.

.5 Contractor shall display permits in a conspicuous location at the Place of the Work.

.2 Occupancy Permits:

.1 Contractor shall apply for obtain and pay for any required permits and or certificates where required by AHJ.

.2 Contractor shall correct deficiencies in accordance with the Consultant’s instruction. If a deficiency is not corrected, the Owner reserves the right to make correction and charge Contractor for costs incurred.

.3 Contractor shall turn all permits and certificates over to Owner.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.2 ASTM International (ASTM):

.1 ASTM E329-[20]Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

.3 International Organization for Standardization (ISO):

.1 ISO 9001: [2015], Quality Management Systems – Requirements

1.02 SUMMARY

.1 This section describes administrative and procedural requirements for proactive Contractor activities to assure the quality of construction before and during execution of the Work.

1.03 RELATED REQUIREMENTS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00 – Quality Control

1.04 ADMINISTRATIVE REQUIREMENTS

.1 Contractor is responsible for self-performed testing and inspections and submittal of test reports to the Consultant.

.2 The Owner may employ and pay for quality audit services performed through third-party observation and testing to validate the Contractor's performance of the Work and perform whole Work testing at completion of Project.

.3 Contractor to provide a Quality management system that establishes a standardized approach to managing quality of materials and workmanship during the execution of Work in accordance with ISO 9001. The quality management system shall consist of plans, procedures, and organization necessary to produce complete the Work in compliance with the Contract Document requirements.

1.05 ACTION AND INFORMATION SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit a Quality Management Plan to the Consultant for review and Acceptance prior to Preconstruction meeting.

.1 The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The Owner will consider an interim plan for the first twenty (20) Working Days of operation. The Contractor may begin mobilization during the interim period.

.2 The Work will be permitted to begin only after Acceptance of the Quality Management Plan or Acceptance of an interim plan applicable to the portion of the Work to be started.

.3 The Quality Management Plan shall include, as a minimum, the following to cover all Work both at the Place of the Work, and in off-site locations (such as manufacturing facilities), including Work by Subcontractors, fabricators, suppliers, and purchasing agents:

.1 A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the quality control staff shall implement the three-phase control system for all aspects of the work specified. The staff shall include the person responsible for quality who shall report to the Contractor's project manager.

.2 The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a quality control function.

.3 A copy of the letter to the person responsible for quality signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of person responsible for quality, including authority to stop work that is not in compliance with the Contract Documents. The person responsible for quality shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters will also be supplied to the Consultant.

.4 Procedures for scheduling, reviewing, certifying, and managing Submittals, including those of Subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with the Contract Documents.

.5 Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, portion of the Work to be tested, test frequency, and person responsible for each test.

.6 Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.

.7 Procedures for tracking defects and deficiencies from identification through Acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

.8 Reporting procedures, including proposed reporting formats.

.9 A list of the definable features of Work. A definable portion of the Work is a task which is separate and distinct from other tasks and has separate control requirements. This list will be agreed upon with the Consultant during a coordination meeting.

.10 Acceptance of the Contractor's Quality Management Plan is required prior to the start of the Work. Acceptance is conditional and will be predicated on satisfactory performance during the Work.

.11 The Owner reserves the right to require the Contractor to make changes in its Quality Management Plan and operations, as necessary, to obtain the quality specified.

.12 Refer to the Contract Documents for additional requirements.

.4 Submit a detailed testing and inspections schedule for Acceptance to the Consultant in accordance with the Contractor's Quality Management Plan.

.5 Submit certificates for Products, process and system for Acceptance by the Consultant.

.6 Submit formal testing and inspections reports per ASTM E329 and as indicated in Specifications to the Consultant in accordance with the Contract Documents.

.7 Submit one digital copy of each Quality Assurance inspection and test report to the Consultant, except where Specifications indicate otherwise.

.8 Submit mill test certificates, as required, in technical Specifications and as indicated on Drawings.

1.06 Quality Control Organization:

.1 The requirements for the quality control organization are a person responsible for quality and sufficient number of additional qualified personnel to ensure compliance to Contract Documents.

.2 Provide a quality control organization which shall be available at all times during progress of the Work and with complete authority to take any action necessary to ensure compliance with the Contract Documents.

1.07 QUALIFICATIONS

.1 Manufacturers' Qualifications:

.1 specializes in manufacturing the Products specified in the Specifications.

.2 minimum three (03) years documented experience with a record of successful performance.

.2 Suppliers' Qualifications:

.1 authorized to distribute manufacturer's Products

.2 has capacity to supply required Products without delaying the Project

.3 Fabricators' Qualifications:

.1 experienced in producing Products required for this Project

.2 successful record of in-service performance

.3 sufficient production capacity to fabricate required Products without delaying the

Project

.4 Installer Qualifications:

.1 firm or individual experienced in design and installation, application, and erection of materials to the extent required for this Project

.2 successful record of in-service performance

.5 Testing and Inspecting Agency Qualifications:

.1 accredited organizations by the Standards Council of Canada for testing and inspection

.2 capable of reliably performing testing of building products and inspections of construction activities in accordance with ISO 9001 and ASTM E329.

.6 Licensed Professionals Qualifications:

.1 individual registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the province, state or jurisdiction in which the Project is to be constructed.

1.08 CERTIFICATIONS

.1 Ensure that certification of Products, processes, and systems includes physical and examination testing as specified in ASTM E329 SO 9001 to confirm compliance with Specifications requirements.

1.09 COORDINATION

.1 Coordinate and schedule tests and inspections with accredited testing, inspection agencies as indicated in Contract Documents and in accordance with ASTM E329 requirements.

.2 Coordinate Contractor’s Quality Management system with the Consultant for reporting, scheduling access and incidental labor required by Quality Auditor’s reports if required.

.3 When attendance is required, notify the Consultant in advance before proceeding with tests and inspections, and additional tests and inspections as may be reasonably requested by the Consultant.

.4 Coordinate testing and inspections schedule with Subcontractor, testing agencies, and other affected parties.

1.10 SITE SAMPLES

.1 Testing agency is responsible for obtaining representative samples of those materials required to be tested and evaluated in accordance with the Contractual Documents.

.2 Ensure testing agency performs sampling in accordance with ASTM E329.

.1 When sampling collection is required by testing agency, ensure proper protection, handling and storing of samples.

.3 Testing agency to document procedures and appropriate techniques to select samples.

.4 Record details of environmental conditions present during the sampling, such as rain or freezing weather that may affect testing of sample or interpretation of test results.

1.11 Mock-ups

.1 Mock-ups can be used as a reference for assessing quality of workmanship and site-applied finishes as requested in the Project's Contract Documents.

.2 Prepare mock-ups for Work specifically requested in Specifications. Except when required in other sections, obtain the Consultant's Acceptance to construct and install mock-ups. When not required, Contractor shall indicate the use of mock-ups in their Quality Management Plan.

.3 Assemble mock-ups at the Place of the Work in locations acceptable to the Consultant, or where location is indicated in the technical Specifications.

.4 Schedule mock-ups ready for the Consultant review and Acceptance in orderly sequence, to avoid delays in Work.

.1 Failure to prepare mock-ups in ample time is not considered sufficient reason to request an extension of Contract Time. Claims for extension of Contract Time by reason of such default will not be considered.

.5 Consult with the Consultant in scheduling dates for construction and review of mock-ups. Provide sufficient notice as directed by the Consultant.

.6 Construct mock-ups using materials, finishes, colours, and methods proposed for the completed Work. Mock-ups to demonstrate proposed workmanship and range of aesthetic appearance.

.7 Where a mock-up represents or affects multiple Specification sections, coordinate activities to ensure mock-ups are complete.

.8 Modify or replace mock-ups when unacceptable to the Consultant.

.9 Maintain acceptable mock-ups in an undisturbed condition as a standard for judging the completed Work.

.10 Demolish and remove mock-ups at conclusion of the Work or when Acceptable to the Consultant.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)

    .1 CCDC 2-2020, Stipulated Price Contract.

1.02 SUMMARY

.1 This Section describes administrative and procedural requirements for reactive activities to verify that completed Work conforms to Contract Documents requirements.

.2 Having inspection and testing agencies employed by Contractor or the Owner does not relieve the Contractor of their responsibility to perform Work in accordance with Contract Documents.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Allow and coordinate access to Work on site, manufacturing off site, and fabrication off site with inspection and testing agencies, the Consultant and the Owner.

.2 Retain and pay for inspection and testing that are designated for Contractor's own Quality Management Plan, and when testing and inspection are required by Authorities Having Jurisdiction (AHJ).

.3 Provide advanced notice, minimum five (05) Working Days to the Consultant and to each inspection/testing agency for inspection and testing required by Contract Documents or by (AHJ).

.4 Where Owner cooperation, input or participation is required to fully perform inspection and test activities, particularly in relation to the correct operation of Products Supplied by Other and installed by the Contractor, provide a minimum ten (10) Working Days' notice to the Consultant.

.5 In advance of each test, notify appropriate agency and the Consultant in the order that attendance arrangements can be made.

.6 Employment of inspection and testing agencies does not relax or remove responsibility to perform Work in accordance with Contract Documents.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit schedule of testing and inspection activities to the Consultant, applicable Subcontractors, testing agencies, Owner, and other affected parties. Include the following:

    .1 List each testing and inspection agency

.2 Identify types of tests and inspections for each agency, and cross reference to applicable specification section number-title in Contract Documents

.3 Description of test and inspection

.4 Identify applicable reference standard

.5 Identify test and inspection method

.6 Indicate number of each test and inspection required

.3 Submit one digital copy of each quality assurance inspection and test report to the Consultant, except where a technical Specification section indicates otherwise.

.4 Submit reports for inspection and testing required by Contract Documents or by AHJ and performed by Contractor-retained inspection and testing agencies within ten (10) Working Days after inspection or test is completed, except where a technical Specification section indicates a different time period.

.5 Submit one digital copy of each quality control inspection and test report to the Consultant, except where a technical Specification section indicates otherwise. Maintain copies available at Place of the Work in accordance with Section 01 78 00 - Closeout Submittals.

.6 Deliver copies of quality control reports to Subcontractor of Work being inspected or tested.

1.05 SITE QUALITY CONTROL PROCEDURES

.1 Provide labor, Construction Equipment, and temporary facilities to obtain and handle test samples and materials on site. Arrange for sufficient space to store and cure test samples.

.2 Deliver samples and materials required for testing, as requested in technical Specification sections. Submit with reasonable promptness and in an orderly sequence to avoid delays in Work.

.3 Before Project start, photograph Project site and existing conditions in accordance with Section 01 33 00 – Submittal Procedures.

1.06 TESTING AND INSPECTION SERVICES

.1 The Owner may retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the Work, in addition to those carried by the Contractor.

.2 Consultant may order any part of the Work to be reviewed or inspected if the Work is suspected to be not in accordance with Contract Documents. If, upon review such Work is found not in accordance with Contract Documents, the Contractor shall correct such Work and pay cost of additional review and correction.

.3 Provide equipment required for executing inspection and testing by appointed agencies.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised

by Consultant at no cost to Owner. Pay costs for retesting and re-inspection.

.5 Quality control testing and inspection reports to include the following:

.1 Project name and number

.2 Testing/Inspection agency's name, address, telephone number, and website

.3 Date of issuing report

.4 Dates and locations of tests, inspections, or samples

.5 Description of the Work and test and inspection method

.6 Numbers and titles of associated Specification sections

.7 Test and inspection data and interpretation of test results (e.g., pass or fail)

.8 Ambient conditions at time of test, inspection, or sampling

.9 Recommendations on re-testing and re-inspecting, if applicable.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.03 TEMPORARY ELECTRICITY

.1 When Electrical power is not available at site, make all necessary arrangements and pay for all costs for a temporary electrical service of sufficient capacity to supply temporary lighting, operation of power tools, cranes and equipment for all construction, implementation, and inspection and testing purposes. Supply and install necessary temporary cables and other electrical equipment and make all temporary connections as required. If generators are used, they should be of the kind that minimize noise impact to surrounding areas and residents.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance, and removal.

.3 When Electrical power supply is available at site and supply is metered to ONTC, subject to agreement of the Consultant, it may be provided for construction use at no cost. Contractor shall ensure their use shall not cause the overall use to exceed supply voltage and capacity. Connect to existing power supply in accordance with Canadian Electrical Code.

.4 Electrical power systems installed under this Contract may be used for construction requirements only with prior approval from the Consultant if warranties are not affected. Repair damage to electrical system caused by the Contractor’s use under this Contract.

.5 Temporary power distribution wiring shall comply with Ontario Electrical Safety Code. Obtain inspection certificates for temporary electrical work.

1.04 TEMPORARY FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work in accordance with Section 01 35 35 – Fire Safety Protection.

1.05 TEMPORARY HEATING COOLING AND VENTILATING

.1 Provide temporary heating as required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be of the flameless (vent free) type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Protect Work and Products against dampness and cold.

.3 Prevent moisture and condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation, and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain minimum temperatures recommended by applicable codes and regulations in areas where construction is in progress.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours, or gases in occupied areas during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in a manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operating ventilation and exhaust system after cessation of work process until complete removal of harmful contaminants is ensured.

.6 Permanent heating, ventilating, and air conditioning system of building must not be used.

1.06 TEMPORARY LIGHTING

.1 Provide and maintain temporary lighting throughout Project. Ensure level of illumination on all work area is suitable and will meet or exceed the requirement of Health and Safety regulations and as per applicable codes and standards.

.2 Electrical lighting systems installed under this Contract may be used for construction requirements only with prior approval of the Consultant if warranties are not affected.

.1 Repair damage to lighting systems caused by use under this Contract.

.2 Replace lamps that have been used for more than [3] months.

.3 Temporary lighting installed under this Contract shall not cause light nuisance and or adversely impact ONTC Operations and surrounding areas and properties. Make adjustments to the satisfaction of Owner.

1.07 TEMPORARY SANITARY FACILITIES

.1 Provide sanitary facilities in accordance with Occupational Health and Safety requirements in the

Place of the Work. Use of Owner's existing sanitary facilities or new sanitary facilities is not allowed.

1.08 TEMPORARY TELECOMMUNICATIONS

.1 If required, provide and pay for temporary telephone, data hook up equipment necessary for own use and use of the Consultant.

1.09 TEMPORARY WATER

.1 When available, Owner will provide water for construction use. Otherwise, the Contractor will be responsible for the water supply and all associated costs.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance, and removal as required.

2.01 INSTALLATION AND REMOVAL

.1 Provide temporary utilities to execute Work expeditiously.

.2 Remove all such temporary utilities from site after use.

.3 Be responsible for the careful and reasonable use of Owner-supplied utilities. Make good and remediate any damage caused by use under this contract.

.4 Pay costs for installation, maintenance and removal.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.

.2 CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.

.3 CSA Group (CSA)

.1 CSA-A23.1/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121-[M1978(R2003)], Douglas Fir Plywood.

.3 CAN/CSA-S269.2-[M1987(R2003)], Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321-[96(R2001)], Signs and Symbols for the Occupational Environment.

.4 U.S. Environmental Protection Agency (EPA) / Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide Submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.03 INSTALLATION AND REMOVAL

.1 For each Place of the Work prepare site plan indicating proposed location and dimensions of the Construction Area to be fenced and used by Contractor, number of trailers if required, area for parking vehicles, avenues of ingress/egress to fenced area and details of fence installation. Construction Area shall be within the area indicated in the Contract Drawings. Submit site plan to Consultant for review and Acceptance.

.2 Indicate use of supplemental or other staging areas.

.3 Provide construction facilities in order to execute Work expeditiously.

.4 After use remove from site all such work installed under this section 01 52 00 – Construction Facilities. Reinstate area to same or better state before start of Project.

1.04 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, platforms, temporary stairs.

1.05 HOISTING

.1 Provide, operate and maintain hoists, cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists and cranes to be operated by qualified operator.

1.06 ELEVATORS

.1 When applicable, permanent elevators are not to be used by Contractor, Subcontractor or supplier personnel or for transporting of materials unless approved by the Owner. Co-ordinate use with the Owner if use is permitted.

.2 If use of elevators is approved by the Owner, provide protective coverings for finish surfaces of walls, floors and entrances.

1.07 SITE STORAGE/LOADING

.1 Confine Work and operations of employees to the Construction Area. Do not unreasonably encumber premises with Products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work. Be solely responsible and liable for damages resulting from violation of this requirement.

.3 Products shall be stored only in areas designated or approved by the Consultant and shall not be left on the ground or in undesignated areas.

.4 Site storage and loading requirements to be in accordance with Ontario Occupational Health and Safety Act and Regulations for Construction Projects.

1.08 CONSTRUCTION PARKING

.1 Parking may be permitted on site provided it does not disrupt performance of Work. Arrange with the Consultant and obtain approval before site usage. Show location of agreed parking on site plan.

.2 Parking within the Construction Area shall be managed by the Contractor as long as it does not affect work performance or Safety.

.3 Provide and maintain adequate access to Project sites.

.4 Parking arrangements shall be in accordance with location specific restrictions contained in section 011400 – Work Restrictions.

1.09 TEMPORARY SECURITY

.1 Contractor is responsible for the security of the Place of the Work and any off-site other locations used by the Contractor for the execution of the Contract such as off-site temporary storage spaces.

.1 Temporary Site Security:

1. Site Fencing: Before beginning excavation and before construction activities begin, provide temporary site enclosure fencing with lockable gates to prevent unauthorized access.
2. Extent of Fencing: To enclose entire Project site or a portion sufficient to accommodate construction activities as indicated on Drawings.

3. Distribute gate keys to authorized personnel only. Supply Consultant and Owner with one set of keys each.

.2 Temporary Building Security:

1. Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized access, vandalism, theft, and similar security violations.
2. Distribute building entrance keys to authorized personnel only. Supply Owner and Consultant with one set of keys each.

1.10 OFFICES

.1 Provide one field office for the duration of the Work. The field office can be located within the Contractor Construction trailer and shall have proper heating, lighting, and ventilation and be of sufficient size to accommodate site meetings.

.2 Provide one workspace in field office for use by the Owner and the Consultant.

.3 Provide marked and fully stocked first-aid case in a readily available location.

.4 Subcontractors to provide their own offices as necessary. Arrange with the Consultant location of these offices.

.5 Maintain offices in a clean condition.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof storage space (sea-cans, sheds, etc.) for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof storage space on site in manner to cause least interference with work activities.

.3 Ensure all equipment, tools and materials (including salvaged material) are stored clear of the rail Right of Way in a position where it they will not interfere with train operations and employee movements. Ensure all equipment, tools and materials and are secured in such a manner that they cannot fall or be placed foul of the rail line.

1.12 SANITARY FACILITIES

.1 Provide sanitary facilities for workforce in accordance with governing regulations and ordinances and in accordance with 01 51 00 – Temporary Facilities.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.13 CONSTRUCTION SIGNAGE

.1 No other signs or advertisements, other than warning signs, are permitted on site.

.2 Signs and notices for safety and instruction in English Graphic symbols to CAN/CSAZ321.

.3 Maintain approved signs and notices in good condition for duration of Project and dispose of offsite on completion of Project or earlier if directed by the Consultant.

.4 Provide signage in compliance O. Reg. 213/91 CONSTRUCTION PROJECTS, Canada Occupational Health and Safety Regulations SOR/86-304, Ontario Occupational Health and Safety Act, R.S.O. 1990 and applicable laws and standards.

.5 The Owner may supply or instruct the Contractor to supply other signs. Signs shall be installed by the Contractor. Specification of signage will be provided by the Owner. Any additional cost will be valued as per Contract Documents.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by the Consultant.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor’s traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor shall be responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary only after obtaining the Consultant’s approval.

.8 Access roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

.9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.10 Dust control: adequate to ensure safe operation at all times.

.11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by the Owner.

.12 Lighting: to assure full and clear visibility for full width of access road and work areas during night work operations.

.13 Provide snow removal during period of Work.

.14 Remove, upon completion of Work, access roads designated by the Owner.

1.15 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities at a location approved by the Consultant.

2.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of Authorities Having Jurisdiction, sediment and erosion control drawings, sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of Authorities Having Jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-[97], Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-[00], Exterior Alkyd Primer for Wood.

.3 CSA Group (CSA)

.1 CSA-O121-[M1978(R2003)], Douglas Fir Plywood.

1.02 RELATED REQUIREMENTS

.1 Section 01 14 00 – Work Restrictions

.2 Section 01 52 00 – Construction Facilities

.3 Section 01 55 26 – Traffic Controls

.4 Section 01 57 00 – Temporary Controls.

.5 Section 01 74 00 – Cleaning

.6 Section 01 74 19 – Waste Management and Disposal.

1.03 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.04 HOARDING

.1 Unless otherwise specified, erect temporary site enclosures using self-supporting 1.8m high metal fence. Provide lockable truck gate(s). Maintain fence in good repair.

.2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.05 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades as required by applicable Laws, codes and governing authorities.

1.06 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.07 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such Work is complete.

1.08 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.09 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

.2 Ensure public use of operational facilities is protected appropriately. Reference section 01 14 00 – Work Restrictions, for details of operational facilities.

1.10 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.12 PROTECTION OF FINISHES

.1 Provide protection for finished and partially finished finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with the Owner locations and installation of protection of finishes five (5) Working Days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.13 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling in accordance with Sections 01 74 00 – Cleaning and 01 74 19 – Waste Management and Disposal.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Section 01 11 00 - Summary Of Work.

.2 Section 01 45 00 - Quality Control.

.3 Section 01 73 00 – Execution.

1.03 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials in execution of Work.

.3 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.

.4 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

.5 Unless otherwise indicated in Specifications, maintain uniformity of manufacture for any particular or like item.

.6 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.04 AVAILABILITY

.1 Immediately upon signing Contract, review Product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of Products are foreseeable, notify the Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify the Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Owner reserves right to substitute more

readily available products of similar character, at no increase in Contract Price or Contract Time.

1.05 STORAGE, HANDLING AND PROTECTION

.1 Handle and store Products in a manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled Products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

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

.4 Store cementitious Products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber, etc. on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged Products at own expense and to satisfaction of the Consultant.

.9 Touch-up damaged factory finished surfaces at own expense and to the Consultant satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.06 TRANSPORTATION

.1 Pay costs of transportation of Products required in performance of Work, unless otherwise specified.

.2 Transportation cost of Products Supplied By Others will be paid for by the Owner. Unload, handle, store and protect such Products.

1.07 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in Specifications, install or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.2 Notify the Consultant in writing, of conflicts between Specifications and manufacturer's instructions, so that the Consultant will establish course of action.

.3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes the Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.08 QUALITY OF WORK

.1 Ensure quality of Work is of highest standard, executed by workers experienced and skilled in

respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. The Owner and the Consultant reserve the right to require dismissal from site workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with the Consultant, whose decision is final.

1.09 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

.3 Co-ordinate with the Consultant delivery times. Ensure to provide sufficient notices for large deliveries that may impact traffic or block roads.

1.10 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform the Consultant if there is interference. Install as directed by the Consultant.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform the Consultant of conflicting installation and propose alternative solution for Acceptance.

1.13 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.14 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Unless otherwise specified, use heavy hexagon heads, semi-finished. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.15 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building or structures. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of the Consultant.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 45 00 – Quality Control.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the following before Work begins at the Place of Work:

.1 Service locations: Document locations and extents of service lines in work areas.

.3 Submit documentation that verifies accuracy of site engineering work when requested by the Consultant.

.4 Submit certificate signed by surveyor indicating elevations and locations of completed Work that conform to Contract Documents and those that do not conform.

1.04 SETTING OUT OF WORK

.1 Survey existing conditions and correlate with all requirements indicated in the Specifications.

.2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.3 Provide devices needed to lay out and construct work.

.4 Review existing conditions and identify, in writing to the Consultant, any conditions that differ materially from those indicated in the Contract Documents.

1.05 RECORDS

.1 Maintain a complete, accurate log of control and survey work as Work progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles, and elevations of Work. Keep copies available at the job site with other progress documentation. Submit to the Consultant at request.

.3 Record locations of maintained, re-routed, and abandoned service lines.

.4 Provide a final survey of building and structure location, surrounding grades as affected by the Work and buried utilities.

1.06 SUBSURFACE CONDITIONS

.1 Promptly notify the Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should the Consultant determine that conditions do differ materially, instructions will be issued by the Owner for changes in Work as provided in Changes and Change Orders.

1.07 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Employ competent person to lay out Work in accordance with the Contract Documents.

.3 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space in accordance with manufacturer's recommendations for safety, access and maintenance.

.4 Submit Shop Drawings which indicate relative position of various services and equipment to the Consultant for review and Acceptance. Contractor is responsible for coordination of all equipment and services before installation.

2.01 NOT USED

.1 Not Used.

3.01 EXAMINATION REQUIREMENTS

.1 Verification of Conditions:

.1 Verify that substrate and other conditions are acceptable for installation of materials, assemblies, and systems in accordance with manufacturer’s instructions and recommendations.

.2 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.3 After uncovering, inspect conditions affecting performance of Work.

.4 Examine conditions, with installers, for defects affecting performance of the Work. Where Work of one Section depends on Work of other Sections being properly completed, verify that Work is complete and suitable to receive the subsequent work.

.5 Proceed with installation only after unacceptable conditions are remedied.

.6 Proceeding with cutting, patching, or installation will be considered Contractor’s acceptance of existing conditions.

.2 Existing Services:

.1 Confirm locations and extent of service lines in area of Work before beginning work on site. Submit findings.

.2 Immediately notify the Consultant if unknown services are encountered. Confirm findings in writing.

.3 Remove abandoned service lines within 2 m of structures. Cap or seal lines at cut-off points as indicated on Drawings.

.3 Pre-Installation Testing:

.1 Perform manufacturer-recommended pre-installation site test of substrate and submit to the Consultant a report of test results indicating whether test results meet the manufacturer's minimum requirements and recommendations.

.4 Evaluation and Assessment:

.1 Verify that pre-existing substrate conditions are acceptable for installation of materials, assemblies, and systems in accordance with manufacturer's instructions and recommendations.

.2 Proceed with installation only after unacceptable conditions are remedied. The remedial work will be completed by the Contractor to the satisfaction of the Consultant. Cost of such remedial work shall be as per Contract Documents.

3.02 PREPARATION

.1 Protection of In-Place Conditions:

.1 Provide supports to ensure structural integrity of surroundings. Provide devices and methods to protect other portions of Project from damage.

.2 Provide protection from weather and other potentially damaging conditions at areas which will be exposed when uncovering work. Maintain excavations free of water.

.2 Perform surface preparation in compliance with Contract Documents.

.3 Survey Reference Points:

.1 Locate and confirm reference points before starting site Work. Protect permanent reference points during construction.

.2 Changes or relocations should not be made without prior written notice to the Consultant.

.3 Notify the Consultant if a reference point is lost or destroyed.

.4 Surveyor to replace reference points in accordance with original land survey.

.5 Notify the Consultant if a reference point requires relocation because of necessary changes in grades or locations.

.4 If Contractor is found to be in error, all costs incurred to correct condition shall be assumed by the Contractor, unless otherwise specified in Contract Documents.

END OF SECTION

1 GENERAL

1.01 SECTION INCLUDES

.1 Common requirements for installing, applying, and erecting Products. Includes procedures and Submittals for cutting and patching to existing conditions.

1.02 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
    1. CCDC 2-2020, Stipulated Price Contract.

1.03 RELATED REQUIREMENTS

.1 Section 01 14 00 – Work Restrictions

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 45 00 – Quality Control.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit proof of anchor and fastener load carrying capacity for a work result, when requested.

2 PRODUCTS

2.01 MATERIALS

.1 Patching Materials: If possible, use the same materials found in the existing conditions, except in fire-resistance rated materials and assemblies.

.2 Materials visible from the floor area: Use materials that visually match existing adjacent surfaces and match existing functional performance.

3 EXECUTION

3.01 COMMON INSTALLATION/APPLICATION/ERECTION REQUIREMENTS

.1 Fit several parts together, to integrate with other Work.

.2 Remove and replace defective and non-conforming Work.

.3 Unless otherwise indicated in Specifications, install, or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.4 Notify the Consultant in writing, of conflicts between Specifications and manufacturer's instructions, so that the Consultant can establish course of action.

.5 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes the Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

.6 Provide openings in non-structural elements for penetrations of mechanical and electrical Work.

.7 Conceal pipes, ducts and wiring in floor, wall, partition, and ceiling assemblies in finished areas, except as indicated otherwise.

.8 In addition to the manufacturer's recommendations for safety, access, accessibility, and maintenance, locate equipment, fixtures, and distribution systems where it shall provide minimal interference and shall maximize on usable space.

.1 Location of equipment, fixtures, and outlets indicated on Drawings and in Specifications are approximate.

.2 Notify the Consultant of impending installation and obtain Acceptance for actual locations.

3.02 BRACING AND ANCHORING

.1 Anchors and Fasteners: Unless otherwise indicated elsewhere:

.1 Provide any necessary anchors and fasteners to fasten each component securely for its intended purpose. Allow for building movement, including from thermal expansion and contraction of materials and assemblies.

.2 Prevent electrolytic reaction between dissimilar metals and materials.

.3 Provide hot-dip galvanized or stainless steel anchors and fasteners for securing exterior work;

.4 Locate anchors and fasteners within individual load limit or shear capacity. Ensure anchors and fasteners are permanently secured.

.5 Where exposed to view, evenly distribute anchors and fasteners in a single area; and

.6 Where exposed to view, provide metal anchors, fasteners, and related accessories with the same texture, colour, and finish as adjacent materials.

.2 Non-Conforming Work: Anchors and fasteners installed which cause substrate cracks or spalling are not acceptable.

3.03 CUTTING AND PATCHING

.1 Proceed with cutting and patching only after the review and Acceptance by the Consultant of all Submittals listed in Article 1.03, Actions and Informational Submittals.

.2 Perform cutting, fitting, and patching including excavation and fill, to complete Work in accordance with related technical Specification sections.

.3 Use special techniques to avoid damaging existing conditions that will remain, and which will result in proper surfaces to receive patching and finishing.

.4 Cut rigid materials using masonry saw, core drill, or other tool recommended by the Product manufacturer or applicable industry association. Pneumatic or impact tools are not allowed on masonry work without the approval of the Consultant.

.5 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.6 Refinish surfaces to match adjacent finishes. Refinish continuous surfaces to nearest intersection (e.g., edges of partition). Refinish assemblies by refinishing entire unit. Provide entire surface with uniform finish, colour, and texture.

3.04 ADJUSTING

.1 Remove and replace patching that is visually unsatisfactory to the Consultant.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 PROJECT CLEANLINESS

.1 Maintain Place of the Work in tidy condition, free from accumulation of waste material and debris.

.2 Do not burn waste materials on site.

.3 Make arrangements with and obtain permits from Authorities Having Jurisdiction (AHJ) for disposal of waste and debris.

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

.5 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.

.6 Dispose of waste materials and debris at appropriate off-site facilities.

.7 Clean interior areas prior to start of finishing Work and maintain areas free of dust and other contaminants during finishing operations.

.8 Store volatile waste in covered metal containers and remove from premises at end of each Working Day, unless authorized otherwise by the Consultant.

.9 Provide adequate ventilation during use of volatile or noxious substances. Use of existing or new ventilation systems is not permitted for this purpose.

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

.11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate new or existing systems or facilities.

1.03 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus Products, tools, Construction Equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others and leave Place of the Work clean and suitable for occupancy.

.3 Prior to final review, remove remaining surplus Products, tools and Construction Equipment.

.4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Owner or the Consultant.

.5 Make arrangements with and obtain permits from Authorities Having Jurisdiction (AHJ) for disposal of waste and debris.

.6 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, wood, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings, and at exterior of building.

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

.9 Vacuum, clean, and dust interiors, behind grilles, louvres and screens.

.10 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

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

.12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.13 Remove dirt and other disfiguration from exterior surfaces.

.14 Clean and sweep roofs, gutters, areaways, and sunken wells.

.15 Sweep and wash clean paved areas.

.16 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.17 Clean roofs, downspouts, and drainage systems.

.18 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.19 Remove snow and ice from access to Place of the Work.

1.04 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

END OF SECTION

1.01 GENERALREFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify the Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request the Owner inspection.

.2 The Owner Inspection:

.1 The Owner, the Consultant and the Contractor will inspect the Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, adjusted and balanced and fully operational.

.4 Certificates required by Authority Having Jurisdiction submitted and approved.

.5 Operation of systems: demonstrated to Owner's personnel.

.6 Commissioning of equipment and systems: completed in accordance with 01 91 13 - GENERAL COMMISSIONING REQUIREMENTS and copies of final Commissioning Report submitted to the Consultant.

.7 Apply for certification of Substantial Performance of the Work and Ready-For-Takeover in accordance with the Contract Documents.

.8 Submit all Close-Out Documentation described in GC 5.5.1.2.and section 01 78 00 – Closeout Submittals

.9 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by the Owner and the Consultant.

.2 When Work is incomplete according to the Owner or the Consultant, complete outstanding items and request re-inspection.

1.03 FINAL CLEANING

.1 Clean in accordance with Section 01 74 00 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 SUMMARY

.1 Comply with the requirements of this section and other related sections.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting with the Owner and the Consultant, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.3 Establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.2 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.3 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to the Consultant for review and Acceptance the operating and maintenance manual (in English). Schedule the Submittal such that Acceptance is received prior to the commencement of training of O&M personnel.

.3 Following completion of training of operations and maintenance personnel, provide two hard (2) copies and an electronic copy in PDF format of finalized operations and maintenance manual.

.4 Provide spare parts, maintenance materials and special tools of same quality and manufacture as Products provided in Work.

.5 Provide evidence, if requested, for type, source and quality of Products supplied.

.6 Provide a complete set of As-Built Record Drawings sealed by an engineer licensed in the province of Ontario.

.7 Provide all other required Closeout Documentation in accordance with the Contract Documents.

1.05 OPERATIONS AND MAINTENANCE MANUAL

.1 FORMAT

.1 Organize data as an instructional manual.

.2 Binders: Vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.

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

.1 Identify contents of each binder on spine.

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

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

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

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

.9 Provide CAD files in dwg format.

.2 CONTENTS

.1 Table of Contents for Each Volume: provide title of Project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of Products and systems, indexed to content of volume.

.2 Include the following contents:

.1 As-Built Record Drawings

.2 Product data, and samples.

.3 Manufacturer's certificates.

.4 Inventory of spare parts, special tools and maintenance materials.

.5 Maintenance Management System (MMS) identification system used.

.6 WHMIS information.

.7 WHMIS Safety Data Sheets (SDS).

.8 Electrical Panel inventory containing a detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.

.9 Other documents as required and specified in other sections of Specifications.

.10 Provide digital photos, if requested, for site records.

.3 For each Product or system:

.1 List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

.4 Product Data: mark each sheet to identify specific Products and component parts, and data applicable to installation; delete inapplicable information.

.5 Provide a set of As-Built Record Drawings that accurately reflect as-constructed, as-built or as-fabricated Work and that have been sealed by a professional engineer licensed in the Province of Ontario.

.1 Provide hard copies within the operations and maintenance manuals and electronic copies in both native CAD format and PDF.
.2 Label each document “AS-BUILT RECORD” in neat, large, printed letters.

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

.7 Label record documents and file in accordance with section number listings.

.9 Keep record documents and samples available for inspection by the Owner and the Consultant.

.10 Specifications: mark each item to record actual construction, including:

1. Manufacturer, trade name, and catalogue number of each Product actually installed particularly optional items and substitute items.

. .11 Training: Refer to Section 01 79 00 - Demonstration and Training.

.3 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.2 Give function, normal operation characteristics and limiting conditions.

.3 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.4 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.5 Include installed colour coded wiring diagrams.

.6 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

1. Include regulation, control, stopping, shut-down, and emergency instructions.

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

.7 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.8 Provide servicing and lubrication schedule, and list of lubricants required.

.9 Include manufacturer's printed operation and maintenance instructions.

.10 Include sequence of operation by controls manufacturer.

.11 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.12 Provide installed control diagrams by controls manufacturer.

.13 When applicable, provide Contractor's coordination drawings, with installed colour-coded piping diagrams.

.14 When applicable, provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

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

.16 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and Section 01 91 13 - General Commissioning Requirements.

.17 Additional requirements: As specified in individual Specification sections.

.4 MATERIALS AND FINISHES

.1 Building Products, applied materials, and finishes: Include Product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.2 Moisture-protection and weather-exposed Products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Additional requirements: As specified in individual Specifications sections.

1.06 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual Specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.2 Special Tools:

.1 Provide special tools, in quantities specified in individual Specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to the Consultant.

.2 Include approved listings in operation & maintenance manual.

1.07 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to warranties and extended warranties.

.2 Submit warranty management plan, twenty (20) Working Days before planned pre-warranty meeting, to the Consultant review and Acceptance.

.3 Warranty management plan to include required actions and documents to assure that the Owner receives all warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Assemble approved information in binder, submit upon acceptance of Work and organize binder as follows:

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

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

.3 Obtain warranties and bonds, executed in duplicate by Subcontractors, suppliers, and manufacturers, within ten (10) days after completion of applicable item of work.

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

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

.6 Except for items put into use with Owner’s permission, leave date of beginning of time of warranty until Date of Early Occupancy or Ready-for-Takeover is verified.

.7 Include information contained in warranty management plan as follows:

.1 Listing and status of delivery of Certificates of Warranty for extended warranty items.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Procedure and status of tagging of equipment covered by extended warranties.

.4 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.08 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil- and water-resistant tag approved by Owner.

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of Acceptance until Project is accepted for occupancy.

.4 Indicate the following information on tag:

.1 Type of product/material.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector’s signature.

.7 Construction Contractor.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel before date of Substantial Performance of the Work.

.2 The Owner will provide a list of personnel to receive instructions and coordinate their attendance at agreed-upon times.

.3 Preparation:

.1 Verify conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

.3 Ensure equipment has been inspected and put into operation in accordance with specified Contract Documents.

.4 Ensure testing, adjusting, and balancing have been performed in accordance with Section 01 91 13 - General Commissioning Requirements, and equipment and systems are fully operational.

.4 Demonstration and Instructions:

.1 Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance of each item of equipment at agreed-upon times at the designated location.

.2 Instruct personnel in phases of operation and maintenance using operations and maintenance manuals as basis of instruction.

.3 Review contents of operations and maintenance manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

.5 The amount of time to be provided for instruction of each item of equipment or system shall be agreed with the Owner in advance.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit, for Acceptance, a plan including a schedule of times and dates for the demonstration of each item of equipment and each system. Ensure plan is submitted such that Acceptance is received two weeks before designated dates.

.3 Submit reports within one week after completion of demonstration, provided that demonstration

and instructions have been satisfactorily completed.

.4 Include in report time and date of each demonstration, with list of persons present.

.5 Provide sufficient copies of completed operations and maintenance manuals for use in demonstrations and instructions.

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 Section Includes:

.1 Description of overall structure of Plan and roles and responsibilities of commissioning team.

1.02 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.2 CCDC 2-2020, Stipulated Price Contract.

1.03 RELATED REQUIREMENTS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 77 00 - Closeout Procedures.

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 01 79 00 - Demonstration and Training.

1.04 GENERAL

.1 Provide fully functional facilities and or systems:

.1 Systems, equipment and components meet user's functional requirements before date of Acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.
.2 Facility user and O&M personnel have been fully trained in aspects of installed systems.
.3 Complete documentation relating to installed equipment and systems.

.2 Term "Cx" in this section means "Commissioning".

.3 Use this Cx Plan as master planning document for Cx:

.1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
.2 Sets out deliverables relating to O&M, process and administration of Cx.
.3 Describes process of verification of how built works meet Owner requirements.
.4 Produces a complete functional system prior to issuance of Certificate of Occupancy.

.4 Acronyms:

.1 Cx - Commissioning.
.2 O&M - Operations and Maintenance.

.3 EMCS - Energy Monitoring and Control Systems.
.4 WHMIS Safety Data Sheets (SDS).
.5 PI - Product Information.
.6 PV - Performance Verification.
.7 TAB - Testing, Adjusting and Balancing.
.8 WHMIS - Workplace Hazardous Materials Information System.

.5 Commissioning terms used in this Section:

.1 Bumping: short term start-up to prove ability to start and prove correct rotation.

.2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.05 DEVELOPMENT OF CX PLAN

.1 Submit for Acceptance a draft Cx Plan. Cx Plan shall be 100% completed within eight (8) weeks of award of Contract. Cx Plan shall take into account:

.1 Shop Drawings and Product data.
.2 Approved changes to Contract Documents.
.3 Contractor's Construction Schedule.
.4 Cx schedule.
.5 Contractor's, Subcontractor's, suppliers' requirements.
.6 Project construction team's and Cx team's requirements.

.2 Submit completed Cx Plan to the Consultant for Acceptance.

1.06 REFINEMENT OF CX PLAN

.1 During construction phase, revise, refine and finalize Cx Plan to include:

.1 Changes resulting from Owner program modifications.

.2 Accepted design and construction changes.

.2 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

.3 Final Cx Plan shall be Accepted two (2) weeks prior to start of Commissioning.

1.07 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

.1 Contractor to maintain overall responsibility for the Project and is the sole point of contact between members of commissioning team.

.2 Contractor's Cx Agent implements specified Cx activities including:

.1 Demonstrations.

.2 Training.

.3 Testing.

.4 Preparation, submission of test reports.

.3 The Consultant is responsible for:

.1 Verifying implementation of final Cx Plan

.2 witnessing any or all Cx activities

.4 Owner: represents lead role in Operation Phase and onwards and is responsible for:

.1 Receiving facility.

.2 Day-To-Day operation and maintenance of facility.

1.08 CX PARTICIPANTS

.1 Employ the following Cx participants, as required, to verify performance of equipment and systems:

.1 Installation Contractor/Subcontractor:

.2 Equipment and systems except as noted.

.2 Equipment manufacturer: equipment specified to be installed and started by manufacturer:

.1 To include performance verification.

.3 Specialist subcontractor: equipment and systems supplied and installed by specialist subcontractor.

.4 Owner Coordinates Owner's staff participation in Cx activities as required.

.5 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O&M personnel as per warranties terms. Provide names of participants to the Consultant and details of instruments and procedures to be followed for Cx [2] weeks prior to starting date of Cx for review and Acceptance.

1.09 EXTENT OF CX

.1 Commission all new systems/equipment installed as part of the Work, including but not limited to, the systems contained in section 01 11 00 – Summary of Work and detailed in the technical Specifications.

.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

.1 General:

.1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.

.2 Definitions:

.1 Cx as used in this section includes:

.1 Cx of components, equipment, systems, subsystems, and integrated systems.

.2 Factory inspections and performance verification tests.

.3 Deliverables: submit in accordance with 01 33 00 - Submittal Procedures:

.1 Cx Specifications.

.2 Startup, pre-Cx activities and documentation for systems, and equipment.
.3 Completed installation checklists (ICL).
.4 Completed product information (PI) report forms.
.5 Completed performance verification (PV) report forms.
.6 Results of Performance Verification Tests and Inspections.
.7 Description of Cx activities and documentation.
.8 Description of Cx of integrated systems and documentation.
.9 Tests Reports.
.10 Training Plans.
.11 Cx Reports.
.12 Prescribed activities during warranty period.

.4 ONTC Representative to witness tests and reports of results.

.5 Consultant may participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Items listed in the Cx Plan shall include the following:

.1 Pre-Start-Up inspections.
.2 The Consultant may monitor some or all of these pre-start-up inspections.
.3 Include completed documentation with Cx report.
.4 Conduct pre-start-up tests: conduct pressure, static, flushing, cleaning, and “bumping” during construction as specified in technical sections. To be witnessed and verified by Consultant and does not form part of Cx specifications.
.5 Include completed documentation in Cx report.

.2 Complete following Pre-Cx activities as relevant to the Work with reference to technical Specifications:

.1 Pre-Cx activities - ARCHITECTURAL AND STRUCTURAL:

.2 Pre-Cx activities - MECHANICAL:
.1 HVAC equipment and systems:
.1 “Bump” each item of equipment in its “stand-alone” mode.
.2 At this time, complete pre-start-up checks and complete relevant documentation.
.3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.
.4 Perform TAB on systems. TAB reports to be Accepted by Consultant.

.3 Pre-Cx activities EMCS:
.1 EMCS trending to be available as supporting documentation for performance verification.
.2 Perform point-by-point testing in parallel with start-up.
.3 Carry out point-by-point verification.
.4 Demonstrate performance of systems, to be witnessed by Consultant prior to start of Final Acceptance Test period.
.5 Perform final Cx and operational tests during demonstration period and test period.
.6 Only additional testing after foregoing have been successfully completed to be “Off-Season Tests”.

.4 Pre-Cx activities - LIFE SAFETY SYSTEMS
- .1 Include all equipment and systems.
- .2 Reports of test results to be witnessed by ONTC Representative before verification.

.5 Pre-Cx activities - ELECTRICAL:
- .1 High voltage distribution systems over 750 V.
- .2 Low voltage distribution systems under 750 V.
- .3 Requires independent testing agency to perform pre- energization and post-energization tests.
- .4 Emergency power generation systems
- .5 Transfer switches: test by simulating loss of power. Verify availability of power at equipment requiring same.
- .6 Uninterruptible power systems: test under full and partial load conditions.
- .7 Lighting systems:
- .8 Emergency lighting systems:
- .9 Tests to include verification of lighting levels and coverage, initially by disrupting normal power.
- .10 Low voltage systems: these include:
- .11 Clock, communications, low voltage lighting control systems and data communications systems.

1.12 START-UP

.1 Start-up components, equipment and systems.

.2 Consultant to monitor some or all of these start-up activities.
- .1 Rectify start-up deficiencies to satisfaction of the Consultant.

.3 Performance Verification (PV):
- .1 Contractor’s Cx Agent to perform.
- .2 Repeat when necessary until results are acceptable to Consultant.
- .3 Use modified generic procedures to suit project requirements.
- .4 Consultant to review and Accept reported results using approved PI and PV forms.
- .5 Owner and Consultant reserve right to verify up to 30% of reported results at random.
- .6 Failure of randomly selected item shall result in rejection of PV report or report of system startup and testing.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Perform Cx using procedures developed by Contractor and Accepted by Consultant.

.2 Upon satisfactory completion, Contractor performing tests to prepare Cx Report using Accepted PV forms.

.3 Consultant may witness reported results of Cx activities and forward to Owner.

1.14 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

.1 Cx to be performed by specified Cx specialist, using procedures Accepted by the Consultant.

.2 Tests to be witnessed by Consultant and documented on Accepted report forms.

.3 Upon satisfactory completion, Cx specialist to prepare Cx Report, to be submitted to Consultant for review and Acceptance.

.4 Owner and Consultant reserve right to verify percentage of reported results.

1.15 CX SCHEDULES

.1 Prepare detailed Cx Schedule and submit to Consultant for review and Acceptance. Integrate Cx schedule into Project Construction Schedule such that there is a complete Critical Path for the entire Work. Include:

.1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:

.1 Design criteria, design intents.
.2 Pre-TAB review
.3 Cx procedures
.4 Discussion of heating/cooling loads for Cx
.5 Submission of list of instrumentation with relevant certificates
.6 Notification of intention to start TAB
.7 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.
.8 Identification of deferred Cx.
.9 Implementation of training plans.
.10 Cx reports: immediately upon successful completion of Cx.

.2 Cx schedule for verification of performance in all seasons and wear conditions.

.2 Consultant, Contractor and Contractor's Cx Agent will monitor progress of Cx against this schedule.

1.16 ACTIVITIES DURING WARRANTY PERIOD

.1 Cx activities must be completed before issuance of Substantial Performance of the Work Certificate. It is anticipated that certain Cx activities may be necessary during Warranty Period, including:

.1 Fine tuning of HVAC systems.
.2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.

1.17 TRAINING PLANS

.1 Refer to Section 01 79 00 - Demonstration and Training.

1.18 FINAL SETTINGS

.1 Upon completion of Cx to satisfaction of the ONTC Representative, lock control devices in their final positions, indelibly mark settings marked and include in Cx Reports.

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 Section Includes:

.1 Commissioning forms to be completed for equipment, system and integrated system.

.2 Related Requirements

.1 Section 019113 -General Commissioning Requirements.

1.02 INSTALLATION/START-UP CHECK LISTS

.1 Include the following data:

.1 Product manufacturer's installation instructions and recommended checks.

.2 Special procedures as specified in relevant technical sections.

.3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Consultant supplemental additional data lists will be required for specific Project conditions.

.3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.

.4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Consultant. Check lists will be required during Commissioning and will be included in Operations and Maintenance Manual (O&M) at completion of Project.

.5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.03 PRODUCT INFORMATION (PI) REPORT FORMS

.1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the operations and maintenance manual at completion of Work.

.2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Consultant's Acceptance.

1.04 PERFORMANCE VERIFICATION (PV) FORMS

.1 PV forms to be used for checks, running dynamic tests and adjustments carried out on

equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with Project requirements.

.2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.

.3 Prior to PV of integrated system, complete PV forms of related systems and obtain Consultant's Acceptance.

1.06 COMMISSIONING FORMS

.1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.

.2 Strategy for Use:

.1 Contractor's Commissioning Agent to prepare and use Project-specific Commissioning forms, Accepted by Consultant.

.2 Contractor will provide required Shop Drawings information and verify correct installation and operation of items indicated on these forms.

.3 Confirm operation as per design criteria and intent.

.4 Identify variances between design and operation and reasons for variances.

.5 Verify operation in specified normal and emergency modes and under specified load conditions.

.6 Record analytical and substantiating data.

.7 Verify reported results.

.8 Form to bear signatures of recording technician and reviewed and signed off by Consultant.

.10 Reported results in true measured SI unit values.

.11 Provide Consultant with originals of completed forms.

.12 Maintain copy on site during start-up, testing and commissioning period.

.13 Forms to be both hard copy and electronic format with typed written results in Operation and Maintenance Manual.

END OF SECTION

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Project Manual - Specifications
Division 02—10 — Technical Divisions

Office Conversion
Ontario Northland Transportation Commission
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Ontario Northland

Issued for Permit, Tender and Construction
Architectural Project No. 2508
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1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements.

1.2 SECTION INCLUDES

.1 Requirements for selective demolition of portion, or portions, of existing buildings in preparation for renovation or re-modeling. Demolition work shall include the draining and capping and/or re-routing of existing building services, protection of remaining structure and other building elements, and removal of debris.

1.3 RELATED SECTIONS

.1 Temporary Barriers and Enclosures, Section 01560
.2 Environmental Protection, Section 01561

1.4 REFERENCES

.1 CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.
.2 Occupation Health and Safety Act and Regulations for Construction Projects; Ontario Reg.213/91, as amended by Reg. 145/00.

1.5 SUBMITTALS

.1 Demolition Drawings
  .1 Where required by authorities having jurisdiction, submit drawings, diagrams, and/or details for approval, clearly indicating sequence of demolition work, support of existing structures, shoring, and underpinning.
  .2 Where required by authorities having jurisdiction, such drawings to bear stamp of qualified professional engineer registered or licensed in the Province of Ontario.

1.6 EXISTING CONDITIONS

.1 Structures to be partially demolished shall be based on their condition at time of examination during the Bid Period.

2 PRODUCTS

NOT APPLICABLE.

3 EXECUTION

3.1 PROTECTION

.1 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades, and other parts of existing building to remain. Provide all bracing, shoring, and/or underpinning required. Make good damage caused by demolition.

.2 Take precautions to support affected structures and if safety of building being demolished, or adjacent structures or services appears to be endangered, cease operations and notify Consultant.

.3 Prevent dust and debris from blocking surface drainage systems, or affecting elevators, mechanical, and/or electrical systems which must remain in operation.

.4 Adhere strictly to requirements of Sections 01560 and 01561 during demolition and removal process. Provide all temporary safety controls, as required by The Occupational Health & Safety Act, and Section 01500.

.5 Ensure that secure site hoarding and/or fencing is in place and complete, prior to commencement of demolition operations. Maintain hoarding during demolition operations. Replace or repair sections of hoarding damaged or removed, as a result of demolition operations.

3.2 PREPARATION

.1 Locate and mark all enclosed or hidden services within the structure, and on the site.

.2 Disconnect and re-route electrical and telephone service lines entering areas to be demolished, in accordance with authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized during period of demolition.

.3 Disconnect and cap, designated mechanical services in accordance with authorities having jurisdiction;

- .1 Natural gas supply lines to be removed by local gas authority where required, or by qualified tradesman in accordance with gas authority instructions.
- .2 Disconnect, and cap remove sewer and water lines to point indicated on drawings.
- .3 Remove and dispose of other underground services as indicated on drawings, and as directed by Consultant.

.4 Do not disrupt active or energized utilities traversing premises, designated to remain undisturbed.

3.3 SAFETY CODE

.1 Unless otherwise specified, carry out demolition work in accordance with CSA S350.

3.4 DEMOLITION

.1 Demolish parts of building to permit construction of addition and/or remedial work as indicated.

.2 All concrete and masonry broken from demolition work to be removed from open basements or excavations.

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

.4 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times.

.5 Demolish to minimize dusting. Keep dusty materials wetted as directed by Consultant.

.6 Demolish masonry and concrete walls in small sections to prevent damage to existing structure or surfaces to remain.

.7 Remove contaminated or dangerous materials, as defined by authorities having jurisdiction, from site, and dispose of in strict accordance with by-laws, regulations and/or guidelines applicable to such material.

3.5 SITE CLEANING

.1 Promptly remove and dispose of demolished materials except where noted otherwise, in accordance with authorities having jurisdiction.

.2 Do not sell, bury or burn materials on site.

.3 Leave interior areas in a "swept clean" condition after demolition in preparation for remedial work.

.4 If affected by demolition, leave exterior soft areas in a "raked clean" condition, and clear of all debris. Leave paved areas in a "swept clean" condition, and clear of all dirt, debris, and other contamination.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01561, Environmental Protection.
.2 Section 02315, Excavation, Trenching & Backfill

1.2 REFERENCES

.1 Canadian Federal Legislation
  .1 Canadian Environmental Protection Act (CEPA), 1988.
  .2 Canadian Environmental Assessment Act (CEAA), 1995.
  .3 Transportation of Dangerous Goods Act (TDGA), 1992.
  .4 Motor Vehicle Safety Act (MVSA), 1995.

1.3 STORAGE AND PROTECTION

.1 Perform all work in accordance with Section 01561, Environmental Protection.

.2 Protect in accordance with Section 02315, Excavation, Trenching & Backfill

.3 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.

.4 In all circumstances ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.5 Do not dispose of waste of volatile materials such as, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout the project.

.6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.

.7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

.8 Protect trees, plants and foliage on site and adjacent properties.

1.4 REGULATORY REQUIREMENTS

.1 Ensure all work is performed in compliance with CEPA, CEAA, TDGA, MVSA, and all applicable provincial regulations.

2 PRODUCTS

2.1 EQUIPMENT

.1 Equipment and heavy machinery used to meet or exceed all applicable emission requirements operate in compliance with EPA CFR 86.098 10 and EPA CFR 86.098 11 and MVSA.

.2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

3 EXECUTION

3.1 PREPARATION

.1 Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Notify and obtain approval of utility companies before starting demolition. Locate and protect utilities. Preserve active utilities traversing site in operating condition.

3.2 SEQUENCES OF OPERATION

.1 Removal
- .1 Remove items as indicated.
- .2 Do not disturb items designated to remain in place.
- .3 In removal of pavements, curbs and gutters:
  - .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Consultant.
  - .2 Protect adjacent joints and load transfer devices.
  - .3 Protect underlying and adjacent granular materials.
- .4 When removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving, prevent contamination with base course aggregates.
- .5 When removing pipes under existing or future pavement area, excavate at least 300 mm below pipe invert.
- .6 Remove only designated trees during demolition. Obtain written approval of Consultant prior to removal of any trees not designated.

.2 Backfill
- .1 Backfill in excavated areas with non-native soils, as indicated.

3.3 RESTORATION

.1 Restore areas and existing works outside areas of demolition and removals to conditions that existed prior to commencement of work.

.2 Use only soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.4 CLEANUP

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

.2 Use only cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01021, Allowances
.2 Section 01330, Submittal Procedures
.3 Section 01560, Temporary Barriers and Enclosures
.4 Section 01561, Environmental Protection
.5 Section 01610, Basic Product Requirements

1.2 REFERENCES

1. Ontario Provincial Specifications (OPSS) 1010 Material Specification for Aggregates
2. ASTM C 136 95a, Test Method for Sieve Analysis of Fine and Coarse Aggregates.
3. ASTM D 698 91, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort 600 kN m/m 3.
4. CAN/CGSB 8.2 M88, Sieves, Testing, Woven Wire, Metric.
5. CAN/CSA A23.1 94, Concrete Materials and Methods of Concrete Construction

1.3 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.
  .1 Rock: any solid material in excess of $1m^3$ and which cannot be removed by means of duty mechanical excavating equipment having a 1.15 m^3 bucket. Frozen material not classified as rock.
  .2 Common excavation: excavation of material of whatever nature, which is not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in work.

.3 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.4 Waste material: excavated material unsuitable for use in work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of work.

.6 Unsuitable materials:
  .1 Weak and compressible materials under excavated areas.
  .2 Frost susceptible materials under excavated areas.
  .3 Frost susceptible materials:
    .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D 4318, and gradation within limits specified when tested to ASTM D 422 and ASTM C 136: Sieve sizes to CAN/CGSB 8.1.

.2 Table

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

.3 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

.7 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.4 ROCK EXCAVATION

.1 Rock excavation is not anticipated in this project.

1.5 SAMPLES

.1 Upon request, submit samples in accordance with Section 01330, Submittal Procedures.

1.6 PROTECTION OF EXISTING FEATURES

.1 Existing buried utilities and structures:
- .1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
- .2 Prior to commencing excavation work, notify applicable owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Authorities having jurisdiction to clearly mark such locations to prevent disturbance during work.
- .3 Confirm locations of buried utilities by careful test excavations.
- .4 Maintain and protect from damage, gas, electric, and structures encountered as indicated, as well as all others located by applicable Owner or Authorities.

.2 Existing buildings and surface features:
- .1 Conduct, with Consultant, condition survey of existing buildings, trees and other plants, service poles, wires, pavement, survey benchmarks and monuments which may be affected by work.
- .2 Protect surface features from damage while work is in progress. In event of damage, immediately make repair to approval of Owner.
- .3 Where required for excavation, cut roots or branches as approved by Consultant in accordance with Tree and Shrub Preservation.

1.7 SHORING, BRACING AND UNDERPINNING

.1 Protect existing features in accordance with Section 01560, Temporary Barriers and Enclosures and applicable local regulations.

.2 Engage services of qualified professional engineer who is registered or licensed in province of Ontario to design and inspect cofferdams, shoring, bracing and underpinning required for work.

.3 Submit design and supporting data at least 2 weeks prior to commencing work.

.4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in province of Ontario.

.5 Professional Engineer responsible for design of temporary structures to submit proof of insurance coverage for professional liability except where engineer is employee of contractor, in which case contractor shall submit proof that work by professional engineer is included in contractor's insurance coverage.

1.8 TESTING AND INSPECTIONS

.1 Inspection and testing of materials and compaction will be carried out by a testing laboratory designated by the Consultant. Costs of tests will be paid under a Cash Allowance by Section 01021, Allowances.

.2 Frequency of inspections and tests will be determined by Consultant.

.3 Coordinate proof - rolling and grade verification with Consultant and testing and inspection agency.

2 PRODUCTS

2.1 MATERIALS

.1 Type 1 fill: OPSS Granular A.

.2 Type 2 fill: OPSS Granular B. Type 2

.3 Unshrinkable fill: proportioned and mixed to provide:
- a) Maximum compressive strength of 0.4 MPa at 28 days.
- b) Maximum Portland cement content of 25 kg/m 3.
- c) Minimum strength of 0.07 MPa at 24 h.
- d) Concrete aggregates: to CAN/CSA A23.1.
- e) Portland cement: Type 10.
- f) Slump: 160 to 200 mm.

.4 Shearmat: honeycomb type bio degradable cardboard 100 mm thick, treated to provide sufficient structural support for poured concrete until concrete cured.

.5 Geotextiles: filter fabric terra fix 270R as manufactured by Terrafix Geosynthetics.

3 EXECUTION

3.1 SITE PREPARATION

1. Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.2 STRIPPING OF TOPSOIL

1. Commence topsoil stripping of areas after area has been cleared of brush weeds and grasses and removed from site.

.2 Strip topsoil to depths as indicated. Do not mix topsoil with subsoil.

.3 Stockpile on site. Stockpile height not to exceed 2 m.

.4 Dispose of unused topsoil to location directed by Consultant off site.

3.3 STOCKPILING

1. Stockpile fill materials in areas on site. Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

3.4 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

1. Construct temporary works to depths, heights and locations as indicated.

.2 During backfill operation:
- a) Unless otherwise as indicated or as directed by Consultant, remove sheeting and shoring from excavations.
- b) Do not remove bracing until backfilling has reached respective levels of such bracing.
- c) Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.

.3 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.4 Upon completion of substructure construction:
- a) Remove cofferdams, shoring and bracing.
- b) Remove excess materials from site and restore water courses as indicated and as directed by Consultant.

3.5 DEWATERING AND HEAVE PREVENTION

1. Keep excavations free of water while work is in progress.

.2 Submit for Consultant's review details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut offs.

.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut offs, or other means.

.4 Protect open excavations against flooding and damage due to surface run off. Pump water from excavations continuously.

.5 Dispose of water in manner not detrimental to public and private property, or any portion of work completed or under construction.

.6 Protect soils at footing locations from freezing.

.7 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, water courses or drainage areas.

3.6 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions as indicated and as directed by Consultant.

.2 Excavation must not interfere with normal 45-degree splay of bearing from bottom of any footing.

.3 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.4 For trench excavation, unless otherwise authorized by Consultant in writing, do not excavate more than 30m of trench in advance of installation operations and do not leave open more than 15m at end of day's operation.

.5 Dispose of surplus and unsuitable excavated material in approved location outside property limits.

.6 Do not obstruct flow of surface drainage or natural watercourses.

.7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.8 Notify Consultant when bottom of excavation is reached.

.9 Obtain Consultant approval of completed excavation.

.10 Remove unsuitable material from trench bottom to extent and depth as directed by Consultant.

.11 Correct unauthorized over excavation as follows:
- a) Fill under bearing surfaces and footings with concrete specified for footings.
- b) Fill under other areas with Type 2 fill compacted to not less than 95 % of corrected maximum dry density.

.12 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Consultant.

.13 Install geotextiles as indicated.

3.7 FILL TYPES AND COMPACTION

.1 If not otherwise indicated in Geotechnical Report, use fill of types specified below. Compaction densities are percentages of maximum densities obtained from ASTM D 698.
- a) Exterior side of perimeter walls: use Type 2 fill to subgrade level. Compact to 95 %.

b) Within building area: use Type 2 to underside of base course for floor slabs. Compact to 98%.
c) Under concrete slabs: provide 150 mm compacted thickness base course of Type 1 fill to underside of slab. Compact base course to 100 %.
d) Retaining walls: use Type 2 fill to subgrade level.
e) Place unshrinkable fill in areas as indicated.

3.8 BACKFILLING

.1 Do not proceed with backfilling operations until Consultant has inspected and approved installations.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.5 Backfill around installations.

.6 Place unshrinkable fill in areas as indicated
a) Place bedding and surround material as specified elsewhere.
b) Do not backfill around or over cast in place concrete within 24 hours after placing of concrete.
c) Place layers simultaneously on both sides of installed work to equalize loading.
d) Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
(1) Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Consultant.
(2) If approved by Consultant, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Consultant.

.7 Install drainage system in backfill as indicated or as directed by Consultant.

3.10 RESTORATION

.1 Upon completion of work, remove waste materials and debris, trim slopes, and correct defects as directed by Consultant.

.2 Clean and reinstate areas affected by work as directed by Consultant.

.3 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements

1.2 RELATED SECTIONS

.1 Section 01610, Basic Product Requirements
.2 Section 02315, Excavating, Trenching & Backfilling
.3 Section 02311, Site Grading
.4 Section 02761, Painted Traffic Lines and Markings

1.3 REFERENCE STANDARDS

.1 OPSS 313, OPSS 1001, OPSS 1103, OPSS 1149 and OPSS 532

1.4 SAMPLES

.1 Submit samples in accordance with Section 01330, Submittal Procedures.

.2 Deliver samples to the Laboratory designated by the Consultant. Samples of material for sieve analysis and hot mix design shall be submitted at least two (2) weeks before commencing production.

1.5 QUALITY ASSURANCE

.1 Plant requirements: Facilities for production and transportation or asphaltic mixture shall conform to OPSS Form 310.

.2 Equipment Requirements: Self-powered mechanical pavers conforming to OPSS Form 310.

.3 Rollers conforming to OPSS Form 310.

1.6 TEMPERATURE REQUIREMENTS

.1 Prior to placing asphalt, air temperature at the base surface shall be a minimum of 7º C and rising.

.2 Temperature of mixture shall not be less than 118º C immediately after spreading prior to initial rolling.

.3 The asphalt cement shall be heated at the mixing plant only to the temperature required for satisfactory mixing and shall not exceed 162º C.

2 PRODUCTS

2.1 MATERIALS

.1 Aggregates General to: OPSS 1001

.2 Emulsified Asphalt: to OPSS 1103

.3 Asphalt Pavement: HL4 to OPSS 1149. Performance Graded Asphalt Cement (PGAC) Grade of PG 58-34 shall be used. The mix design mixture for both surface and binder courses shall have a Marshall Stability of 8000 minimum N at 600 degrees C.

.4 Pavement Marking: per section 02761 Painted Traffic Lines and Markings.

.5 Asphalt cement: conform to OPSS Form 1101.

.6 Aggregates: conform to OPSS Form 1000 and 310.

.7 Emulsified Asphalt: SS-1 emulsion conforming to OPSS Form 1103.

2.2 ASPHALT MIXES

.1 Superpave (SP) 12.5 Surface Course.

3 EXECUTION

3.1 PAVEMENT CONSTRUCTION

.1 Asphalt pavement shall not be placed until such time that the granular A base has been brought up to the designed grade and inspected and approved by the Consultant.

.2 Construction of the asphalt pavement shall conform to OPSS 313.

3.2 PAVEMENT THICKNESS

.1 Pavements for roadways:
- .1 Base course: 50mm HL4.
- .2 Surface course: 60mm Superpave (SP) 12.5

.2 Pavements for parking lots and entrances:
- .1 Surface course: 60mm Superpave (SP) 12.5

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements

1.2 RELATED WORK

.1 Section 02743, Asphalt Concrete Paving

1.3 REFERENCES

.1 CAN/CGSB 1.5 M91, Low Flash Petroleum Spirits Thinner.

.2 CGSB1 GP 12c 68, Standard Paint Colours.

.3 CGSB1 GP 71 83, Method, of Testing Paints and Pigments.

.4 CGSB1 GP 74M 79, Paint, Traffic, Alkyd.

.5 LEED Reference Guide v1.1 (as published by the Canadian Green Building Council).

1.4 SAMPLES

.1 Submit samples in accordance with Section 01330 Submittal Procedures.

.2 Submit to Consultant following material sample quantities at least 2 weeks prior to commencing work.
- .1 Two 1L samples of each type of paint.
- .2 One 1kg sample of glass beads.
- .3 Sampling to CGSB1 GP 71.

.3 Mark samples with name of project and its location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.

2 PRODUCTS

2.1 MATERIALS

.1 Paint:
- .1 To CGSB1 GP 74M, alkyd traffic paint.
- .2 Colours: to CGSB1 GP 12C
  - .1 Parking lines, markings & non-regulatory lines: white 513 301.
  - .2 Road lines & regulatory markings: yellow 505 308

.3 Upon request, Consultant will supply a qualified product list of paints applicable to work. Qualified paints may be used but Consultant reserves right to perform further tests.

.2 Thinner: to CAN/CGSB 1.5.

.3 All paint to confirm to OPSS #1712 and be supplied by one of the following suppliers.

	Yellow Paint Code	White Paint Code
Niagara Paint and Chemical Co. Ltd.	#87935	#87932
Ibis Products Ltd.	#40-3057	#40-2478
CIL	#7612-26757 or #7612-26993	#7612-26992
Sherwin Williams	#C97YG52	#C97WG129
Sico Paints	#3007640Y	#3007649W

.4 Glass beads:
.1 Overlay type: to CGSB1 GP 74M.

3 EXECUTION

3.1 EQUIPMENT REQUIREMENTS

.1 Paint applicator to be an approved pressure type distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut off.

.2 Distributor to be capable of applying reflective glass beads as an overlay on freshly applied paint.

3.2 CONDITION OF SURFACES

.1 Remove all existing markings that do not comply with new design.

.2 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.

3.3 TRAFFIC CONTROL

.1 Work to follow staging plan. General Contractor to provide workflow plan acceptable to Owner for approval before commencing work.

3.4 APPLICATION

.1 Lay out pavement markings for review and acceptance by owner.

.2 Unless otherwise approved by Consultant, apply paint only when air temperature is above 10 degrees C, wind speed is less than 60km/h and no rain is forecast within next 4h.

.3 Apply traffic paint evenly at rate of $3m^2/L$.

.4 Do not thin paint unless approved by Consultant.

.5 Symbols and letters to conform to be confirmed with client, Consultant before commencement of work.

.6 Paint lines to be of uniform colour and density with sharp edges.

.7 Thoroughly clean distributor tank before refilling with paint of different colour.

.8 Apply glass beads at rate of $200g/m^2$ of painted area immediately after application of paint.

3.5 TOLERANCE

.1 Paint markings to be within plus or minus 12mm (1/2”) of dimensions indicated.

.2 Remove incorrect markings.

3.6 PROTECTION OF COMPLETED WORK

.1 Protect pavement markings until dry.

3.7 PROJECT COMPLETION

.1 Clean all surfaces and apply a second coat to all markings and symbols at total completion of project.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements

1.2 RELATED SECTIONS

.1 Section 01610, Basic Product Requirements
.2 Section 02315, Excavating, Trenching and Backfilling.
.3 Section 02743, Asphalt Concrete Paving
.4 Section 03300, Cast in Place Concrete
.5 Section 03213, Tactile Surface Warning Indicators

1.3 REFERENCE

.1 CSA A23.1-94, Concrete Materials and Methods of Concrete Construction.

.2 Ontario Provincial Standard Specifications:
- OPSS 351- Concrete Sidewalk
- OPSS 353 – Concrete Curb and Gutter System
- OPSS 1308 – Joint Filler
- OPSS 1315- Curing Compounds for Concrete
- OPSS 1350 – Concrete (Material and Production)
- OPSS 1440 – Steel Reinforcement for Concrete
- OPSS Special Provisions

1.4 SUBMITTALS

.1 Furnish the Consultant with a certificate prepared by the Ready-Mix concrete suppliers stating that all requirements regarding strength, slump, air entrainment, mix, materials and ratio have been maintained.

1.5 QUALITY ASSURANCE

1. All materials must conform to CSA A23.1/A23.2, latest edition (metric).

2. Have all concrete tested for compressive strength, slump and air content, in accordance with CAN A23.2-M. Submit test reports in duplicate and pay all costs incurred.

3. On site mockup of natural and coloured concrete paving to be provided. If approved may remain as part of the completed work. Modify as necessary to obtain approval.

1.6 DELIVERY, STORAGE & HANDLING

1. Store all materials in accordance with CSA A23.1-M.

2. Store forms off the ground and sufficiently supported to prevent warping or distortion. Protect from contamination by oil, grease, water, earth, etc.

3. All concrete is to be ready-mixed at plant and transported to the site by truck in accordance with A.23.1-M. Hand mixed concrete is not allowed.

2 PRODUCTS

2.1 MATERIALS

.1 Concrete mixes and materials: to Section 03300 – Cast in Place Concrete OPSS 1350.

.2 Reinforcing steel: to Section 03200 –Concrete Reinforcements OPSS 1440.

.3 Joint filler and Curing Compound: to Section 03300-Cast in Place Concrete and OPSS 1308 and OPSS 1315.

.4 Granular Base: Granular A as indicated.

.5 Non –staining mineral type form release agent: Chemically active release agents containing compounds that react with free lime to provide water-soluble soap.

.6 Sealant: one component self levelling polyurethane sealant to CAN/CGSB 19.13.

.7 Coloured concrete mix: as required to maintain colour consistency with sample submitted. Colour: to be selected by Consultants. Concrete mix as manufactured by Davis Colors or approved alternative by Elements.

.8 Tinted Concrete – incorporate colour loading up to a maximum 3% based upon dry cementitious mix weight. Colour added to mix on job site 20 minutes prior to pour. Cement and aggregate to produce concrete matching sample submitted and approved. Actual loading as necessary to obtain selected concrete colour.

.9 Tactile Surface Indicators – as indicated.

3 EXECUTION

3.1 GRADE PREPARATION

.1 Do grade preparation work in accordance with Section 02315, Excavating, Trenching and Backfilling.

.2 Construct embankments using excavated material free from organic matter or other objectionable materials. Dispose of surplus and unsuitable excavated material in approved location on site.

.3 Place fill in maximum 150mm layers and compact to at least 95% of maximum density to ASTMD698.

3.2 GRANULAR BASE

.1 Obtain Consultant approval of subgrade before placing granular base.

.2 Place granular base material to lines, grades widths, and depths as per contract plans.

.3 Compact granular base to at least 100% of maximum density to ASTMD698.

3.3 CONCRETE

.1 Obtain Consultant approval of granular base and reinforcing steel prior to placing concrete.

.2 Do concrete work in accordance with Section 03300-Cast in Place Concrete OPSS 1350.

.3 Install concrete curb and gutter, and concrete curb to OPSD 600.040 and OPSD 600.110 as indicated on the contract plans, and conforming to OPSS 353. Include placement of curb terminations to OPSD 608.01 and curb outlets to OPSD 605.01.

.4 Construct concrete sidewalk to OPSD 310.010 and OPSS 351 at locations as detailed on the contract plans.

.5 Immediately after floating, give sidewalk surface uniform broom finish to produce regular corrugations not exceeding 2mm deep, by drawing broom in direction normal to centre line.

.6 Provide edging as indicated with 10mm radius edging tool.

.7 Slip-form pavers equipped with string line system for line and grade control may be used If quality of work acceptable to Consultant can be demonstrated. Hand finish surfaces when directed.

.8 Locate expansion joints as per detail and between new concrete and all new or existing structures. Joints must be cast in place. Sawcut joints will not be allowed.

.9 Ensure finished surface is true to line and level as shown on the drawings. Slopes not to exceed 1.5% and ensure positive draining unless otherwise noted.

.10 Immediately after stripping form work, obtain the approval of the Consultant before commencing patching, finishing or curing operations.

.11 For coloured concrete no patching is allowed. Contractor required to replace entire section from expansion joint to expansion joint.

3.4 EXPANSION AND CONTRACTION JOINTS

1. Install tooled transverse contraction joints after floating, when concrete is stiff, but still plastic, at intervals of 1.5m.

2. Install expansion joints at intervals of 6m.

3. Install expansion joints around manholes and catch basins and along length adjacent to concrete curbs, buildings, or permanent structure.

4. Execute control joints as detailed on the details and drawings. Ensure control joints are to a minimum depth of 1/4 the thickness of the concrete. Make sawed joints. Saw cut joints before concrete has reached final set when aggregate will not be displaced.

5. No offsets will be allowed between adjacent sections of joint fillers and no plugs of concrete will be permitted anywhere within an expansion joint.

6. Pattern for control joints and expansion joints to be laid out on site for approval by Consultant.

3.5 CURING

.1 Cure concrete by adding moisture continuously in accordance with CAN/CSA-A23.1 to exposed finished surfaces for at least 1 day after placing or sealing moisture in by curing compound approved by the Consultant.

.2 Where burlap is used for moist curing, place two pre-wetted layers on concrete surface and keep continuously wet during curing period.

.3 Apply curing compound evenly to form continuous film, in accordance with manufacturer's recommendations.

3.6 BACKFILL

.1 Allow concrete to cure for 7 days prior to backfilling

.2 Backfill to the designated elevations with material approved by the Consultant. Compact and shape backfill material to the required contours as indicated on the contract plans or as directed by the Consultant.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.
.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements

1.2 RELATED SECTIONS

.1 Section 01395 - Environmental Goals
.2 Section 01610 - Basic Product Requirements

1.3 REFERENCES

.1 ASTMA53 90b, Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.
.2 CAN/CGSB 138.1 M80, Fence, Chain Link, Fabric.
.3 CAN/CGSB 138.2 M80, Fence, Chain Link, Framework, Zinc Coated, Steel.
.4 CAN/CGSB 138.3 M80, Fence, Chain Link Installation.
.5 CAN/CGSB 138.4 M82, Fence, Chain Link, Gates.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01330, Submittal Procedures.

2 PRODUCTS

2.1 MATERIALS

.1 Concrete mixes and materials: to 20mpa after 28 days OPSD-972.130

.2 Chain link fence fabric: to CAN/CGSB 138.1.
  .1 Type1, ClassA, medium style.
  .2 Height of fabric: 1.8m or as indicated.
  .3 Hot dipped galvanized steel 3.6mm thick (9 gauge) steel wire woven in a 50mm mesh with knuckled finish top and bottom selvage edges.
  .4 galvanized steel for Posts and Accessories: ASTM F1043, galvanized steel by the thermal fusion process with a 0.2 to 0.3mm thick galvanized steel.
  .5 Vinyl coated fence fabric: Black vinyl coated 3.6mm thick 19 gauge steel wire woven in a 50mm mesh with knuckled finish top and bottom selvage edges where noted.
  .6 Vinyl coating for posts and accessories: ASTM F1043, vinyl coated by the thermal fusion process with A0.2 to 0.3mm thick vinyl coating.

.3 Posts, braces and rails: to CAN/CGSB 138.2, galvanized steel pipe. Dimensions as indicated.

.4 Bottom tension wire: to CAN/CGSB 138.1

.5 Tie wire fasteners: to CAN/CGSB 138.1, Table 2(steel wire)

.6 Tension bar: to ASTMA525M, 5x20mm minimum galvanized steel.

.7 Gates: to CAN/CGSB 138.4. and as per details as indicated

.8 Fittings and hardware: to CAN/CGSB 138.2, cast aluminum alloy, galvanized steel or malleable or ductile cast iron. Tension bar bands: 3x20mm minimum galvanized steel or 5x20mm minimum aluminum. Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail. Overhang tops to provide waterproof fit, to hold top rails and an outward inward projection to hold barbed wire overhang. Provide projection with clips or recesses to hold 3strands of barbed wire spaced 100mm apart. Projection of approximately 300mm long to project from fence at 45□ above horizontal. Turnbuckles to be drop forged.

.9 Organic zinc rich coating: to CAN/CGSB- 1.181".

.10 Grounding rod: 16mm diameter copperwell rod, 3m long to Division 16.

2.2 FINISHES

.1 Galvanizing:
- .1 For pipe: 550g/m2minimum to ASTMA90.
- .2 For other fittings: to CAN/CSA G164.
- .3 Vinyl coating as indicated.

2.3 DESIGN

.1 Ensure chain link fences / posts / guards to conform to loading requirements of Ontario Building Code Part 4 as required.

3 EXECUTION

3.1 GRADING

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts. Provide clearance between bottom of fence and ground surface of 30mm to 50mm.

3.2 ERECTION OF FENCE

.1 Erect fence along lines as indicated and in accordance with CAN/CGSB 138.3.

.2 Excavate post holes to dimensions indicated.

.3 Space line posts 1.5m apart, measured parallel to ground surface.

.4 Space straining posts at equal intervals not exceeding 150m if distance between end or corner posts on straight continuous lengths of fence over reasonably smooth grade is greater than 150m.

.5 Install additional straining posts at sharp changes in grade and where directed by Consultant.

.6 Install corner post where change in alignment exceeds 10º.

.7 Install end posts at end of fence and at buildings. Install gate posts on both sides of gate openings.

.8 Place concrete in post holes then embed posts into concrete to depths indicated. Extend concrete 50mm above ground level and slope to drain away from posts. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.9 Do not install fence fabric until concrete has cured a minimum of 5 days.

.10 Install brace between end and gate posts and nearest line post. Install braces on both sides of corner and straining posts in similar manner.

.11 Install overhang tops and caps.

.12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

.14 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300mm intervals. Knuckled selvedge at bottom. Twisted selvedge at top.

.15 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450mm intervals. Give tie wires minimum two twists.

.16 Install grounding rods as indicated.

3.3 INSTALLATION OF GATES

.1 Install gates in locations as indicated.

.2 Level ground between gate posts and set gate bottom approximately 40mm above ground surface.

.3 Provide gate latch mechanism (lock by Owner).

3.4 TOUCH UP

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Repair damaged areas as per manufacturer’s instructions.

3.5 CLEANING

.2 Clean and trim areas disturbed by operations. Dispose of surplus material as directed by Consultant.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.
.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements

1.2 SECTION INCLUDES

.1 Provision of all labour, materials, equipment and incidental services necessary to provide post-mounted and wall-mounted regulatory signs.

1.3 RELATED SECTIONS

.1 Site Grading, Section 02310
.2 Asphalt Concrete Pavement, Section 02740

1.4 REFERENCE STANDARDS

.1 CSA-A23.1; Concrete Materials and Methods of Concrete Construction.
.2 CAN/CSA-G40.20/G40.21; General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steels.
.3 CAN/CSA-G164; Hot Dip Galvanizing of Irregular Shaped Articles.

1.5 SUBMITTALS

.1 Shop Drawings/Product Data
  .1 Provide full scale sign layouts for all signs specified, for review by the Consultant. Layouts shall include correct symbols, lettering, lettering styles, and shall indicate colours.

2 PRODUCTS

2.1 MATERIALS

.1 Sign Posts
  .1 One piece, cold-rolled channel sign posts, 64mm wide x 32mm deep, hot-dip galvanized steel, 4.2mm base metal thickness, minimum 340MPa yield, perforated for sign attachment, as manufactured by Armtec Limited, or an approved alternative. Provide mounting hardware.
  .2 Post Length: 2.4m.

.2 Signs
  .1 Hot-dip galvanized sheet steel, with MTO standard traffic colours and graphics.

.3 Concrete
  .1 Proportion normal density concrete in accordance with CSA-A23.1, and as follows:

.2 Cement: Type 10 Portland Cement.
.3 Minimum compressive strength at 28 days: 25Mpa.
.4 Exposure Classification: C-2.
.5 Coarse Aggregate Size: 16mm, crushed (smooth aggregate not acceptable).
.6 Slump at time and point of discharge: 80mm ± 20mm.

3 EXECUTION

3.1 INSTALLATION

.1 Place concrete in post holes then embed posts into concrete to minimum 1220mm depth. Extend concrete 25mm above ground level and slope to drain away from posts.

.2 Brace posts in plumb position and true to alignment and elevation until concrete has set.

.3 Bolt signs to top of posts with tamper-proof galvanized steel bolts and nuts.

3.2 SCHEDULE

.1 No Parking/Fire Route Signs
  .1 Provide (x2) signs as required by local fire and municipal authorities, in conformance with local bylaws and regulations.

.2 Barrier Free Parking Signs
  .1 Provide (x1) sign post-mounted for barrier free parking spaces.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Work includes, but is not limited to:
- .1 Millwork support brackets
- .2 Pipe handrails & guards.
- .3 Lintel supports over openings.
- .4 Bollards

1.2 REFERENCES

.1 ASTM A53/A53M-99b, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
.2 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
.3 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
.4 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
.5 CAN/CSA-G164-M92 (R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
.6 CSA W59-M1998, Welded Steel Construction (Metal Arc Welding).

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

2 PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade300W 350W.
.2 Steel pipe: to ASTM A53/A53M standard weight, black or galvanized finish as indicated.
.3 Welding materials: to CSA W59.
.4 Bolts and anchor bolts: to ASTM A307.
.5 Stainless steel tubing: to ASTM A269, Type 302 Commercial grade Seamless welded with AISI No4 finish.
.6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
.3 Where possible, fit and shop assemble work, ready for erection.
.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^{2}to CAN/CSA-G164.
.2 Shop coat primer: to CAN/CGSB-1.40.
.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.
.4 Bituminous paint: to CAN/CGSB-1.108.

2.4 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:
  .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  .2 Concrete, mortar and masonry.
  .3 Wood.

2.5 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
.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 7 degrees C.
.3 Clean surfaces to be field welded; do not paint.

2.6 ANGLE LINTELS

.1 Steel angles: galvanized prime painted, sizes as indicated for openings. Provide 150 mm minimum bearing at ends.
.2 Weld or bolt back-to-back angles to profiles as indicated.
.3 Finish: shop painted. Final painting to match room finishes, or as otherwise indicated.

2.7 PIPE RAILINGS

.1 Steel pipe: formed to shapes and sizes as indicated.
.2 Galvanize exterior pipe railings after fabrication. Shop coat prime interior railings after fabrication.

2.8 BOLLARDS

.1 Fabricate bollards from 6" diameter, 1/4" thick wall, galvanized steel pipe, length as indicated.
.2 Anchor to concrete footings below frost level.
.3 Fill pipe with concrete. Taper top surface of concrete to shed water.
.4 Paint finished product with exterior enamel, two coats.

3 EXECUTION

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.
.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
.4 Exposed fastening devices to match finish and be compatible with material through which they pass.
.5 Provide components for building by other sections in accordance with shop drawings and schedule.
.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.
.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 PIPE RAILINGS

.1 Install pipe railings for stairs and ramps as indicated.
.2 Set railing standards in concrete. Grout to fill hole. Trowel surface with smooth rounded top to shed water, with edges flush with perimeter surfaces.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements
.2 Insulation - Section 07213

1.2 References

.1 ANSI A208.1, Particleboard, Mat Formed Wood.
.2 CAN/CGSB-11.3-M87, Hardboard.
.3 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
.4 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
.5 CSA-B111-1974, Wire Nails, Spikes and Staples.
.6 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
.7 CSA O121-M1978, Douglas Fir Plywood.
.8 CAN/CSA-O141-91, Softwood Lumber.
.9 CSA-O151-M1978, Canadian Softwood Plywood.
.10 CSA-O153-M1980, Poplar Plywood.
.11 CAN/CSA-O325.0-92, Construction Sheathing.
.12 CAN3-O437 Series-93, Standards on OSB and Waferboard.
.13 National Lumber Grades Authority (NLGA)
    .1 Standard Grading Rules for Canadian Lumber.

1.3 Quality Assurance

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

2 PRODUCTS

2.1 Framing and Structural Materials

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

    .1 CAN/CSA-O141.
    .2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Glued end-jointed (finger-jointed) lumber NLGA Special Products Standard

.3 Glulam in accordance with Structural Glued-Laminated Timber CAN/CSA-O122.

.4 Structural Composite Lumber (SCL) in accordance with Evaluation of Structural Composite Lumber Products ASTM D 5456.

.5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

.1 S2S is acceptable.
.2 Board sizes: "Standard" or better grade.
.3 Dimension sizes: "Standard" light framing or better grade.
.4 Post and timbers sizes: "Standard" or better grade.

.6 At all exposed wood provide concealed fastenings. Concealed fastenings to be engineered by Professional Engineer registered in Ontario.

2.2 Panel Materials

.1 Douglas fir plywood (DFP): to CSA-O121, standard construction.

.2 Canadian softwood plywood (CSP): to CSA-O151, standard construction.

.3 Interior mat-formed wood particleboard: to ANSI 208.1.

2.3 Accessories

.1 Nails, spikes and staples: to CSA-B111.

.2 Bolts: 12.5 mm (1/2”) diameter unless indicated otherwise, complete with nuts and washers.

.3 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer. Explosive activated fasteners are not approved.

2.4 Fastener Finishes

.1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work interior highly humid areas pressure-preservative fire-retardant treated lumber.

.2 Stainless steel: use stainless steel 304 alloy for exposed work.

2.5 Wood Preservative

.1 Treat lumber and plywood to CSA 080.

.2 Dry material to maximum moisture content of 19%.

.3 Surface apply coloured preservative to manufacturer’s directions.

3 EXECUTION

3.1 Installation

.1 Comply with requirements of OBC/NBC Part 9 supplemented by following paragraphs.

.2 Install members true to line, levels and elevations, square and plumb.

.3 Construct continuous members from pieces of longest practical length.

.4 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.

.5 Install subflooring and combined subfloor and underlay with panel end-joints located on solid bearing, staggered at least 800 mm.

.1 In addition to mechanical fasteners, floor panels secure floor subflooring to floor joists using glue screws. Place continuous adhesive bead in accordance with manufacturer's instructions, single-bead on each joist and double-bead on joists where panel ends butt.

.6 Install wall sheathing in accordance with manufacturer's printed instructions.

.7 Install roof sheathing in accordance with requirements of NBC.

.8 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.

.9 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.

.1 Align and plumb faces of furring and blocking to tolerance of 1:600.

.10 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.11 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

.12 Install sleepers as indicated.

.13 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

3.2 Erection

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.3 Schedules

.1 Roof sheathing:

.1 Plywood, DFP or CSP sheathing grade or PP standard sheathing grade, T&G square edge, 15.9 mm (5/8”) thick.

.2 Exterior wall sheathing:
- .1 Plywood, DFP or CSP sheathing grade or PP standard sheathing grade, T&G square edge, thickness noted on drawings.

.3 Interior wall sheathing:
- .1 Plywood CSP sheathing grade or PP standard sheathing grade square edge 12.7 mm (1/2”) thick or to thickness noted on drawings.

.4 Electrical equipment mounting boards:
- .1 Plywood, DFP G1S square edge, 15.9 mm (5/8”) thick.

.5 Solid wood blocking:
- .1 38mm wide solid wood or
- .2 Plywood, square edge, 19 mm (3/4”) thick.
- .3 Sizes to suit anchoring for products. Minimum 8” surface area.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements
.2 Section 06200 - Rough Carpentry
.3 Section 06400 - Architectural Woodwork
.4 Section 08710 - Door & Finishing Hardware
.5 Section 10800 - Toilet, Bath and Laundry accessories

1.2 References

.1 AWMAC Quality Standards for Architectural Woodwork 1991.
.2 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber 1996.
.3 National Hardwood Lumber Association (NHLA) Rules for the Measurement and Inspection of Hardwood and Cypress January 1986.

1.3 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
.2 Indicate details of construction, profiles, jointing, fastening and other related details.
.3 Indicate all materials, thicknesses, finishes and hardware.

1.4 Samples

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.

1.5 Delivery, Storage, and Handling

.1 Deliver, handle, store and protect materials in accordance with Section 01610 - Basic Product Requirements.
.2 Protect materials against dampness during and after delivery.
.3 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

2 PRODUCTS

2.1 Lumber Material

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with following standards:
  .1 CAN/CSA O141.
  .2 NLGA Standard Grading Rules for Canadian Lumber.
  .3 AWMAC custom premium grade, moisture content as specified.

.2 Hardwood lumber: moisture content 7% or less in accordance with following standards:
  .1 National Hardwood Lumber Association (NHLA).
  .2 AWMAC premium grade, moisture content as specified to species noted..

2.2 Panel Material

.1 Douglas fir plywood (DFP): to CSA O121, standard construction.
.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
.3 Hardwood plywood: to CSA O115. Type 11 exposed faces architectural grade.
.4 Poplar plywood (PP): to CSA O153, standard construction.
.5 Interior mat-formed wood particleboard: to CAN3-O188.1.
.6 Hardboard: to CAN/CGSB-11.3.
.7 Medium density fibreboard (MDF): to ANSI A208.2, density 769 kg/m^3.

2.3 Accessories

.1 Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; plain copper stainless steel finish elsewhere.
.2 Wood screws: to CSA B35.4 plain stainless steel, type and size to suit application.
.3 Splines: wood plastic metal.
.4 Adhesive: recommended by manufacturer.

3 EXECUTION

3.1 Installation

.1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.

.3 Form joints to conceal shrinkage.

3.2 Construction

.1 Fastening.
  .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
  .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
  .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.
  .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.2 Standing and running trim.
  .1 Butt and cope internal joints of baseboards to make snug, tight, joint. Cut right angle joints of casing and base with mitred joints.
  .2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
  .3 Make joints in baseboard, where necessary using a 45º scarfe type joint.
  .4 Install door and window trim in single lengths without splicing.

.3 Interior and exterior frames.
- .1 Set frames with plumb sides and level heads and sills and secure.

.4 Panelling.
- .1 Secure panelling and perimeter trim using adhesive recommended for purpose by manufacturer. Fill nail holes caused by temporary fixing with filler matching wood in colour.
- .2 Secure panelling and perimeter trim using concealed fasteners.
- .3 Secure panelling and perimeter trim using counter sunk screws plugged with matching wood plugs.

.5 Shelving.
- .1 Install shelving on shelf brackets, at coat racks.
- .2 Provide 3 mm solid edge-banding on exposed edges.

.6 Hardware.
- .1 Install all hardware and accessories to locations required. See drawings for accessories.

3.3 Schedules

.1 n/a

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01330 Submittal Procedures
.2 Section 01450 Quality Control
.3 Section 01610 Basic Product Requirements
.4 Section 07900 Joint Sealers
.5 Section 08800 Glazing
.6 Section 11603 Stainless Steel Countertops

1.2 References

.1 American National Standards Institute (ANSI)
  .1 ANSI A208.2 1994, Density 640-800kg/m;, Medium Density Fiberboard for Interior Use.
  .2 ANSI A208.1-1993, Density 640-800kg/m;, Grade M2, Particleboard for Interior Use.

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  .1 AWMAC Quality Standards for Architectural Woodwork.

.3 Canadian Standards Association (CSA)
  .1 CAN3 A172 M79 , High Pressure Paper Base, Decorative Laminates.
  .2 CSA B111 1974 , Wire Nails, Spikes and Staples.
  .3 CSA O115 M82 , Hardwood and Decorative Plywood.
  .4 CSA O121 M1978 , Douglas Fir Plywood.
  .5 CAN/CSA O141 91 , Softwood Lumber.
  .6 CSA O151 M78 , Canadian Softwood Plywood.
  .7 CSA O153 M80 , Poplar Plywood.
  .8 CAN3 O188.1 M78 , Interior Mat Formed Wood Particleboard.
  .9 CAN/CGSB 11.3 M87 , Hardboard.

.4 National Hardwood Lumber Association (NHLA)
  .1 Rules for the Measurement and Inspection of Hardwood and Cypress January 1998.

.5 National Lumber Grades Authority (NLGA)
  .1 Standard Grading Rules for Canadian Lumber 1991.

1.3 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330 Submittal Procedures.

.2 Indicate details of construction materials, profiles, jointing, fastening finishes and other related details.

.3 Indicate locations of all service outlets in casework, and all connections, attachments, anchorage and location of exposed fastenings.

1.4 Samples

.1 Submit samples in accordance with Section 01330 Submittal Procedures.

.2 Submit duplicate samples: sample size 300 x 300 mm.

.3 Submit duplicate colour samples of laminated plastic or themofused melamine for colour selection.

.4 Submit duplicate samples of laminated plastic joints, edging, cutouts and postformed profiles.

1.5 Delivery, Storage, and Handling

.1 Protect millwork against dampness and damage during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

1.6 Warranty

.1 Submit written warranty against warping, splitting, delamination, or other defects in fabrication and installation in accordance with GC 12.3 for one (1) year.

2 PRODUCTS

2.1 Materials

.1 Solid Wood and Veneer: clear maple unless otherwise indicated. All woods and veneers to be clear ‘quarter cut' and matched.

.2 Thermofused Melamine (MCP):
- .1 To NEMA LD-3-95 Grade VGL consisting of a decorative paper impregnated and saturated with melamine resin, thermally fused under heat and pressure to thickness indicated. Always overlay bonded to both faces to prevent warping.
- .2 Particleboard core panels to ANSI A208.1 - [1993] to ASTM E1333-1990, grade M2, density 640 - 800 kg/m3 to indicated thickness. Colour-matched edging to be 3mm PVC, rounded.
- .3 Melamine colour to be selected from all manufacturer’s group choices solid and wood grain to later Consultant’s choices.
- .4 Supply "Panolam" Brand or approved alternate.

.3 Softwood lumber: SPF unless specified otherwise, S4S, in accordance with following standards:
- .1 CAN/CSA O141.
- .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 AWMAC custom grade, moisture content as specified.

.4 Hardwood lumber: Clear Maple or as otherwise indicated, select grade to NHLA standards, kiln dried.

.5 Plywood: to comply with or exceed requirements of CSA 0115-1987 Type II.

.6 Particleboard Core: to CAN3-0188.1 - M78; Grade R, sanded faces, 19 mm thick.

.7 Plastic Laminate: to CAN3-A172-M79, General Purpose Standard Grade (GP-S) for all flat applications and edge banding. Postforming Standard Grade (PF-S) for postformed work. Colours and textures to be selected by Consultant from manufacturers' full range, from "Nevamar","Formica", or "Wilsonart" and "Arborite" at the Consultants discretion.

.8 Fasteners and Sealants
- .1 Nails and staples: to CSA B111.
- .2 Wood screws: Type and size to suit application.
- .3 Splines: wood, plastic, or metal.
- .4 Sealant: to Section 07900 CAN 3.
- .5 Adhesives: to CSA 0112-M as applicable.

.9 Glazing
- .1 Tempered glazing unless otherwise noted; Thickness to be 10mm unless otherwise indicated. Refer also to Section 08800, Glazing.

2.2 Cabinet Fabrication:

.1 Cabinet Style: Flush overlay doors and drawers on gable end "European" style construction.

.2 Case Construction:
- .1 All joints shall be glued rebate, or glued and dowelled or glued and screwed with appropriate screw connectors approved by Consultant. Plain or nailed butt joints are not acceptable.
- .2 Case Bodies: 19mm Melamine Component Panels with 3mm matching edge-banding or as otherwise indicated.
- .3 Backs: 16mm Melamine Component Panels.
- .4 Doors: 19mm Melamine Component Panels with 3mm matching edge-banding.

.3 Shelves:
- .1 Shelving: 19mm Melamine Component Panels with 3mm matching edge-banding.
- .2 Shelving shall be full depth of cabinets.

.4 Drawer Construction:
- .1 All joints to be glued rebate, or glued and dowelled or glued and screwed with appropriate screw connectors approved by Consultant.
- .2 Drawers to be maximum practical depth.
- .3 Drawer Interiors (Sides, Backs, Bottoms and False Fronts): 13mm Melamine Components Panels
- .4 Drawer Fronts: 19mm Melamine Component Panels with 3mm matching edge-banding.

.5 Valance panels: 19mm Melamine Component Panels with 3mm matching edge-banding.

.6 Furring, blocking, nailing strips, grounds and rough bucks and sleepers: Softwood lumber.

.7 Wood trims and nosings: Select Grade Hardwood, species indicated.

.8 Counters: As indicated on drawings. If not otherwise indicated, assume plastic laminate on particleboard core, post formed where indicated; with wood nosings; and to profiles as detailed.

.9 Supply and install cabinet hardware, in quantity required for doors, shelves, and drawers.

.10 No exposed fasteners allowed in exposed gable ends.

2.3 Cabinet Hardware

.1 Door hinges: "European" style, concealed, hinges, self-soft closing, press formed hinge links, zinc die cast screw on hinge cup inset into door, 3-dimensional independent adjustment, all exposed parts nickel plated, opening angle 110°, for full or half overlay as required, on all units, except lazy susan type on corner folding door units. One pair per door, two pair per full height door. Supply “Hettich Intermat” or approved alternate.

.2 Drawer Slides: Full extension slides with lift out release. Self, soft closing. Acceptable Acceptable Product: “Accuride Full extension by Knape & Vogt”, or approved equal.

.3 Drawer and Swing Door Pulls: U shaped wire pulls 89 mm (3 1/2") c/w screw fastening, finish to be "Dull Nickel - finish #195", supply #33204 by Richielieu or approved alternate.

.4 Shelf Pilasters: zinc coated KV255 by Knape and Vogt, full height of gable, recessed in dado flush to face.

.5 Shelf Supports: zinc coated KV256 by Knape and Vogt. Supply 20 spare shelf supports.

.6 Door and Drawer Bumpers: rubber bumpers, 10 mm diameter x 3 mm thick, screwed on. Two per door on drawer. Supply 20 spare bumpers.

.7 Locks: heavy duty suitable for intended use, supplied by Richelieu. Key all cabinet and drawer locks within a room alike. Supply (5) Master Keys for entire project. Coordinate keying with Consultant.

.8 Closet Rods: 27mm diameter pre-painted white steel rod with screwed fasteners at each end.

.9 Open Shelving Components: brackets prefinished silver, "Medium Duty" Richelieu #69912106 and pilaster supports, Richelieu #085 Series, zinc finish.

.10 Countertop supports: K-R650 Kolossus Heavy-Duty Aluminum Brackets, by Richelieu, or approved equal. 18” x 18” L-shape bracket, colour: white.

.12 Waste Bin and Recycling Center: Rev-A-Shelf 53WC Series Recycling Center by Richelieu or approved equal, colour: Orion Gray, Dimensions: 14-3/8”w x 19”h

2.3 Plastic Laminate Fabrication

.1 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.2 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 2400 mm to 3000 mm. Keep joints 600 mm from sink cutouts.

.3 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.4 Use straight self edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.5 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.6 Apply laminated plastic liner sheet to interior of cabinetry where indicated.

2.4 Thermofused Melamine

.1 Melamine panels in finished (installed) condition shall show no exposed fasteners on exterior surfaces. Assemble melamine millwork using doweled/wafered-and-glue construction. Only where specified, construction may also include assembly using hardware (ie. screws). For more information consult MDF/Particleboard A From Start to Finish@ documents prepared by The Composite Panel Assoc.

3 EXECUTION

3.1 Installation

.1 Do architectural woodwork to Custom Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.

.3 Use draw bolts in countertop joints.

.4 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

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

.6 Apply water resistant building paper or bituminous coating over wood framing members in contact with masonry or cementitious construction.

.7 Fit hardware accurately and securely in accordance with manufacturer's directions.

.8 Confirm millwork and cove base requirements for each room. See finish schedule.

3.2 Cleaning

.1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces .

3.3 Protection

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

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 Section 01001, General Requirements

1.2 DESCRIPTION

.1 Work Included:
- .1 Supply and installation of membrane air/vapour barrier to walls, roofs, and floors. Includes patching as required.

.2 Related Work Specified Elsewhere:
- .1 Board insulation - Section 07212 Board Insulation
- .2 Sealants - Section 07900 Sealants

1.3 SUBMITTALS

.1 Upon request, submit certified copy of test data from recognized independent testing laboratory confirming performance properties of air vapour and damprroofing specified.
.2 Submit appropriately sized samples of each membrane, 305mm x 305mm (12" x 12"), for verification of compliance with material specified.

1.4 QUALITY ASSURANCE

.1 Review work of this section while it progresses with a view to identifying weaknesses or gaps in the air/vapour barrier systems.
.2 Coordinate the timing and installation of the various air/vapour barrier systems and cladding systems to ensure a complete and integral system of air/vapour barriers.
.3 Review and ensure continuity of air and vapour retardent membranes at junction of cladding and substrate systems and other construction details.
.4 If the possibility of discontinuity is discovered bring to the attention of the Consultant for further direction and do not conceal.
.5 All membranes and accessories shall be applied by a contractor acceptable to the manufacturer. Provide written evidence of such endorsement from the manufacturer when requested.
.6 Installation of membrane systems shall be inspected prior to, periodically during and upon completion by a representative of the manufacturer to ensure compliance with the specifications and the manufacturers published guidelines. Submit written copies of inspection reports prepared by the representative of the manufacturer to the Consultant prior to concealing membrane.
.7 Notify Consultant of timing of the work of this section and do not conceal work of this section until work reviewed by Consultant and identified defects corrected.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver all membranes and accessory materials to the project site in original and unopened packaging with manufacturer's labels intact.
.2 Membrane and accessory materials shall be stored on site in such a manner so as to protect them from precipitation and ground moisture.
.3 Accessory materials including; sealants, mastics, adhesives and primers, shall be stored at temperatures appropriate to those materials. Consult precautionary statements on product labels

for storage and usage instructions before use and make reference to applicable material safety data sheets.

.4 Pallets of membranes shall not be double stacked.

1.6 JOB CONDITIONS

.1 The membranes and accessory materials shall be applied at ambient temperatures satisfactory to the manufacturer and under dry conditions only.

.2 Concrete shall be cured a minimum of 7 days and be free of surface moisture prior to the installation of the dampproofing system. Allow adequate drying time following precipitation as recommended by Manufacturer.

.3 Prior to the installation, inspect those areas to receive the dampproofing to ensure that they are clean, dry, sound, smooth and continuous.

1.7 REFERENCES

.1 The membranes as specified herein and their installation, shall conform to and proceed in accordance with any and all codes, standards and practices governing work of the nature described throughout this specification.

2 PRODUCTS

2.1 MANUFACTURERS

.1 Supply only those membrane systems specified herein.

.2 Alternate systems will only be considered upon written submission during the tender period.

.3 Verify with all manufacturers the compatibility of products one to the other and report any conflicts to the Consultant.

2.2 MATERIALS

.1 Vapour barrier under slab-on-grade: Polyethylene film to CAN2-51.33-M80, Type 1, 0.253 mm (10 mil) thick, in largest sheets practical.

.2 Sheet Air Barrier for framed walls: sheet material fabricated from spun-bonded olefin fibres, permeance rating of 1723 ng/PA-S-m2, Tyvek 2 by Dupont Canada, Typar by Remmay or Air-Gard by Fabrene Inc. complete with joint tape, Contractor's Sheathing Tape, Type Y-8086 as manufactured by 3M.

.3 Air/vapour barrier membrane for cavity walls: "Blueskin T.G." thermofusible air and vapour barrier membrane as manufactured by Monsey Bakor:

.1 Membrane: SBS modified bitumen membrane reinforced with non-woven fibreglass specifically designed to be fused to the substrate by heating the lower surface with a propane torch. Membrane shall maintain a minimum thickness of 2.5mm (100 mils) after heat application.

.2 Thru-wall flashing membrane: same material as air/vapour barrier membrane.

.3 Surface Conditioner: As recommended by the Manufacturer.

.4 Complimentary tapes/mastics for sealing around penetrations, etc.: as recommended by manufacturer.

.4 Thru-wall flashing membrane: ”Blueskin TWF” by Monsey Bakor self adhesive thru-wall flashing membrane composed of a SBS modified bitumen membrane which is integrally laminated to a yellow cross laminated polyethylene film.

.5 Polyethylene vapour barrier where indicated:
- .1 General: Polyethylene film to CAN2-51.33-M80, Type 1, 0.152 mm (6 mil) thick, in largest sheets practical.
- .2 Around Frame Connections: Polyethylene film to CAN2-51.33-M80, Type 1, (10 mil) thick
- .3 Vapour Barrier Joint Sealing Tape: Tape with an aggressive permanent adhesive, min. 75 mm wide, Contractors Tape by 3M Company.
- .4 Sealant: in accordance with Section 07900 - Sealants
- .5 Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes, use Sylvania Electric Equipment No. 1004-VB and 5254-VB, or approved equal coordinate with Division 16.
- .6 Elastic Flashing: Black artificial rubber flashing not less than 1 mm thick complete with expansion joints, control joints, edge bindings, pipe flashings and other standard accessories. Acceptable Suppliers: Miner Butyl Membrane, or Lexsuco Canada, or Tremco or Dunlop, or Goodyear.

.6 Foundation wall dampproofing below grade: "Black Knight Foundation Coating and Primer” as manufactured by U.S.E. Hichcon Products Limited; with Drainage Board.
- .1 Complimentary tapes/mastics for sealing around penetrations, etc.: as recommended by manufacturer.
- .2 Apply dampproofing to all new and existing foundations to be excavated.
- .3 Install Drainage Board in front of rigid insulation. Acceptable product shall be drainage board as manufactured Platon or equal.

3 EXECUTION

3.1 VAPOUR BARRIER UNDER SLAB-ON-GRADE

.1 Use sheets of largest practical size to minimize joints.
.2 Inspect sheets for continuity. Repair punctures and tears with sealing tape before work is concealed.
.3 Seal lap joints of sheet vapour barrier as follows:
- .1 Attach first sheet to substrate.
- .2 Apply continuous bead of sealant over solid backing at joint.
- .3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
- .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.2 FOUNDATION WALL DAMPPROOFING BELOW GRADE

.1 General
- .1 Examine all areas to receive membrane to ensure that they are suitably prepared for its

installation. Have deficiencies addressed prior to the commencement of the installation.

.2 Concrete surfaces shall be smooth, clean, dry and free of any foreign matter that would otherwise hinder the adhesion or installation procedure.

.3 Ensure compatibility of membrane and accessories with: curing compounds, preservative treatments, dissimilar membrane systems and adjoining materials. Consult manufacturer's representative for further assistance.

.2 Preparation

.1 Before applying dampproofing: Seal exterior joints between foundation walls and footings, joints between concrete floor slabs and foundation and around penetrations through dampproofing with sealing compound.

.3 Application

.1 Apply primer to surface at rate of 0.5 l/m^2

.2 Apply dampproofing in accordance with applicable CGSB standard as follows:

.1 Material: CGSb 37-GP-2M use Application CGSB 37-GP-3M

.2 Material: CGSb 37-GP-16M use Application CGSB 37-GP-36M

.3 Apply continuous uniform coating of dampproofing to foundation walls from 50mm below finished grade, down foundation, over mortar fillet and down footing.

.4 Clean-up

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

3.3 POLYETHYLENE VAPOUR BARRIER

.1 Install sheet vapour barrier on warm side of exterior wall, ceiling and floor assemblies prior to installation of gypsum board to form continuous barrier.

.2 Use sheets of largest practical size to minimize joints.

.3 Inspect sheets for continuity. Repair punctures and tears with sealing tape before work is concealed.

.4 During framing installation, wrap header tracks, slab ends and other constructions requiring installation during framing, using 10 mil polyethylene sheets for later sealing to larger sheets. Seal these connecting pieces to membrane air vapour barrier where required.

.5 For windows and other wall openings:

.1 Cut sheet vapour barrier to form openings and ensure material is lapped and sealed to window frame or other opening frame to form continuous seal.

.2 Seal vapour barrier to air barrier and/or membrane air/vapour barrier at all openings.

.6 Seal perimeter of sheet vapour barrier as follows:

.1 Apply continuous bead of sealant to substrate at perimeter of sheets.

.2 Lap sheet over sealant and press into sealant bead.

.3 Install staples through lapped sheets at sealant bead into wood substrate.

.4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.7 Seal lap joints of sheet vapour barrier as follows:

.1 Attach first sheet to substrate.

.2 Apply continuous bead of sealant over solid backing at joint.

.3 Lap adjoining sheet minimum 150 mm and press into sealant bead.

.4 Install staples through lapped sheets at sealant bead into wood substrate.

.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.8 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:

.1 For sheet-type vapour barriers, install moulded box vapour barrier.

.2 Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

3.4 SHEET AIR BARRIER

.1 Attach sheet air barrier vertically to exterior face of sheathing as recommended by manufacturer.
.2 Lap all horizontal and vertical joints 200mm minimum.
.3 Ensure continuous placement of sheet air barrier.
.4 Seal all joints in sheet air barrier with specified sealing tape.
.5 Where air barrier contacts other insulation or air barrier type, lap a minimum of 200mm and seal with tape.
.6 Seal air barrier and vapour barrier to each other at all openings.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements
.2 Section 02223 - Excavation and Backfill
.3 Section 07410 - Preformed Aluminum Panels
.4 Section 07620 - Sheet Metal Flashing &Trim
.5 Section 07930 - Foamed in Place Insulating Sealant

1.2 REFERENCES

.1 ASTM E96-96, Test Methods for Water Vapor Transmission of Materials.
.2 ASTM C591-94, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal
.3 CGSB 71-GP-24M-77, Adhesive, Flexible, for Bonding Cellular polystyrene Insulation.
.4 CAN/ULC-S701-97, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
.5 CAN/ULC-S702-97, Thermal Insulation, Mineral Fibre, for Buildings.

1.3 SUBMITTALS

.1 Product Data:
  .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01330 - Submittal Procedures.
  .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01330 - Submittal Procedures. Indicate VOC's insulation products and adhesives.

.2 Manufacturer's Instructions:
  .1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.2 Co-ordinate with other building subtrades.
.3 Review manufacturer's installation instructions and warranty requirements.

2 PRODUCTS

2.1 INSULATION

.1 Extruded polystyrene: to CAN/ULC S701-97, Type 2 thickness as indicated on drawings with shiplapped edges unless otherwise noted. Only polystyrene insulations listed on CGSB Qualified Products List (41 GP Series) are acceptable for use on this project.

  .1 Acceptable materials:
    .1 Below Grade: Styrofoam SM (Type 4) by Dow Chemicals Canada Inc. with cement board finish or approved equal.

.2 Exterior walls (Steel Stud/Masonry), (Steel stud/ girts/metal cladding): Styrospan (Type 3) squared edges by Dow Chemicals Canada Inc. or approved equal.
.3 Exterior walls (Masonry Cavity Wall): Cavitymate (Type 3) squared edges by Dow Chemicals Canada Inc. or approved equal.

.2 Insulating sealant: Foam in place to section 07930

2.2 ADHESIVES

.1 Type A: for polystyrene below grade insulation against foundation walls:
.1 to CGSB 71-GP-24.

.2 Type C: Trowel consistency solvent type adhesive for rigid insulation:
.1 to CGSB 71-GP-24 Type 2.
.2 Acceptable Product: Bakor 230-21

2.3 ACCESSORIES

.1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self-locking type.

3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50mm from vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset both vertical and horizontal joints in multiple layer applications. On wall applications offset vertical joints to facilitate installation of masonry reinforcement and girt systems..

.7 Do not enclose insulation until it has been inspected and approved by Consultant.

3.3 EXAMINATION

1. Examine substrates and immediately inform Consultant in writing of defects.

2. Prior to commencement of work ensure substrates are firm, straight, smooth, dry, clean, and free of snow, ice or frost and clean of dust and debris.

3.4 RIGID INSULATION INSTALLATION

1. Install insulation board to thickness shown at locates indicated on Drawings and Details.

2. Apply adhesive to polystyrene, insulation board in accordance with manufacturer's recommendations.

3. Imbed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.

4. Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 0.15 mm polyethylene strip over expansion and control joints using compatible adhesive before application of insulation.

3.5 PERIMETER FOUNDATION INSULATION

.1 Interior application: extend boards vertically below bottom of finish floor slab as indicated on drawings, installed on inside face of perimeter foundation walls. Install on interior face of perimeter foundation wall with adhesive.

.2 At intersection of perimeter foundation wall and interior foundation walls turn insulation onto one side of the interior wall, as indicated on drawings.

.3 Under slab application: extend layers of boards from perimeter foundation wall as indicated on drawings. Install layer below underslab area as indicated.

3.6 WALL INSTALLATION

.1 Install polystyrene insulation boards on outer surface of inner wythe of wall cavity over impaling clips on bed of adhesive. Each layer of insulation shall receive insulation adhesive and joint seal installed as indicated. Apply insulation adhesive to insulation boards with 50 mm daubs of adhesive spaced approximately 305 mm o.c. Both ways on inside face of insulation board.

.2 Apply a minimum 6 mm wide application of adhesive to board edges by trowel buttering. Seat insulation edge into adhesive and press insulation firmly in place over masonry ties.

.3 Fit insulation between wall ties and other obstructions with joints staggered and edges butted tightly.
  .1 Press units firmly against inside wythe of masonry or other construction.

.2 Wedge insulation from outside wythe of construction with small fragments of masonry materials spaced 600mm o.c. both ways.

.3 Make insulation continuous. Fill all voids with low expansion foam.

3.7 PROTECTION

.1 After installation of board insulation and prior to installation of exterior wall finish, protect insulation from physical damage and exposure to ultra violate sun damage per manufacturer's instructions.

3.8 CLEANING

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

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements
.2 Section 06100: Rough Carpentry
.3 Section 09250: Gypsum Board
.4 Division 23: Insulation for mechanical work.

1.2 REFERENCES

.1 ASTM C 665, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction.

.2 CAN/ULC S702 1997Thermal Insulation Mineral Fibre for buildings.

.3 Underwriters Laboratories of Canada (ULC).
  .1 CAN/ULC•S702, Standard for Mineral Fibre Insulation.

1.3 SUBMITTALS

.1 Product Data:
  .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01330 - Submittal Procedures.
  .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01330 - Submittal Procedures. Indicate VOC's insulation products and adhesives.

.2 Manufacturer's Instructions:
  .1 Submit manufacturer's installation instructions.

2 PRODUCTS

2.1 INSULATION

.1 Batt and blanket mineral fibre: to ASTM C 665, Type 1 and 2,
  .1 Acceptable material for Acoustic Insulation:
    .1 Owens Corning: Quietzone
    .2 John Mansville: Sound-Sheild Fibreglass Insulation
    .3 or approved equal

  .2 Acceptable material for Thermal Insulation: all insulation batts to suit full wall cavity as per Wall/Partition Type.
    .1 Owens Corning: Ecotouch Thermal Insulation
    .2 Roxul: ComfortBatt Thermal Insulation
    .3 John Manville: Thermal Insulation
    .4 or approved equals.

3 EXECUTION

3.1 INSULATION INSTALLATION

.1 Install insulation to maintain continuity of thermal and acoustic protection to building elements and spaces unless specifically indicated on drawings all acoustic batt insulation shall extend from the floor to underside of structure floor or roof deck above.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Do not compress insulation to fit into spaces.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures.

.5 Do not enclose insulation until it has been inspected and approved by Consultant

3.2 CLEANING

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

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements.

1.2 SECTION INCLUDES

.1 Provision of all labour, materials, equipment and incidental services necessary to provide firestop products and systems intended to act as a firestop and smoke seal within fire resistive wall and floor assemblies.

.2 Firestop systems shall be used in locations including, but not limited to, the following:
- .1 Penetrations through fire resistance rated floor and roof assemblies including both empty openings and openings containing penetrants.
- .2 Penetrations through fire resistance rated wall assemblies including both empty openings and openings containing penetrants.
- .3 Membrane penetrations in fire resistance rated wall assemblies where items penetrate on side of the barrier.
- .4 Joints between fire resistance rated assemblies.
- .5 Perimeter gaps between rated floors/roofs and an exterior wall assembly.

.3 Firestops and smoke seals within mechanical and electrical assemblies (i.e. inside ducts, dampers and bus ducts) shall be provided as part of the work of Divisions 15 and 16 respectively.

.4 Firestops and smoke seals around the outside of such mechanical and electrical assemblies, where they penetrate fire separations, shall form part of the work of this section.

.5 Firestop systems provide for the Work must be from one manufacturer only, whether provided by Divisions 15, 16, or by this section

1.3 RELATED SECTIONS

.1	Cast-in-Place Concrete	Section 03300
.2	Unit Masonry	Section 04200
.3	Structural Steel for Building	Section 051223
.4	Sprayed Fireproofing	Section 07811
.5	Intumescent Thin Film Fire Resistive Material	Section 07814
.6	Sealants	Section 07900
.7	Aluminum Frame Curtain Wall	Section 08900
.8	Gypsum Board	Section 09250
.9	Mechanical; Pipe and Duct	Division 15
.10	Electrical Lighting, Power, Alarms, and Communication	Division 16

1.4 QUALITY ASSURANCE

.1 Applicator Qualifications
  .1 Work of this section shall be performed by applicators having a minimum of 2 years documented experience in the installation of firestop products and systems. Submit proof of experience to Consultant.

.2 Installation
  .1 Work shall be performed in strict accordance with manufacturer's printed instructions, and in accordance with all warranty requirements.

.3 Pre-installation Meeting
  .1 Convene a pre-installation meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
    .1 Contractor (Site Superintendent & Project Manager),
    .2 Installation Subcontractor (Site Foreman & Project Manager),
    .3 Product Manufacturer and Distributor (Technical Representatives),
    .4 Related Subcontractors (ie. Mechanical and/or Electrical), and
    .5 Consultant.

1.5 REFERENCE STANDARDS

.1 ASTM E84-01; Standard Test Method for Surface Burning Characteristics of Building Materials.
.2 ASTM E119; Methods of Fire Tests of Building Construction and Materials.
.3 ASTM E814-00; Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
.4 ASTM E1399-97 (2000); Test Method for Cyclic Movement and Measuring Minimum and Maximum Joint Width.
.5 ASTM E1966-00; Test Method for Resistance of Building Joint Systems
.6 UL 263; Fire Tests of Building Construction and Materials.
.7 UL 723; Surface Burning Characteristics of Building Materials.
.8 UL 1479; Fire Tests of Through-Penetration Fire Stops.
.9 UL 2079; Tests for Fire Resistance of Building Joint Systems.
.10 ULC-S115-1995 (R2001); Fire Tests of Firestop Systems.
.11 CAN/ULC-S102-1988 (R2000); Surface Burning Characteristics of Building Materials and Assemblies.
.12 Underwriters Laboratories of Canada; List of Equipment and Materials - Fire Resistance.
.13 Underwriters Laboratories Inc.; Fire Resistance Directory – Volume 2.
.14 Intertek Testing Services; Directory of Listed Building Products.
.15 Factory Mutual Research (FM); FM Approval Standard of Firestop Contractors – Class 4991.
.16 Omega Point Laboratories (OPL); Building Products, Materials & Assemblies – Volume II.

1.6 DEFINITIONS

.1 Firestop: The use of a material or combination of materials in a fire-rated structure (wall or floor) where it has been breached, so as to restore the integrity of the fire rating on that wall or floor.

.2 System: The use of a specific firestop material or combination of materials in conjunction with a specific wall or flow construction type and specific penetration(s).

.3 Barrier: Any bearing or non-bearing wall or floor that has an hourly fire and smoke rating.

.4 Through-Penetration: Any penetration of a fire-rated wall or floor that completely breaches the

barrier.

.5 Membrane-Penetration: Any penetration in a fire-rated wall that breaches only one side of the barrier.

.6 Fire Resistive Joint: Any gap, joint, or opening, whether static or dynamic, between two fire rated barriers including where the top of a wall meets a floor; wall edge to wall edge applications; floor edge to floor edge configurations; floor edge to wall.

.7 Perimeter Barrier: Any gap, joint, or opening, whether static or dynamic, between a fire-rated floor assembly and a non-rated wall assembly.

1.7 PERFORMANCE REQUIREMENTS

.1 Penetrations: Provide through-penetration firestop systems that are produced and installed to resist the spread of fire, passage of smoke and other hot gases according to requirements indicated, to restore the original fire-resistance rating of assembly penetrated.

.2 Provide and install complete penetration firestop systems that have been tested and approved by nationally accepted testing agencies per ASTM E814, UL 1479, or ULC-S115 fire tests in a configuration that is representative of field conditions.

.3 F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, to ASTM E814, UL 1479, or ULC-S115 but not less than one (1) hour or the fire resistance rating of the assembly being penetrated.

.4 FT-Rated Systems: Provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.

.5 FH-Rated Systems: Provide through-penetration firestop systems with H-ratings indicated, as well as F-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.

.6 FTH-Rated Systems: Provide through-penetration firestop systems with H-ratings indicated, as well as F-ratings and T-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.

.7 For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

.8 For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

.9 Fire Resistive Joints: Provide joint systems with fire resistance assembly ratings indicated, as determined by UL 2079 (ASTM E1399 and E1966), but not less than the fire resistance assembly rating of the construction in which the joint occurs. Firestop assemblies must be capable of withstanding anticipated movements for the installed field conditions.

.10 For firestop assemblies exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

.11 For floor penetrations exposed to possible loading and traffic, provide firestop systems capable of

supporting floor loads involved either by installing floor plates or by other means.

.12 Firestop products shall have flames spread ratings less than 25 and smoke-developed ratings less than 450, to ASTM E 84 or CAN/ULC-S102.

.13 Where there is no specific third party tested and classified firestop system available for an installed condition, the firestop contractor shall obtain from the firestop material manufacturer an Engineering Judgment (EJ) to be submitted to the Consultant and authorities having jurisdiction for approval prior to installation. The EJ shall follow International Firestop Council (IFC) guidelines.

1.8 MOCK-UP

.1 Prepare sample joints for approval by the Consultant, representative of each type of firestop condition in accordance with Section 01300.

.2 Where not approved by the Consultant, remove and replace sample joints to the satisfaction of the Consultant.

.3 Approved installations may become part of the finished work.

1.9 SUBMITTALS

.1 Product Data: For each type of firestop product selected. Certify that firestop materials are asbestos free and contain volatile organic compounds (VOC's) within limits of the local jurisdiction.

.2 Design Listings: Submit system design listings, including illustrations, from a qualified testing and inspecting agency that is applicable to each firestop configuration.

.3 Where there is no specific third party tested and classified firestop system available for a particular configuration, the firestop contractor shall obtain from the firestop material manufacturer an Engineering Judgment (EJ) for submittal.

.4 Qualification Data: For firms and persons specified under Quality Assurance to demonstrate their capabilities and experience. Submit document from manufacturer wherein manufacturer recognizes the installer as qualified.

1.10 ENVIRONMENTAL CONDITIONS

.1 Install firestops when ambient or substrate temperatures are within limits permitted by the manufacturer’s written instructions. Do not install firestops when substrates are wet due to rain, frost, condensation, or other causes.

.2 Ventilate per the manufacturers written instructions on the product’s Material Safety Data Sheet.

1.11 COORDINATION

.1 Coordinate construction of openings and penetrating items to ensure that firestop assemblies are installed according to specified requirements.

.2 Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

.3 Do not conceal firestop installations until the Owner's inspection agency or Authorities Having Jurisdiction have examined each installation.

.4 Schedule firestop work after installation of penetrants but prior to concealing the openings.

1.12 EXTENDED WARRANTY

.1 Submit a warranty of the firestop installation specified in this Section covering a period of an additional two years beyond the expiration of the warranty period specified in the General Conditions of the Contract, including materials and application. Replacement of firestop shall include removal of defective materials, preparation for and application of new material, and the repair and making good of damaged adjacent materials.

.2 "Defective" firestop installation shall include; joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, loss of adhesion, loss of cohesion, and staining of adjacent finished materials or surfaces.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

.1 3M Fire Protection Products
.2 A/D Fire Protection
.3 Hilti Firestop Systems
.4 Grace Construction Products
.5 TREMstop Firestopping Systems

2.2 MATERIALS

.1 Firestop And Smoke Seal Systems: in accordance with ASTM E814, UL 1479, or ULC-S115, asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke, and gases to ASTM E814, UL 1479, or ULC-S115, and not to exceed opening sizes for which they are intended.

.2 Service Penetration Assemblies: certified in accordance with ASTM E814, UL 1479, or ULC-S115 and listed in testing laboratory directory.

.3 Service Penetration Firestop Components: certified in accordance with ASTM E814, UL 1479, or ULC-S115 and listed in testing laboratory directory.

.4 Fire resistance rating of installed firestop assemblies shall be in accordance with design requirements, and requirements of Ontario Building Code.

.5 Primers: to Firestop manufacturer's recommendation for specific material, substrate, and end use.

.6 Intumescent Firestop Sealants and Caulks
  .1 Grace FlameSafe FS1900.
  .2 Hilti FS-One.
  .3 A/D FIREBARRIER Intumescent Caulk.
  .4 3M Fire Barrier CP 25WB+ Caulk.

.5 TREMstop IA by, TREMstop Firestopping Systems.

.7 Elastomeric Sealant
- .1 Grace FlameSafe FS1900, FS900+.
- .2 Hilti CP601S.
- .3 A/D FIREBARRIER Seal/Seal NS.
- .4 3M Fire Barrier Sealant 2000 and 2000N/S.
- .5 Fyre-Sil/Fyre-Sil S/L by, TREMstop Firestopping Systems.

.8 Joint Spray
- .1 Grace FlameSafe FS3000.
- .2 Hilti CP672.
- .3 A/D FIREBARRIER SprayMastic.
- .4 3M FireDam Spray 100.
- .5 TREMstop Acrylic SP by, TREMstop Firestopping Systems.

.9 Firestop Putty
- .1 Grace FlameSafe FSP1000 Putty & FSP1077 Putty Pads.
- .2 Hilti CP617/617L Putty Pads, & CP618 Putty Stick.
- .3 A/D FIREBARRIER Putty.
- .4 3M Fire Barrier Moldable Putty+.
- .5 TREMstop MP by, TREMstop Firestopping Systems.

.10 Firestop Devices
- .1 Grace FlameSafe FSWSD Collar, FSIS Intumescent Sleeve.
- .2 Hilti CP642/643 Collar.
- .3 A/D FIREBARRIER Collar/Sleeve.
- .4 3M Fire Barrier RC-1 Restricting Collar.
- .5 Fyre-Can/Fyre-Can Sleeve by, TREMstop Firestopping Systems.

.11 Wrap Strips
- .1 Grace FlameSafe FSWS 100/150.
- .2 Hilti CP645.
- .3 AD FIREBARRIER Wrap Strip.
- .4 3M FS-195+.
- .5 TREMstop WS by, TREMstop Firestopping Systems.

.12 Firestop Mortars
- .1 Grace FlameSafe FSM Mortar.
- .2 Hilti FS635 Trowelable Compound.
- .3 A/D FIREBARRIER Mortar.
- .4 3M Fire Barrier Mortar.
- .5 TREMstop Fire Mortar by, TREMstop Firestopping Systems.

.13 Firestop Bags/Pillows/Blocks
- .1 Grace FlameSafe Bags, FlameSafe Pillows.
- .2 Hilti FS657 Fire Block.
- .3 AD FIREBARRIER Pillows.
- .4 3M Fire Barrier Pillows.
- .5 TREMstop PS by, TREMstop Firestopping Systems.

.14 Forming/Damming Materials: Mineral Wool or other type as per manufacturer’s recommendations.

.15 Accessories: Provide components for each firestop system that are needed to install fill materials and to comply with Performance Requirements. Use only approved components specified by the firestop manufacturer for the firestop systems indicated. Accessories include, but are not limited to the following
items:
- .1 Permanent forming/damming/backing materials, including the following:
- .2 Mineral wool fiber insulation.
- .3 Foams or sealants used to prevent leakage of fill materials in liquid state.
- .4 Fire-rated form board.
- .5 Polyethylene/polyurethane backer rod.
- .6 Rigid polystyrene board, and other temporary forming materials.
- .7 Substrate primers.
- .8 Steel sleeves.

.16 All firestop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrants are subsequently removed.

2.3 MIXING

.1 For those products requiring mixing before application, comply with firestop manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

3 EXECUTION

3.1 EXAMINATION

.1 Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

.2 Proceed with installation only after unsatisfactory conditions have been corrected.

.3 Verify that all pipes, conduits, cables, and/or other items which penetrate fire-rated construction have been permanently installed prior to installation of firestops.

3.2 PREPARATION

.1 Surface Cleaning: Clean out openings immediately before installing firestop systems to comply with written recommendations of firestop manufacturer and the following requirements:
- .1 Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of firestop systems.
- .2 Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestop systems. Remove loose particles remaining from cleaning operation.
- .3 Remove laitance and form-release agents from concrete.

.2 Firestop shall be installed before fireproofing where bonding of firestop to metal deck is required.

.3 Firestop must precede installation of insulation around pipes and ducts penetrating fire separation.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces.

3.3 INSTALLATION

.1 General
- .1 Install firestop and smoke seal material and components in accordance with certification and manufacturer's instruction.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separations.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength to maintain their integrity.
- .4 Tool or trowel exposed surfaces to a neat smooth finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

.2 Penetration Firestop Systems
- .1 Install through-penetration firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.
- .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.
- .3 Install forming/damming/backing materials and other accessories required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire resistance ratings required.
- .4 Install fill materials for firestop systems by proven techniques to produce the following results:
  - .1 Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
  - .2 Apply materials so they fully contact and adhere to substrates formed by openings and penetrating items.
  - .3 For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

.3 Joint Firestop Systems
- .1 Install fire resistive joint firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.
- .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.
- .3 Install joint forming/damming materials and other accessories required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths of installed firestop material relative to joint widths that allow optimum movement capability and achieve fire resistance ratings required.
- .4 Install fill materials for firestop systems by proven techniques to produce the following results.
  - .1 Fill joint as required to achieve fire-resistance ratings indicated.
  - .2 Apply materials so they fully contact and adhere to substrates forming the openings.
  - .3 Completely fill recesses provided for each joint configuration.
  - .4 Tool non-sag firestop materials after their application and prior to the time

skinning begins. Use tooling agents approved by the firestop manufacturer.

.4 Perimeter Barrier Firestop Systems
- .1 Install perimeter barrier firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.
- .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.
- .3 Install metal framing, curtain wall insulation, mechanical attachments, safing materials and firestop materials as applicable within the system design.

3.4 INSPECTION

.1 Notify Consultant when installation is complete and ready for inspection, and prior to concealing or enclosing firestop materials and service penetration assemblies.

3.5 TOLERANCES

.1 The following shall regulate sizing of service penetrations:
- .1 Divisions 15 and 16 shall sleeve single, circular penetrants, except in fire resistance rated gypsum board.
- .2 Multiple penetrations of circular penetrants shall be considered such if the penetrants are not further than 102mm apart.
- .3 Forming of multiple penetrations and single penetrants in fire resistance rated gypsum board assemblies shall be created by respective trades by forming a square or rectangular opening around the penetrants. The edges of the opening shall be covered in gypsum board
- .4 Perimeter clearance shall be 13mm to 25mm for single penetrants, or 13mm to 25mm around outer penetrants in multiple penetrations.
- .5 Penetrations of square or rectangular configuration shall be constructed as specified above. Perimeter clearance shall be 40 to 50mm.

3.6 SCHEDULE

.1 Non-Service Penetrations Through Vertical Fire Separations Consisting of Masonry, Concrete, Or Gypsum Board/Stud Construction;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.2 Edge of Floor Slabs At Curtain Wall Or Precast Concrete Panel Assemblies;
- .1 Self-leveling elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.3 Voids at Perimeter Edges of Vertical Fire Separations Consisting Of Masonry, Concrete, Or Gypsum Board/Steel Stud Construction;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.4 Intersection of Masonry and Gypsum Board/Steel Stud Fire Separations;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.5 Control and Deflection Joints in Fire Separations;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.6 Non-Service Penetrations Through Horizontal Fire Separations And Fire-Resistance Rated Floor Slabs.
- 1 Self-leveling elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.7 Openings and Sleeves Installed for Future Use in Fire Separations;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **FH**.

.8 Service Penetrations Around Mechanical Ductwork And Noncombustible Piping, Rigid Electrical Conduit And Other Assemblies Penetrating Fire Separations;
- .1 Elastomeric seal and backup/forming material.
- .2 Firestop system rating: **F**.

.9 Service Penetrations Around Combustible Piping Penetrating Fire Separations;
- .1 Intumescent mastic collar.
- .2 Firestop system rating: **F**.

.10 Service Penetrations Around Multiple Flexible Cables Penetrating Fire Separations;
- .1 Removable intumescent bags/pillows, or intumescent cable sleeve systems.
- .2 Firestop system rating: **FT**.

3.7 CLEANUP

.1 Remove excess materials and debris from site, and clean adjacent surfaces immediately after application.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements

1.2 REFERENCES

.1 CSSBI 20M-99 Sheet Steel for Architectural, Industrial and Commercial Building Applications.

.2 CSSBI 16-94 Pre-finished Sheet Steel for Building Construction

.3 CSSBI S10-97 Insulated Sheet Steel Wall Assemblies

.4 ASTM A653M-99 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 CAN/CGSB-19.18-M87 Sealing Compound, One-Component, Silicone Base, Solvent Curing.

1.3 DESIGN CRITERIA

.1 Design metal panel wall to provide for thermal movement of component materials caused by ambient temperature range of 80º C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.2 Include expansion joints to accommodate movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.3 Design members to withstand dead load and wind loads calculated in accordance with NBC applicable local regulations, to maximum allowable deflection of 1/180th of span.
  .1 Components shall not vibrate and shall be free of all noise when exposed to design wind loads.

.4 Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall.

.5 Design wall system to accommodate specified erection tolerances of structure.

.6 Appearance:
  .1 All exposed surfaces shall be free of distortion, twist, waves, kinks and buckles.
  .2 Colour shall be uniform hue, tint, shade and gloss.

1.4 SAMPLES

.1 Submit duplicate 100 x 100 mm samples of wall system, representative of materials, finishes and colours, in accordance with requirements of Section 01330.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with requirements of Section 01330

.2 Indicate dimensions, profiles, schedule of wall elevations, wall openings, head, jamb, sill and mullion detail, trim and closure pieces, materials and finish, attachment methods, anchor details, interface with adjacent construction, isolation coatings, compliance with design criteria and requirements of related work.

.3 Each shop drawing submitted shall bear stamp of qualified professional engineer registered in province of Ontario.

2 PRODUCTS

2.1 MATERIALS

.1 Prefinished Metal Cladding Systems
- .1 Acceptable Manufacturer(s): Vicwest, Agway Metals, Ideal Roofing, or approved equal. The following spec is intended to be based upon Vicwest product. All approved manufacturer's must conform to the acceptable standards as indicated, including available colour selections.
- .2 Wall Cladding Profiles:
  - .1 Siding A: AD300R, vertical application, single colour.
  - .2 Siding B: Bellara Wood-look siding, 6" profile, horizontal application, single colour to be later selected from full manufacturer's range.
- .3 Soffit Profiles: perforated aluminum soffit, single colour to be later selected from full manufacturer's range.
- .4 All trims to match cladding.
- .5 Fabricated from Z275 galvanized sheet steel conforming to ASTM A653M Grade 230 or AZ150 Galvalume, sheet steel conforming to ASTM A792M Grade 230.
- .6 Sub-girts: Minimum 1.21 mm (0.048") thick formed galvanized steel, ASTM A653M Grade 230 with Z275 zinc coating. Full depth of wall system, factory notched and formed to match liner.
- .7 Fasteners: Galvanized, with exposed accessories and fasteners colour matched to cladding
- .8 Cladding coating: Prepainted with Baycoat 8000 Series or approved equal.

.2 Sealants:
- .1 Concealed locations: tape or compound, non-skinning, non-drying butyl rubber.
- .2 Exposed locations: one part silicone to CAN/CGSB-19.18M
- .3 Primers and surface conditioners: as recommended by sealant manufacturer.

3 EXECUTION

3.1 PREPARATION

.1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with specified isolation coating.

3.2 INSTALLATION

.1 Install siding system in accordance with manufacturer's instruction and CSSBI S10.

.4 Install exterior finish siding with concealed fasteners.

.3 Provide alignment bars, brackets, clips, inserts, shims as required to securely and permanently anchor wall system to building structure.

.4 Wall cladding framing system:
- .1 Install sub-girts. Frame all openings in the cladding.
- .2 Flashing: Install starter flashing, drip and other flashing, and corners, edgings, window and door flashing as shown on the drawings.
- .3 Exterior Cladding: Install exterior cladding in accordance with manufacturer's standard installation procedures, providing proper laps and detailing to ensure a weathertight face.
- .4 Install finishing flashing and cap flashing.
- .5 Sealants: Install sealants at junctions with adjoining work, and where shown on the drawings.

3.3 CLEANING

.1 Wash down exposed interior and exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths. Wipe interior surfaces clean as part of final clean-up.

.2 Remove excess sealant with recommended solvent.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Division 01 – General Requirements

1.2 References

.1 CSSBI 20M-99 Sheet Steel for Architectural, Industrial and Commercial Building Applications.

.2 CSSBI 16-94 Pre-finished Sheet Steel for Building Construction

.3 ASTM A653M-99 Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 CAN/CGSB-19.18-M87 Sealing Compound, One-Component, Silicone Base, Solvent Curing.

1.3 Design Criteria

.1 Design metal panel wall to provide for thermal movement of component materials caused by ambient temperature range of 80º C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.

.2 Include expansion joints to accommodate movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.

.3 Design members to withstand dead load and wind loads calculated in accordance with NBC applicable local regulations, to maximum allowable deflection of 1/180th of span.
- .1 Components shall not vibrate and shall be free of all noise when exposed to design wind loads.

.4 Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall.

.5 Maintain following installation tolerances:
- .1 Maximum variation from plane or location shown on approved shop drawings: 10mm/10m of length and up to 20mm /100m.
- .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75mm.

.6 Appearance:
- .1 All exposed surfaces shall be free of distortion, twist, waves, kinks and buckles.
- .2 Colour shall be uniform hue, tint, shade and gloss.

1.4 Shop Drawings

.1 Submit shop drawings in accordance with requirements of Section 01330

.1 Indicate dimensions and profiles.

2 PRODUCTS

2.1 Materials

.1 Pre-coated Galvanized Steel: ASTM A525, Z275 zinc coating; 0.6 mm core steel, shop pre-coated with 8000 series coating, colour as later selected by Architect. Allow (1) colour.

.2 Galvanized Steel: ASTM A525, Z275 zinc coating; 0.6 mm core steel.

.3 Exterior corners: of same profile, material and finish as adjacent siding material, shop cut and brake formed to required angle, concealed corner brace, concealed fasteners.

.4 Exposed joint (perpendicular to profile): ends of siding sheet shop cut clean and square, backed with tight fitting filler lapping back of joint.

2.2 Components

.1 Fascia: profiles as indicated.

.2 Gutters: Square profile 150 mm wide x 150 mm deep
- .1 Anchorage Devices: Type recommended by fabricator.
- .2 Gutter Supports: Brackets or Straps, as is appropriate, maximum spacing apart 1000mm.

.3 Downspouts: Rectangular closed face profile; 100 mm x 100 mm.
- .1 Downspout supports: Straps, as is appropriate, maximum spacing apart 1800mm.

.4 Splashpads: Preformed concrete slabs.

.5 Gaskets: closed cell polyurethane foam, adhesive on two sides, release paper protected.

.6 Touch-up paint: as recommended by panel manufacturer.

.7 Isolation coating: epoxy resin solution. Isolate fascia from eavestrough.

2.3 Fabrication

.1 Form gutters and downspouts to profiles and sizes indicated.

.2 Field measure site conditions prior to fabricating work.

.3 Fabricate with required connection pieces.

.4 Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.

.5 Hem exposed edges of metal.

.6 Seal metal joints.

.7 Fabricate gutter and downspout accessories; seal watertight.

3 EXECUTION

3.1 Preparation

.1 Protect metal surfaces in contact with aluminum with specified isolation coating.

3.2 Installation

.1 Provide alignment bars, brackets, clips, inserts, shims as required to securely and permanently fasten fascia to building structure.

.2 Join lengths with seams sealed watertight. Flash and seal gutters to downspouts and accessories.

.2 Apply bituminous protective backing on surfaces in contact with dissimilar materials.

.3 Slope gutters 5mm/m minimum, to downspout areas indicated.

.4 Seal metal joints watertight for full metal surface contact.

3.3 Cleaning

.1 Wash down exposed interior and exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths. Wipe interior surfaces clean as part of final clean-up.

.2 Remove excess sealant with recommended solvent.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements

1.2 References

.1 ASTM C 1193 Standard guide for use of joint sealants.

.2 CGSB 19-GP-5M-76, Sealing Compound, One Component, Acrylic Base, Solvent Curing.

.3 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.

.4 CGSB 19-GP-14M-76, Sealing Compound, One Component, Butyl-polyisobutylene Polymer Base, Solvent Curing.

.5 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.

.6 CAN/CGSB-19.18-M87, Sealing Compound, One Component, Silicone Base, Solvent Curing.

.7 CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.

.8 CAN/CGSB-19.22-M89, Mildew Resistant, Sealing Compound for Tubs and Tiles.

.9 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

1.3 Samples

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.

1.4 Delivery, Storage, and Handling

.1 Deliver, handle, store and protect materials in accordance with Section 01610 - Basic Product Requirements.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 Environmental and Safety Requirements

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

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Ventilate area of work by use of approved portable supply and exhaust fans.

1.6 Quality Assurance

.1 Installation of sealants shall be performed by a firm with minimum of five (5) years' experience.

1.7 Warranty

.1 Submit written warranty against leaks, cohesive failure, staining of adjacent materials, in accordance with GC 12.3 but for five (5) years.

.2 The warranty shall be issued by the Contractor and the Sealant Manufacturer.

2 PRODUCTS

2.1 Sealant Materials

.1 Sealants and caulking compounds must:

.1 meet or exceed all applicable governmental and industrial safety and performance standards; and

.2 be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the fisheries Act and the Canadian Environmental Protection Act (CEPA).

.3 Use products of a single manufacturer for each different product and required recommended primers.

.2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulfate.

.3 Sealant and caulking compounds must not contain a total of volatile organic compounds (VOCs) in excess of 5% by weight as calculated from records of the amounts of constituents used to make the product;

.4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

.5 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant shall not be used in air handling units.

.6 When low toxicity caulks are not possible, confine usage to areas which offgas to the exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

.7 Sealants acceptable for use on this project except CAN/CGSB-19.1 and CAN/CGSB-19.18 must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants.

Where sealants are qualified with primers use only these primers.

2.2 Sealant Material Designations

.1 Polyurethane One Part.
- .1 Self-Levelling and Non Sag to CAN/CGSB-19.13, Type 1 and 2,
- .2 Acceptable material: Tremco: Dymonic
  Sonneborn: NP1, SL1
  Sikaflex 1A

.2 Polyurethane Two Part.
- .1 Self-Levelling and Non Sag to CAN/CGSB-19.24, Type 1 and 2
- .2 Acceptable material: Tremco: Dymeric
  Sonneborn: NP2
  Sikaflex: 2C or 2CSL.

.3 Acrylic Latex One Part.
- .1 To CAN/CGSB-19.17.
- .2 Acceptable material: Tremco: Tremflex 834
  General Electric (G.E. Supply): Acryliasil AL1300 (RC520)
  Sonneborn: Sonolac.

.4 Silicone Sanitary Sealant
- .1 To CAN/CGSB-19.22 one part mildew resistant paintable..
- .2 Acceptable material: Tremco - Tremsil 200
  General Electric (G.E. Supply): 1700
  Dow Corning: 786.

.5 Acoustical Sealant - Synthetic Rubber
- .1 To CGSB 19.21
- .2 Acceptable material: Tremco - Acoustical Sealant.

2.3 Preformed Compressible and Non-compressible Back Up Materials

.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
- .1 Extruded open closed cell foam backer rod.
- .2 Size: oversize 30 to 50 %.

.2 Neoprene or Butyl Rubber.
- .1 Round solid rod, Shore A hardness 70.

.3 High Density Foam.
- .1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.

.4 Bond Breaker Tape.
- .1 Polyethylene bond breaker tape which will not bond to sealant.

2.4 Joint Cleaner

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant

recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

3 EXECUTION

3.1 Protection

.1 Protect installed work of other trades from staining or contamination.

3.2 Preparation of Joint Surfaces

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 Priming

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 Backup Material

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 Mixing

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 Application

.1 Sealant.
- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat

joint.
.3 Apply sealant in continuous beads.
.4 Apply sealant using gun with proper size nozzle.
.5 Use sufficient pressure to fill voids and joints solid.
.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.
.1 Cure sealants in accordance with sealant manufacturer's instructions.
.2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.
.1 Clean adjacent surfaces immediately and leave work neat and clean.
.2 Remove excess and droppings, using recommended cleaners as work progresses.
.3 Remove masking tape after initial set of sealant.

3.7 Sealant Schedule

.1 Interior Sealants - Non Elastomeric (acrylic latex)
.1 Perimeter of built in architectural wood work
.2 Junction: of casework gables and flooring.
.3 Perimeter of pressed steel frames and adjacent finishes, including bottom at floor.
.4 Interior perimeter of exterior openings.

.2 Interior Sealants Elastomeric: Polyurethane One Part
.1 Interior side of expansion and control joints of concrete, masonry and precast concrete walls.
.2 Interior control and expansion joints in floor and deck surfaces (self-levelling) sealant.
.3 Joints at underside of precast beams or slabs.
.4 Interior joints of precast concrete walls.
.5 Joints or tops of non load bearing masonry walls at underside of poured concrete.
.6 Exposed interior control joints in drywall.
.7 Interior perimeter of exterior openings

.3 Interior Sealants - Silicone Sanitary
.1 Perimeter of bath fixtures (sinks, tubs, showers, urinals, water closets, basins, showers, vanities, stools)
.2 Junction of ceramic wall tile and finished flooring

.4 Interior Sealants - Acoustical
.1 Joints at tops of drywall and underside of structure.

.5 Exterior Sealants – Elastomeric: Polyurethane Two Part
.1 Perimeter of exterior openings where frames connect exterior facade of building (ie. brick, block, precast, masonry).
.2 Expansion and control joints in exterior surfaces of poured in place concrete, precast concrete, unit masonry, and architectural wall panels.

.3 Coping joints and coping to facade joints.
.4 Cornice and wash or horizontal surface joints.
.5 Exterior control expansion and joints in concrete decks and horizontal traffic surfaces (use self levelling sealants).

.6 Self Levelling Sealants
.1 Sealant Control joints in concrete decks.
.2 Exterior joints in horizontal traffic surfaces.
.3 Exterior control and expansion joints in decks.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 07271 - Air Barriers
.2 Section 07900 - Joint Sealers
.3 Doors and Frames.
.4 Windows

1.2 REFERENCES

.1 CAN/ULC - S705.1-98 Polyurethane foam spray thermal insulation.
.2 LEED Reference Guide v4.0 (as published by the Canadian Green Building Council).

1.3 SUBMITTALS

.1 Submit product data to requirements of Section 01330.
.2 Product Data: Provide data on material characteristics, performance criteria, limitations.
.3 Manufacturers installation instructions: Indicate preparation, installation requirements and techniques, product storage and handling criteria.
.4 Include manufacturer=s material safety data sheets in accordance with WHMIS requirements.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature and humidity recommended by materials manufacturers before, during and after installation.

1.5 COORDINATION

.1 Coordinate work of this section with all sections referencing this section.

2 PRODUCTS

2.1 INSULATING FOAM AIR SEAL MATERIALS

.1 Insulating foam air seal materials: Single component spray in place polyurethane foam, final cured foam shall have a density of 35.2kg/m3 and a design thermal resistance of minimum 1.0 m2 C/W per 25mm thickness.

Acceptable Products:
.1 CANAM Building Products - ZERO DRAFT
.2 BASF: Walltite

3 EXECUTION

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the work of this section.

3.1 PREPARATION

.1 Remove loose or foreign matter that might impair adhesion of foam materials.

.2 Clean and prime substrate surfaces to receive in accordance with manufacturer=s instructions. Ensure all surfaces to receive foam are free of all grease, oil, frost, loose scale, rust, water and other unsuitable material.
.3 Cover surrounding surfaces with temporary masking to protect form over spray.

3.1 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions.
.2 Apply insulating foam air-seal material to produce a continuous air seal to bridge and seal openings and penetrations in building envelope.
.3 Apply in sufficient thickness to provide continuity of thermal protection between adjacent installed assemblies and exposed components.
.4 Apply materials within recommended application temperature ranges. Consult manufacturers when sealant cannot be applied within these temperature ranges.
.5 Apply the foam in passes of between 15 and 50mm thickness.
.6 Keep foam at least 75mm away from heat emitting devices such as recessed light fixtures and chimneys.
.7 Do not cover electrical wiring by more than 20mm unless protective shielding is installed to prevent overheating.
.8 Ensure that foam is not exposed in final assembly.

3.2 PROTECTION OF FINISHED WORK

.1 Protect finished work under provisions of Division 01.
.2 Do not permit adjacent work to damage work of this section.

3.5 CLEANING

.1 Remove masking and other temporary protection from adjacent surfaces.
.2 Clean and make good all damage caused by work of this section.

3.6 SCHEDULE

.1 Install foamed-in-place insulating air seal at the following locations:
  .1 in exterior door and window framed openings.
  .2 at penetrations of building envelope.
  .3 at gaps in building envelope.
  .4 all other locations indicated.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements

.2 Section 07900 - Joint Sealers

.3 Section 08710 - Door Hardware

.4 Section 08800 - Glazing

.5 Division 16: Wiring for electronic hardware.

1.2 REFERENCES

.1 ASTM A 653M-95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 CSA A101-M1983, Thermal Insulation, Mineral Fibre, for Buildings.

.3 CAN/CSA-G40.21-M92, Structural Quality Steels.

.4 CSA W59-M1989, Welded Steel Construction (Metal Arc Welding).

.5 CSDFMA, Specifications for Commercial Steel Doors and Frames, 1990.

.6 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.

.7 CAN4-S104M- M80 (R1985), Fire Tests of Door Assemblies.

.8 CAN4-S105M-M85, Fire Door Frames.

1.3 DESIGN REQUIREMENTS

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35EC to 35EC.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01330.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed louvred, arrangement of hardware and fire rating and finishes.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.5 Submit test and engineering data, and installation instructions.

.6 Indicate all special conditions.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

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

.1 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104.

1.6 WARRANTY

.1 Provide a written warranty for work of this section from manufacturer for failure due to defective materials and from contractor for failure due to defective installation workmanship, for two (2) years, respectively.

2 PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDFMA Table 1 - Thickness for Component Parts. (Paintable Galvanneal)

.2 Reinforcement channel: to CAN/CSA-G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.2 DOOR CORE MATERIALS

.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/m^3 minimum sanded to required thickness.

.2 Stiffened: face sheets laminated welded, honeycomb uninsulated insulated core.
- .1 Fibreglass: to CSA A101, semi-rigid Type 1A3density 24 kg/m^3.
- .2 Expanded polystyrene: CAN/CGSB-51.20, density 16 to 32 kg/m^3 fire retardant.
- .3 Polyurethane: to CGSB 51-GP-21M rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 30-60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, ASTM E 152 or NFPA 252, covering Standard Method of Tests

of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement or ULC approved equivalent.

.2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMERS

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

2.5 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior and interior top caps: rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Door bottom seal.

.5 Metallic paste filler: to manufacturer's standard.

.6 Fire labels: metal rivetted.

.7 Sealant: to Section 07900.

.8 Glazing: to Section 08800.

.9 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 countersunk stainless steel screws dry glazing of snap-on type.
- .2 Design exterior glazing stops to be tamper proof.

2.6 FRAMES FABRICATION GENERAL

.1 Fabricate doors and frames in accordance with CSDFMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.6mm thermally broken type construction.

.4 Interior frames: 1.6 mm welded construction.

.5 Blank, reinforce, drill and tap frames for mortised, template hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cutouts with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

2.7 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

2.8 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

.7 Securely attach lead to inside of frame profile from return to jamb soffit inclusive on door side of frame only at lead lined door assembly

2.9 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: honeycomb construction. Interior doors: honeycomb construction.

.3 Fabricate doors with longitudinal edges locked seamed, adhesive assisted welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Blank, reinforce, drill doors and tap for mortised, template hardware and electronic hardware.

.5 Factory-prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.6 Reinforce doors where required, for surface mounted hardware. Provide flush PVC top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104, ASTM E 152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.9 Manufacturer's nameplates on doors are not permitted.

2.10 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form each face sheet for exterior doors from 1.6 mm sheet steel with honeycomb polystyrene polyurethane core laminated under pressure to face sheets.

.2 Form each face sheet for interior doors from 1.6 mm sheet steel with honeycomb - temperature rise rated core laminated under pressure to face sheets.

2.11 HOLLOW STEEL CONSTRUCTION

.1 Form each face sheet for exterior doors from 1.6 mm sheet steel.

.2 Form each face sheet for interior doors from 1.6 sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with fiberglass core.

.5 Fill voids between stiffeners of interior doors with fiberglass core.

2.12 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation to frame.

3 EXECUTION

3.1 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDFMA Installation Guide.

3.2 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 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.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air vapour barrier per section 07271.

3.3 DOOR AND FRAME HARDWARE PREPARATION

.1 All doors and frames shall be prepared to receive typical hardware such as cylindrical locks, closers, exit devices and hinges. The number of hinges shall be suitable to the sizing of the doors. Suppliers shall also refer to the Door and Screen Schedule for notes on other specialized hardware requirements such as, but not limited to electronic requirements and concealed hardware. Suppliers shall coordinate hardware preparations with the hardware supplier upon selection as per Section 01013, Allowances.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08710 - Door Hardware.

.2 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 carpet noncombustible sill and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.6 GLAZING

.1 Install glazing for doors and frames in accordance with Section 08800 - Glazing.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements
.2 Section 07900 - Joints Sealers
.3 Section 08710 Finishing Hardware
.4 Section 08800 - Glazing
.5 Division 16: Wiring for electronic hardware.

1.2 REFERENCES

.1 Aluminum Association Designation System for Aluminum Finishes-1997.
.2 ASTM E 330-97, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
.3 CGSB 1.40-M89, Primer, Structural Steel, Oil Alkyd Type.
.4 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.

1.3 DESIGN CRITERIA

.1 Design frames and doors in exterior walls to:
  .1 Accommodate expansion and contraction within service temperature range of -35 to 35°C.
  .2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E 330 under wind load of 1.2 kpa. Submit certificate of tests performed.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01330.
.2 Indicate each type of door and frame, extrusion profiles, method of assembly, section and hardware reinforcement, locations of exposed fasteners, finishes and location of manufacturer's nameplates.
.3 Submit catalogue details for each type of door and frame illustrating profiles, dimensions and methods of assembly.

1.5 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for cleaning and maintenance of aluminium finishes for incorporation into manual specified in Section 01780.

1.6 PROTECTION

.1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.
.2 Leave protective covering in place until final cleaning of building.

1.7 WARRANTY

.1 Submit written warranty against leaking, deformation, loss of glass seal, glass breakage, distortion, colour fade and hardware in accordance to GC12.3 but for 2 years.

2 PRODUCTS

2.1 MATERIALS

.1 Aluminum extrusions: Aluminum Association alloy AA6063-T5 or T6 anodizing quality.
.2 Sheet aluminum: Aluminum Association alloy AA1100-H14 anodizing quality.
.3 Steel reinforcement: to CAN/CSA-G40.21, grade 300 W.
.4 Fasteners: cadmium plated steel, finished to match adjacent material.
.5 Weatherstrip: replaceable metal backed synthetic pile.
.6 Door bumpers: black neoprene.
.7 Door bottom seal: automatic adjustable door seal of anodized extruded aluminum frame and vinyl weather seal, recessed in door bottom, automatic retract mechanism when door is open.
.8 Isolation coating: alkali resistant.
.9 Glass: tempered glass to CAN/CGSB-12.1, Type 2.

2.2 ALUMINUM DOORS FOR EXTERIOR AND VESTIBULE(S)

.1 Thermally broken exterior doors.
  .1 Acceptable material: Kawneer 350T Thermal Entrance Swing Door
  .2 Medium stile, 3-1/2" (88.9 mm) vertical face dimension, 2-1/4" (57 mm) depth, high traffic applications.
  .3 Acceptable equals by: Alumicor, Old Castle Glass, CR Lawrence, Windspec
  .4 Construct doors of porthole exteriors with minimum well thickness of 3mm.
  .5 Door Type and Stile Dimensions as indicated
  .6 Reinforced
  .7 Glazing stops
  .8 Four welds per corner
  .9 Door Hardware:
    .1 Unless otherwise noted, Door Hardware to be supplied by Section 08710 Hardware to be shipped to aluminum door manufacturer and factory installed.
    .2 Weather stripping, door seals and removable mullions to be supplied and factory installed by aluminum door manufacturer. Colours to match frame.

2.3 ALUMINUM FRAMES

.1 Thermally broken frames (Exterior)
  .1 Acceptable Material: Trifab VersaGlaze 451T Framing System
    .1 2" x 4-1/2" (50.8 mm x 114.3 mm) nominal dimension
    .2 Thermal with weatherstripping
    .3 Front, center, back, multi-plane, structural silicone or weatherseal (type B) glazed
    .4 Screw spline, shear block, stick, or punched opening
  .2 Acceptable Equals by: Alumicor, Old Castle Glass, CR Lawrence, Windspec

2.4 ALUMINUM FINISH

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
  .1 Bronze Anodic Finish: designation AA-M12 C22 A31, Class 1.

.2 Appearance and properties of anodized finishes designated by the Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative.

2.6 STEEL FINISHES

.1 Finish steel clips and reinforcing steel with steel primer to CGSB 1.40 zinc coating to CSA G164.

2.7 FABRICATION

.1 Doors and framing to be by same manufacturer.
.2 Fabricate doors and frames to profiles and maximum face sizes as shown. Provide minimum 22 mm bite for insulating glazed units.
.2 Provide structural steel reinforcement as required.
.3 Fit joints tightly and secure mechanically.
.4 Conceal fastenings.
.5 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided under Section 08710 - Door Hardware.
.6 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

3 EXECUTION

3.1 INSTALLATION

.1 Set frames plumb, square, level at correct elevation in alignment with adjacent work.
.2 Anchor securely.
.3 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.
.4 Adjust operable parts for correct function.
.5 Make allowances for deflection of structure to ensure that structural loads are not transmitted to frames.
.6 Insulate frame cavities as indicated.

3.2 FRAME HARDWARE PREPARATION

.1 All doors and frames shall be prepared to receive typical hardware such as cylindrical locks, closers, exit devices and hinges. The number of hinges shall be suitable to the sizing of the doors. Suppliers shall also refer to the Door and Screen Schedule for notes on other specialized hardware requirements such as, but not limited to electronic requirements and concealed hardware. Suppliers shall coordinate hardware preparations with the hardware supplier upon selection as per Section 01013, Allowances.

3.3 GLAZING

.1 Glaze aluminum doors and frames in accordance with Section 08800 - Glazing.

3.4 CAULKING

.1 Seal joints to provide weather tight seal at outside and air, vapour seal at inside.
.2 Apply sealant in accordance with Section 07900 - Joint Sealers. Sealant colour to match frame colour.

.3 Fill gap between framing and adjacent construction with foamed in place insulating sealant to section.

END OF SECTION

1 GENERAL

1.1 RELATED WORK

.1 Scope of Work includes;
  .1 Supply of interior wood doors, closet door hardware

.2 Related Work Specifed elsewhere,
  .1 Section 08710 Finished Hardware
  .2 Installation and trims by Section 06200, Finish Carpentry.

1.2 SUBMITTALS

.1 Submit shop drawings in accordance with Division 01.
.2 Indicate door types sizes and cutouts for lights and louvres. Indicate ULC ratings, core material and finish.

1.3 WARRANTY

.1 Provide Manufacturer's Warranty in the name of the Owner that interior solid core wood doors will not warp, twist, show core lines, split, delaminate or sag for a period of ten (10) years for doors up to 1220mm wide and 2743mm high.

2 PRODUCTS

2.1 WOOD DOORS

.1 Typical Wood Doors: 44.5mm (1-3/4”) thick as follows:
  .1 Face Construction:
    .1 Masonite finish for doors scheduled to receive paint finish.
    .2 Maple veneer, clear rift cut for doors scheduled to receive stain finish.
  .2 Glazing: as specified in Section 08800.
  .3 Core: minimum 28pcf particle chip core or hollow core where noted. See Door Schedule.
  .4 Glazing stops: solid wood to match face for doors with no fire rating and doors with a 20 minute fire rating; provide metal stops for doors with fire ratings exceeding 20 minutes.
  .5 Edges: finish to match face.
  .6 Rails & Stiles: 38mm hardwood lumber, glued to core.
  .7 Supply complete with fire resistance rating label as required. See Door Schedule.
  .8 Acceptable manufacturers:
    .1 Cambridge Doors
    .2 Lambton Doors
    .3 Weyerhauser
    .4 Masonite
    .5 Or approved equal.

.2 Sliding and Bifold Closet Doors (within suite interiors):
  .1 Faces: prefinished molded door with textured raised panels for doors scheduled to receive paint finish unless otherwise noted.
  .2 Edges: finish to match face.
  .3 Acceptable Product: molded door by Masonite

.4 Size sliding doors to overlap 50-75mm.
.5 Hardware
  .1 Bifold Door Hinges: supplier to include with door
  .2 Sliding Door Hardware: Model C-2025 by KN Crowder, anodized aluminum finish, in lengths as required. Use C-1202 guides with C-1206 guidestrip. Use C-100 door stops for each doors.
  .3 Door Handles to match Architectural Woodwork Section 06400.

.3 Finish: as per Door Schedule and Section 09900.

2.2 DELIVERY, STORAGE AND HANDLING

.1 Remove wrappings and coverings to doors upon delivery to site, check for damage. Store doors in a vertical position, spaced with blocking to allow for air circulation.

3 EXECUTION

3.1 DOOR PREPARATION FOR HARDWARE

.1 All doors and frames shall be prepared to receive typical hardware such as cylindrical locks, closers, exit devices and hinges. The number of hinges shall be suitable to the sizing of the doors. Suppliers shall also refer to the Door and Screen Schedule for notes on other specialized hardware requirements such as, but not limited to electronic requirements and concealed hardware. Suppliers shall coordinate hardware preparations with the hardware supplier upon selection as per Section 01013, Allowances.

3.2 INSTALLATION

.1 Install doors and hardware in accordance with manufacturer's printed instructions.
.2 Adjust hardware for correct function.
.3 Install louvres and stops.
.4 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements
.2 Section 09250 - Gypsum Board

1.2 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330
.2 Indicate material finishes, connections, anchors and details.

2 PRODUCTS

2.1 Access Panels

.1 Panel Types
- .1 Access Panels
- .2 Universal: Flush
- .3 Recessed: for drywall acoustic tile or other insert materials.
- .4 High Security: for fire rated walls and ceilings.

.2 Material
- .1 Door: Fabricate from 14 gauge cold rolled steel sheet
- .2 Frame: Fabricate from 16 gauge cold rolled steel with perimeter frame. Provide mounting holes and masonry anchors where necessary.
- .3 Hinges: Concealed pin type spring load to allow for door removal. Provide continuous piano hinge with stainless steel pin on sizes larger than 7500 mm.
- .4 Latching: Provide mortise cylinder locks for security applications. Elsewhere use screw driver cam locks.
- .5 Finish: Phosphate dipped with baked on rust inhibitive prime paint finish.
- .6 Acceptable Manufacturers: Nystrom Inc – Mifab or approved equal.

2.2 Access Doors

.1 Provide access doors for work of other divisions at locations where equipment requiring inspection, service, maintenance or adjustment is "built-in" to work of other trades.

.2 Access as indicated and at;
- .1 expansion joints,
- .2 dampers,
- .3 fire dampers,
- .4 air valves,
- .5 air terminal units,
- .6 valves,
- .7 pressure reducing valves and,
- .8 open drains within pipe space.

.3 Submit shop drawings showing access door size, type and location.

.4 Access doors:
- .1 constructed of steel, prime coated,
- .2 flush mounted with 180° opening door, round safety corners, concealed hinges,
- .3 plaster lock and anchor straps,
- .4 600 mm x 600 mm for personnel entry,
- .5 300 mm x 450 mm for hand entry, and
- .6 constructed of stainless steel in areas finished with tile or marble surfaces
- .7 fitted with screwdriver operated latches, or similarly keyed cylinder locks in
- .8 secure areas.
- .9 Standard of Acceptance includes the following or approved equals.
  - .1 Baird - ABCO
  - .2 Stelpro - Type 700
  - .3 Williams Brothers - GP
  - .4 LeHage
  - .5 Acudor
  - .6 Mifab

.5 Fire Rated Access Doors (for drywall walls applications):
- .1 Fire rated to maintain continuity in a 2 hour fire rated wall,
- .2 Concealed hinge, Self-closing, Self-Latching, Inside latch release
- .3 Material: 16 gauge Steel
- .4 Mounting Frame: Flush to frame with reinforced edges, drywall taping bead flange.
- .5 Fire Rating (Walls): UL — 1-1/2 hour "B" label.
- .6 Max size 36 x 48. Confirm sizes on Drawings.
- .7 Standard Latch: Universal self-latching bolt, operated by either a knurled knob or flush key. Prepare door for cylinder locks and coordinate keying with Owner.
- .8 Approved Product: FB-5060-DW by Acudor or approved equal.

.6 Installation

- .1 Supply access doors and make arrangements and pay for installation by Division in whose work they occur.
- .2 Size and locate access doors in applied tile, block or in glazed or unglazed structural tile to suit joint patterns.
- .3 Access doors in ceilings, where acoustic tile is applied to plaster or gypsum board, to be dish type designed to receive tile insert.

.7 Access doors are not required in removable ceilings. Provide coloured marking devices after completion of ceilings, at four corners of each panel below point requiring access. Colour code markers to show service or device above.

.8 At time of instruction of owners operating staff, hand-over and obtain signed receipt for 4 sets of each type of key used to lock access doors in secure areas.

.9 Finish: painted to match adjacent surfaces.

3 EXECUTION

3.1 Installation

.1 Install as per manufacturer's recommendations to locations and types indicated.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 07900 Joint Sealers - Caulking of joints between frames and other building components

.2 Section 07100 Air and Vapour Barriers - Joining of air, vapour and waterproof membranes to window frames

.3 Section 08800, Glazing.

1.2 References

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-79.1-M91, Insect Screens.

.2 Canadian Standards Association (CSA)
- .1 CAN/CSA-A440-M90, Windows.
- .2 CAN/CSA-Z91-M90, Safety Code for Window Cleaning Operations.

1.3 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.

.2 Indicate materials and details in scale full size for head, jamb and sill, profiles of components, interior and exterior trim, junction between combination units, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.

1.4 Test Reports

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
- .3 Windows classifications A3, B7, C5, D2.
- .4 Weathering characteristics.
- .5 Insect screens.
- .6 Air tightness.
- .7 Water tightness.
- .8 Wind load resistance.
- .9 Condensation resistance.
- .10 Block operation - sliding windows only.
- .11 Sash strength and stiffness - Operable Casement Projecting.
- .12 Ease of operation - windows with operable lights.
- .13 Sash pull-off - vinyl windows.
- .14 Forced entry resistance.
- .15 Mullion deflection - combination and composite windows.

1.5 Maintenance Data

.1 Provide operation and maintenance data for windows for incorporation into manual specified in

Section 01780 - Closeout Submittals.

2 PRODUCTS

2.1 Materials

.1 Materials: to CAN/CSA-A440 supplemented as follows:

.2 Manufacturer - Seymour Windows and Doors, Northwood Windows, or approved equal.

.3 Sash: vinyl thermally broken.

.4 Main frame: vinyl thermally broken.

.5 Glass: insulated triple glazed sealed units, E-film, Argon gas filled.

.6 Screens: to CAN/CGSB-79.1.
- .1 Insect screening mesh: count 18 x 14, 18 x 16.
- .2 Fasteners: tamper proof.
- .3 Screen frames: aluminum, colour to match window frames.
- .4 Mount screen frames for interior replacement.

.7 Casing Trims and Returns:
- .1 Interior Sills, Jamb Returns and Header Returns: 5/8” solid PVC trimboard by Royal Building Products, or approved equal; smooth finish; colour: white.

2.2 Window Type and Classification

.1 Window Types: as indicated on Drawings.
- .1 Awning: tilt up single operating unit with removable insulating glass storms.
  - .1 Acceptable material: solid vinyl.
- .2 Casement: push out single operating unit with removable insulating glass storms.
  - .1 Acceptable material: solid vinyl.
- .3 Sliders: sliding single operating unit with insulating glass units.
  - .1 Acceptable material: solid vinyl.
- .4 Fixed: with insulating glass.
  - .1 Acceptable material: solid vinyl.

.2 Insect Screens: removable for cleaning; on all ventilating portions of windows.

.3 Classification rating: to CAN/CSA-A440:
- .1 Air tightness: A3.
- .2 Water tightness: B7.
- .3 Wind load resistance: C5.
- .4 Condensation resistance: Temperature Index, I D2.
- .5 Forced Entry: F1.
- .6 Insect Screens: S1.
- .7 Glazing: G1.

2.3 Fabrication

.1 Fabricate in accordance with CAN/CSA-A440 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

2.4 Vinyl Finishes

.1 Vinyl finishes: One custom colour: To be later selected by Consultant.
.2 Finish to be in accordance with CAN/CSA-A440, including appendices, supplemented.

2.5 Glazing

.1 Glaze windows in accordance with CAN/CSA-A440 and Section 08800, Glazing.

2.6 Hardware

.1 Hardware: prefinished metal sash locks and handles to provide security and permit easy operation of units.

.2 Locks: provide operating sash with spring loading locking device, to provide automatic locking in closed position.

.3 Install window opening restrictors to prevent opening windows more than 100mm (4”) on windows above the main floor level. Incorporate tamper-proof and secure fasteners to prevent occupant tampering. Restrictor hardware is to be concealed within the window frame.

2.7 Air Barrier and Vapour Retarder

.1 Equip window frames with site installed air barrier and vapour retarder material for sealing to building air barrier and vapour retarder as follows:
  .1 Material: identical to, or compatible with, building air barrier and materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
  .2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

3 EXECUTION

3.1 Window Installation

.1 Install in accordance with CAN/CSA-A440.

.2 Arrange components to prevent abrupt variation in colour.

3.2 Occupant Safety during Installation

.1 Removals and installations must be performed in prompt sequence. At no time shall a non-worker be present when the window opening is unsafe for falling hazards.

3.3 Caulking

.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07900 - Joint Sealers. Conceal sealant within window units except where exposed use is permitted by Consultant.

END OF SECTION

1 GENERAL

1.1 WORK INCLUDED

.1 Supply finish Door Finish Hardware. Installation by 06200 under Base Bid.

.2 It is intended that the following list of hardware will cover all finish hardware to complete the project. Omissions and discrepancies shall be brought to the architect's attention during the bidding period.

1.2 RELATED SECTIONS

.1 01021 Allowances

.2 01610 Basic Product Requirements

.3 06200 Finish Carpentry

.4 08110 Metal Door & Frames

.5 08120 Aluminum Doors and Frames

.6 Division 16: Electrical wiring for magnetic locks, electric strikes, electric locks, electric releases and power supplies.

1.3 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

.1 Power supplies, compressor/control boxes, junction boxes, magnetic locks, electric locks, electric strikes, door status switches and electric releases installed by Division 16.

1.4 REQUIREMENTS REGULATORY AGENCIES

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

.2 Provide permanently attached labels for all hardware required to be rated as part of a fire-resistant door and frame assembly.

1.5 REFERENCES

.1 Recommended locations for Architectural Hardware for Standard Steel Doors and Frames - Door and Hardware Institute

.2 Recommended locations for Architectural Hardware for Flush Wood Doors – Door and Hardware Institute

.3 NFPA 80-Standard for Fire Doors and Windows

.4 Sequence Format for Hardware Schedule – Door and Hardware Institute

.5 Key Systems and Nomenclature - Door and Hardware Institute

.6 Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications – Door and Hardware Institute.

.7 Ontario Building Code 2012 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufactures' Association.

1.6 WARRANTY

.1 Provide a written manufacturer's warranty for work of this Section for failure due to defective materials for ten (10) years, dated from substantial completion.

.2 Provide a written Contractor's warranty for work of this Section for failure due to defective installation workmanship for one (1) year, dated from submittal substantial completion.

2 PRODUCTS

2.1 MATERIALS

.1 Where a hardware allowance is provided within Section 01021, Allowances, a hardware schedule will be offered to the Contractor after Tender.

.2 The Contractor shall coordinate the hardware supply during tender, based on the acceptable hardware standards listed below. All hardware to be for 'complete job' as indicated. Modify products to suit all noted requirements.

.3 Installation and preparation cost associated with the hardware must be included in the tender bid.

.4 All work associated with section 06400 Architectural Woodwork shall be excluded from this section and shall be included in the base bid.

.5 The following base products will be deemed an acceptable standard for the supply of Hardware.

.1 Lever & locksets: Cylindrical latches and levers;
1. Coordinate locking and actions as indicated;
2. Acceptable product: AL Series by Schlage, with Saturn lever design, or approved equal.

.2 Rim Exit Devices:
1. 33A & 35A Rim exit device by Von Duprin or approved equal.
2. Electric latch retraction as required.
3. Matching outside trim where indicated, to suit lever device above.

.3 Architectural Hinges: 5-Knuckle, Ball Bearing Full Mortise Hinge,
1. Model 5BB1 by Ives or approved equal.
2. Electrified hinges to match.

.4 Continuous Hinges:
1. Roton Concealed Leaf, Heavy Duty, manufactured by Hager, or approved equal

.5 Thresholds: Extruded Aluminum Thresholds
1. (125mm) 5” width, (12.7mm) 1/2” height;
2. thermally broken where indicated,
3. by KN Crowder or approved equal.

.6 Weatherstripping, door sweeps, door brushes by KN Crowder, or approved equal.

.7 Self-closing devices (Closers);
1. coordinate mounting, arm lengths and configurations to suit site conditions;
2. 1460 Series by LCN, or approved equal.

.8 Power Door Operators: S7400 FlexSwing by Horton Automatics or approved equal.
1. Install as indicated on drawings.
2. Provide push button controls and accessories. Coordinate exact locations prior to installation.
3. Coordinate with all electronic door controls and security features.
4. S7400 FlexSwing by Horton Automatics or approved equal.

.9 Electric strikes: 5200 Series by Hes - Assa Abloy, or approved equal.

.10 Door Push/Pulls:
1. Offset Door Pull (15” Depth) with
2. Push Bar CBH 7040 to suit door width.
3. By CBH or approved equal.

.11 Removable Mullions: steel or aluminum mullion to match door frame material
1. VON 1654 (steel) or 5654 (aluminum) mullion, or approved equal.
2. Where electrified door controls are required, use VON 4954 (steel) or 5754 (aluminum) mullion, or approved equal.
3. Finishes to match door frames.

.12 Surface Mounted Overhead Stops: 90 Series by Glynn-Johnson or approved equal.

.13 12” stainless steel kickplates; width to suit door width(s).

.14 Door activation controls, switches, and universal washroom hardware components by Camden Door Controls, or approved equal. Power supplies as needed for door controls.

.6 Finishes: All products to match existing door finishes unless otherwise indicated.

.1 Finishes for HM and Wood doors: satin chrome or as otherwise indicated.

.2 Finishes for Aluminum Doors: finish to match door.

.7 Keying

.1 Doors, padlocks and cabinet locks to be keyed as noted in Hardware Schedule as directed. Submit keying schedule for approval.

.2 Provide keys in duplicate for every lock in this Contract.

.3 Provide three master keys for each MK or GMK group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Owner requires Contractor to coordinate keying with the Best Access System.

3 EXECUTION

3.1 EXAMINATION

.1 Ensure that doors and frames are properly prepared and reinforced to receive finish hardware prior to installation.

.2 Ensure that door frames and finished floor are sufficiently plumb and level to permit proper engagement and operation of hardware.

.3 Submit in writing a list of deficiencies determined as part of inspection required in 3.1.1 and 3.12 to supervising consultant prior to installation of finished hardware.

3.2 INSTALLATION

.1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the hardware distributor.

.2 Install hardware at mounting heights as specified in the manufacturer's templates or specific references in approved hardware schedule or approved elevation drawings.

.3 Where mounting height is not otherwise specified, install hardware at mounting heights as indicated in above referenced standards.

.4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.

.5 Ensure that all locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. **Handing is part of installation procedure.**

.6 Ensure that all exit devices are of the correct hand and adjust device cam for proper outside trim function prior to installation. **Handing is part of installation procedure.**

.7 Follow all manufactures installation instructions. Adjustment is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.

.8 Install head seal prior to installation of "PA"-parallel arm mounted door closers and push side mounted door stops/holders.

.9 Counter sink through bolt of door pull under push plate during installation.

.10 Mount all closers, automatic operators and hold-open devices with through bolts, as indicated in the finish hardware schedule.

3.3 FIELD QUALITY CONTROL

.1 Perform bi-monthly on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.

.2 Before completion of the work but after the hardware has been installed, a certificate to the architect will be submitted stating that final inspection has been made and that hardware has been checked for installation and operation by a technician from the manufacturer and hardware consultant.

3.4 ADJUSTING AND CLEANING

.1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.

.2 All hardware to be left clean and free of disfigurements.

.3 Instruct/demonstrate to Consultant and Owner's staff in the proper operation, adjustment, maintenance of hardware and finishes.

.4 Check all locked doors against approved keying schedule.

.5 Remove protective coatings prior to final inspection.

.6 Prior to date of substantial completion, adjust hardware. Repair or replace defective hardware or installation.

3.5 PROTECTION

.1 Protect hardware from damage during construction period by removing and reinstalling or where necessary, using temporary hardware to maintain finish in new condition and maintain manufacturer's warranty.

3.6 HARDWARE GROUPS

.1 As indicated. Schedules to be provided by Hardware Supplier by Allowance where indicated.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 Conform to Sections of Division 1 as applicable.

1.2 RELATED WORK

.1 Section 08110 Steel Doors and Frames
.2 Section 08210 Wood Doors

1.3 REFERENCES

ASTM C509-91	-	Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
ASTM C542-90	-	Specification for Lock-Strip Gaskets
ASTM D1044-90	-	Test Method for Resistance of Transparent Plastics to Surface Abrasion
ASTM D1925-70	-	Test Method for Yellowness Index of Plastics
ASTM E90-90	-	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
CAN/CGSB-12.1	-	M90 -Tempered or Laminated Safety Glass
CAN2-12.3-M76	-	Glass, Polished Plate or Float, Flat, Clear
CAN2-12.4-M76	-	Glass, Heat Absorbing
CAN/CGSB-12.5-M86		-Mirrors, Silvered
CAN2-12.6-M76	-	Mirrors Transparent (One-Way)
CAN/CGSB-12.8-M90		- Insulating Glass Units
CAN2-12.9-M76	-	Glass, Spandrel
CAN2-12.10-M76	-	Glass, Light and Heat Reflecting
CAN/CGSB-12.11-M90		-Wired Safety Glass
CAN/CGSB-12.12-M90		-Plastic Safety Glazing
CAN2-12.13-M79	-	Glass, Patterned
CAN/CGSB-19.2-M87		-Glazing Compound Non-hardening Modified Oil Type
CAN/CGSB-19.13-M87		-Sealing Compound, One-Component, Elastomeric, Chemical Curing
CAN/CGSB-19.18-M87		-Sealing Compound, One-Component, Silicone Base, Solvent Curing
CAN/CGSB-19.21-M87		-Sealing and Bedding Compound Acoustical
CAN/CGSB-19.24-M90		-Multicomponent, Chemical-Curing Sealing Compound
Glazing Manual 90	-	Flat Glass Marketing Association

1.4 SUBMITTALS

.1 Samples: Submit samples of materials if required by Consultant before commencing work. Ensure samples are clearly labelled with manufacturer's name and type.

2 PRODUCTS

2.1 GLASS MATERIALS

.1 Float Glass: CAN2-12.3-M; 6mm thick shall conform to the latest Ontario Building Code unless otherwise noted.

.2 Tempered Safety Glass: CAN/CGSB 12.1-M, "Herculite" clear tempered safety glass by PPG Canada Inc. Thickness 6mm unless otherwise indicated.

.3 Wired Glass (GWG, Fire Rated): For interior doors and screens shall be clear, 6 mm (1/4") thick with 13 mm (1/2") mesh of at least .4 mm (.016") diameter centrally embedded in glass during manufacture and welded or intertwined at each intersection.

.4 Safety Glass (Fire Rated):

1. Acceptable product and Manufacturer:
   - .1 FireLite NT as manufactured by Nippon Electric Glass Company, Ltd.
   - .2 Approved alternative product will be considered by the consultant prior to tender close only.

.2 Performance Requirements
1. Fire-rated glass ceramic clear and wireless glazing material with surface-applied film listed for use in impact safety-rated locations such as doors, transoms and borrowed lites with fire rating requirements ranging from 20 minutes to 3 hours with required hose stream test.
2. Passes positive pressure test standards UL 10C.

.3 Material Standards:
1. Thickness: 5 mm
2. Film: Fire-rated surface film as approved by manufacturer.
3. Weight: 2.4 lbs./sq. ft.
4. Approximate Visible Transmission: 88 percent.
5. Approximate Visible Reflection: 9 percent.
6. Hardness (Vicker's Scale): 700.
7. Fire-rating: 20 minutes to 3 hours for doors; 20 minutes to 90 minutes for other applications. See door and frame schedule.
8. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
9. Positive Pressure Test: UL 10C; passes.
10. Surface Finish: Premium Grade is finish ground and polished on both surfaces to provide superior surface quality, improving overall clarity and providing a surface that is unmatched by alternative products.

4. Fire Rating: Fire rating classified and labelled by ULC for fire rating scheduled at opening locations on drawings, when tested in accordance with ULC Standards CAN4 S-104 and CAN4 S-106 NPFA 252 and NFPA 257. Permanently label each piece of glazing with the manufacturer's logo, ULC logo and fire rating.

.5 Laminated Safety Glass:

.1 clear Laminated 030 glazing.
.2 thickness: 10mm unless otherwise indicated.

.6 Insulating Glass Units:

.1 CAN/CGSB-12.8-M patented sealed double-glazed units by PPG Industries Ltd., AFG Glass Inc., or Canada Glass Industries.

.2 PPG Solarban coatings have been identified however equivalent solar coatings by AFG or Canada Glass Industries will be accepted.

.3 Insulated Glass Unit Description:

.1 Glass to CAN/CGSB-12.1
.2 Outer Panel: 6mm thick tempered glass
.3 Air Space: to be 13mm hermetically sealed argon gas filled.
.4 Inner Panes: 6mm thick tempered glass.
.5 Apply solar heat gain film, equal to Solarban 60 to inner pane as indicated.
.6 Overall system thickness: 25 mm, or to suit manufacturers detail.

.7 Spandrel Glass: to CAN/CGSB-12-10, 6 mm thick

.8 Mirrors: Custom mirrors to sizes indicated in drawings. Silver mirror to CAN/CGSB-12-5, 3mm thick, adhered to wall surface and pencil edged.

.9 Decorative Glazing films: Self-adhesive, non-patterned frosted glazing film with integrated artwork as indicated. Acceptable product: 3M Fasara or approved equal.

2.2 GLAZING AND SEALING COMPOUND MATERIALS AND ACCESSORIES

.1 Sealant Compound: CAN/CGSB-19.24-M, multi-component chemical curing, Type 2 Class A. Colour to match adjacent surfaces.

.2 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.

.3 Gaskets: ASTM C509 cellular, elastomeric, preformed, black.

.4 Glazing Splines: Polyvinylchloride manufacturer's standard dry glazing splines to suit aluminum extrusions. Colour to match adjacent surfaces unless indicated otherwise.

.5 Spacer Shims and Setting Blocks: Neoprene, Shore "A" Durometer hardness 70-90, 100 mm long, wide enough to extend from fixed stop to opposite face of glass and of height suitable to provide adequate glazing "bite" for setting blocks. Neoprene, Shore "A" 40 to 50 Durometer hardness, of adequate thickness to provide correct glass to face clearance of at least 3 mm for spacer shims.

.6 Primer Sealers and Cleaners: To glass and plastic glazing manufacturer's standards.

.7 Breather Tubes: To manufacturer's recommendations.

2.3 FABRICATION

.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 Check dimensions on Job Site before cutting materials.

.3 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 INSTALLATION

.1 Glazing - General

.1 Conform to recommendation of Glazing Manual 1990, Flat Glass Marketing Association, except as specified herein.
.2 Glaze hollow metal doors, screens, borrowed lights, windows and other work, scheduled to be glazed.
.3 Check frames are plumb, within tolerance for size and joints, connectors, screws or bolt heads are effectively sealed.
.4 Check compatibility of glazing materials and framing sealants with each other.
.5 Do not field cut or abrade tempered glass.
.6 Install glazing within temperature limits recommended by glazing manufacturer.
.7 Check to ensure openings and stops to be painted have been primed before commencing installation.

3.2 WORKMANSHIP

.1 Ensure openings are free from moisture, frost, rust, dirt and foreign matter.

.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 Clean plastic glazing with cleaning agents and follow procedures recommended by glazing manufacturer.

.4 Apply primer-sealer to contact surfaces.

.5 Place setting block in accordance with manufacturer's instructions.

.6 Install glass by resting on setting blocks. Ensure full contact and adhesion at perimeter. Do not impact glass against framing during installation.

.7 Install removable stops without displacing tape, sealant or gasket.

.8 Provide edge clearance of 3 mm minimum.

.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.

.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.

.11 Lateral shims if not continuous shall be spaced uniformly at 450 mm to 600 mm centres.

.12 Interior Glazing

.1 Fire Rated Hollow Metal Doors and Screens:
- 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.

2. Dry Method-Tape/Tape:
   - Cut glazing tape to proper length and install against permanent stop projecting 1.5 mm above sightline.
   - Place glazing tape on free perimeter of glass projecting 1.5 mm above sightline.
   - Trim off excess tape to sightline.

3. Combination Method-Tape/Sealant:
   - Cut glazing tape to proper length and install against permanent stop projecting 1.5 mm above sightline.
   - Fill gap between glass and applied stop with sealant to depth equal to bite of frame on glass to uniform and level line.
   - Trim off excess tape to sightline.
   - Fill gaps between glass and stops with compound until flush with sightline and tool to smooth straight line.

.13 Exterior Glazing

1. Dry Method Lock Strip and Compression Gaskets:
   - Unpack and layout gaskets on flat warm area to permit recovery of shape.
   - Install gaskets under compression from corners inward.
   - Place setting blocks in accordance with manufacturer's instructions.
   - Provide continuous interior air seal between glass and sash.
   - Drain infiltrated moisture to exterior through drain holes in sill. Provide minimum 3 vents for each sill separated by setting blocks. Follow manufacturer's recommendation for size and placement.
   - Apply sealant cap bead over exterior gasket to provide watershed.

2. Combination Method-Tape/Gasket:
   - Cut glazing tape to proper length and set against permanent stops, approximately 0.8 mm (1/32") below sightline. Install horizontal strips first, extend over entire width of opening before applying vertical strips. Weld corners together by butting tape and dabbing with sealant.
   - Remove backing paper from tape prior to setting glass.
   - Apply continuous heel bead between glass and sash.
   - Place setting blocks 2 on each sill member at quarter points.
   - Drain infiltrated moisture to exterior through drain holes in sill. Provide minimum 3 vents for each sill separated by setting blocks. Follow manufacturer's recommendations for size and placement.
   - Take care not to plug up vent holes in sill with sealant.
   - Centre on setting blocks and press firmly against tape.

3. Combination Method-Tape/Sealant:
   - Cut glazing tape to proper length and set against permanent stops approximately 0.8 mm (1/32") below sightline. Install horizontal strips first, extend over entire width of opening before applying vertical strips. Weld corners together by butting tape and dabbing with sealant.
   - Remove backing paper from tape prior to setting glass.
   - Apply continuous heel bead between glass and sash.

- Place setting blocks 2 on each sill member at quarter points.
- Drain infiltrated moisture to exterior through drain holes in sill. Provide minimum 3 vents for each sill separated by setting blocks. Follow manufacturer's recommendations for size and placement.
- Take care not to plug up vent hole in sill with sealant.
- Centre on setting blocks and press firmly against tape.
- Place intermittent shims or spacers at 600 mm o.c. between exterior stop and glass or panel where glass exceeds 2540 mm (100 united inches).
- Apply continuous space shim with rubber set elastomeric sealant cap bead over top between interior light and removable stop.

3.3 FINISHING

.1 Remove sealant and compound droppings from finished surface.

.2 Periodically clean installed glass during construction to avoid permanent etching and staining.

.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.

.4 Avoid storing materials adjacent to glass.

.5 Protect glass from other trades.

.6 At completion of Work, replace any damaged or broken glass provided under this Section with similar glass.

3.4 GLAZING SCHEDULE

.1 Co-ordinate glazing schedule with door and frame schedule and elevations/windows schedule.

.2 All interior glazing shall be tempered safety glass unless noted otherwise.

.3 All interior fire rated screens & doors shall use clear fire rated safety glass unless noted otherwise. Refer to Door and Frame schedule and Fire Rated Glass specification for conditions of interior glass in fire separations.

.4 All glazing at exterior entrance doors are to be tempered both sides of insulated glass units.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01610 - Basic Product Requirements

.2 Section 09110 - Non-Load Bearing Wall Framing

.3 Section 09900 - Painting

1.2 REFERENCES

.1 ASTM C 36-95, Specification for Gypsum Wallboard.

.2 ASTM C 475-94, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 ASTM C 630-93, Specification for Water-Resistant Gypsum Backing Board.

.4 ASTM C 840-95, Specification for Application and Finishing of Gypsum Board.

.5 ASTM C 954-93, Specification for Steel Drill Screws for the Application of Gypsum Board.

.6 ASTM C 1002-93, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.

.7 ASTM C 1047-94, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.8 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.9 CAN/ULC-S102-1988, Building Materials and Assemblies, Standard Method of Test for Surface Burning Characteristics of.

1.3 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

2 PRODUCTS

2.1 MATERIALS

.1 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30 galvanized.

.2 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.3 Resilient clips drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.4 Nails: to ASTM C 514.

.5 Steel drill screws: to ASTM C 1002.

.6 Laminating compound: as recommended by manufacturer, asbestos-free.

.7 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, metal, zinc-coated by hot-dip process, zinc coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location.

.8 Sealants: in accordance with Section 07900 - Joint Sealers.

.9 Acoustic sealant: Tremco Acoustical Sealant.

.10 Polyethylene: to CAN/CGSB-51.34, Type 2.

.11 Acoustic Insulation Batts: Mineral wool batts minimum density 48 kg/m3 size to fit stud spacing to thickness indicated.
.1 Acceptable Materials: AFB by Roxul

.12 Acoustic Blanket Anchors: Hot dipped galvanized steel strips pre-punched for screw fasteners and arrows for blanket impalement, minimum 2 arrows per stud height, depth of arrow to suit wall and insulation thickness.

.13 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.

.14 Joint compound: to ASTM C 475, asbestos-free.

.15 Joint Tape to ASTM C475. Use fiberglass at areas of reinforced corner board in washrooms, showers, lockers and humid areas. Elsewhere use paper tape.

.16 Glass Mat Gypsum Panel: use sheet panels at wet areas / humid areas.
.1 Acceptable Material: 13mm DensArmour Plus Interior Guard or approved alternate.

.17 Standard Board: to ASTM C36, Type X to E119, 16mm thick, 1220mm wide x maximum practical length, ends square cut, edges tapered.

.18 Abuse resistant gypsum panels: to CAN/ULC-S102-M88 16mm thick Type ‘X’ 1,200 mm wide x practical length, ends square cut, edges squared. Fiberrock VHI by C.G.C. or approved equal. To locations as noted on drawings

.19 Exterior Sheathing Board: Glass mat water-resistant gypsum backing board: to ASTM C 1177, 13mm thick, 1,200 mm wide x maximum practical length.
.1 As DensGlass Gold Exterior Guard or approved equal.

3 EXECUTION

3.1 ERECTION

.1 Do work in accordance with ASTM C 840 except where specified otherwise.

.2 Do application of gypsum sheathing in accordance with ASTM C 1280.

.3 Install work level to tolerance of 1:1200.

.4 Support light fixtures by providing additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, ceiling devices.

.7 Install 19 mm x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

.8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.10 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.

.11 Furr openings and around built-in equipment, cabinets, access panels, fitments, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.13 Erect drywall resilient furring where indicated transversely across studs between the layers of gypsum board, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw

.14 Install 150 mm continuous strip of 16 mm gypsum board along base of partitions where resilient furring installed.

3.2 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building

components. Seal full perimeter of cut-outs around electrical boxes, ducts, and other penetrations, in partitions where perimeter sealed with acoustic sealant.

3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm oc using contact adhesive for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Splice corners and intersections together and secure to each member with 3 screws.

.6 Install access doors to electrical and mechanical fixtures specified in respective Sections.
.1 Rigidly secure frames to furring or framing systems.

.7 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.8 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.9 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.10 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.12 Install sand and finish bulkheads completely as indicated in drawings. Both face and soffit of bulkhead prior to installation of casework.

3.4 ACOUSTICAL INSULATION

.1 Install insulation in partitions and other locations indicated. Secure using strip clips, staple or impale clips.

.2 Maintain continuity of acoustical protection.

.3 Fit insulation closely around electrical boxes, pipes, ducts, frames and objects in or passing through insulation.

.4 Do not compress insulation to fit.

.5 Keep insulation 75mm away from heat emitting devices such as recessed lights.

.6 Do not cover insulation until reviewed by Consultant.

3.5 SCHEDULES

.1 Construct fire rated assemblies where indicated.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements

.2 Section 07900 - Joint Sealers

.3 Section 09652 - Resilient Sheet Flooring

1.2 References

.1 Do all work in accordance with Installation Manual 2000, produced by Terrazzo Tile and Marble Assoc., (TTMAC)

.2 ANSI A118.4 1992 Specifications for Latex Portland Cement Grout

.3 ANSI A118.6 1992 Specifications for Ceramic Tile Grout

.4 ANSI A118.1- 1992, Specifications for Dry-Set Portland Cement Mortar.

.5 CAN/CGSB-51.34- M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.6 CAN/CGSB-75.1- M88 Tile, Ceramic.

.7 CAN/CSA-A5/A8/A362- 93, Portland Cement/Masonry Cement/Blended Hydraulic Cement.

1.3 Samples

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.

.2 Submit duplicate 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

1.4 Extra Material

.1 Provide maintenance materials in accordance with Section 01780 - Closeout Submittals.

.2 Provide extra tiles required for project for maintenance use. Store where directed.

.3 Maintenance material to be of same production run as installed material.

1.5 Environmental Conditions

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 h before, during, and 48 h after, installation.

2 PRODUCTS

2.1 Floor Tile

.1 none.

2.2 Wall Tile

.1 Porcelain Tile, Backsplashes and Washroom Walls (CT-2): Size 152 x 152 x 9mm size, Natural Finish, complete with trim nosings, coves and accessories necessary to complete work.

.1 Acceptable Products:
- .1 Maple Leaf by Olympia
- .2 or approved equal.

.2 Colours: Up to (1) colour as later selected by consultant from full colour range.

2.3 Mortar and Adhesive Materials

.1 Portland cement: to CAN3-A5 , type 10 .

.2 Bond Coat Materials: Latex - Portland cement mortar to AHSI A118.4
- .1 A two component liquid latex mixed with factory blended dry set mortar.
- .2 Acceptable Material:
  1. Mapei: Keralastic System
  2. Laticrete: Laticrete 3701
  3. approved equal.

.3 Adhesive Material
- .1 Organic adhesive: to CGSB 71-GP-22M , Type 1 .
- .2 Acceptable Material (Walls):
  1. Mapei: Type 1 (Ker 903),
  2. Flextile 90,
  3. Laticrete: Laticrete 15, or
  4. approved equal.
- .3 Acceptable Material (Floors):
  1. Mapei: Karabond, or
  2. approved equal.

2.4 Grout

.1 Portland Cement Grout: to ANSI A118.6
- .1 A two component liquid latex mixed with pre-packaged dry grout mix.
- .2 Acceptable Material (Walls):
  1. Mapei: Ker 200
  2. Latcrete: 600 Series
  3. Flextile: Polymer Modified wall grout
  4. or approved equal.
- .3 Acceptable Material (Floors):
  1. Mapei: Ker 800
  2. Laticrete: 500 series
  3. Flextile: Polymar Modified floor grout
  4. or approved equal.

2.5 Accessories

.1 Tile Transition Trims:
- .1 Acceptable Manufacturers: Schluter Systems or approved equal.
- .2 Edge Trims for Wall Base and Wall Tiles: Schluter JOLLY transition strip to protect exposed edges of tile.
- .3 Corner Trims for Wall Tiles: Schluter QUADEC corner trims to protect exposed edges of tiles at outside corners.
- .3 Flooring Transition Strips: Schluter SCHIENE transition strip at flooring transitions.
- .4 Finishes: clear anodized aluminum

.2 Floor Sealer and Protective Coating to tile and grout manufacturer’s recommendations.

.3 Sealant: in accordance with Section 07900 - Joint Sealers.

.4 Divider Strips: 8mm zinc alloy.

.5 Provide stainless steel floor finish cap strips to transition between resilient floor cove base and ceramic wall tile where floor cove base is indicated.

2.6 Mortar and Adhesive Mixes

.1 Scratch coat: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand.

.2 Slurry bond coat: portland cement and acrylic. Latex by Laticrete.

.3 Mortar bed for floors: 1 part sanded portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.4 Mortar bed for walls and ceilings: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included

.6 Levelling coat: 1 part portland cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.

.7 Bond or setting coat: 1 part portland cement, 1/3 part hydrated lime, 1 part water.

.8 Measure mortar ingredients by volume.

.9 Dry set mortar: mix to manufacturer's instructions.

.10 Organic adhesive: pre-mixed.

3 EXECUTION

3.1 Workmanship

.1 Do tile work in accordance with Installation Manual 200, "Ceramic Tile", produced by Terrazzo Tile and Marble Association of Canada (TTMAC), except where specified otherwise.

.2 Apply tile to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.8 Make internal angles square, external angles rounded bullnosed .

.9 Install divider strips at junction of tile flooring and dissimilar materials.

.10 Allow minimum 24 h after installation of tiles, before grouting.

.11 Clean installed tile surfaces after installation and grouting cured.

.12 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07900 - Joint Sealers- Keep building expansion joints free of mortar and grout.

3.2 Floor Sealer and Protective Coating

.1 Apply in accordance with manufacturer’s instructions.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements
.2 Section 09710 - Acoustical Wall Treatment
.3 Section 09130 - Acoustical Suspension
.4 Section 16500 - Lighting

1.2 References

.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
.2 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
.3 CAN/ULC-S102-M88, Surface Burning Characteristics of Building Materials.

1.3 Samples

.1 Submit samples in accordance with Section 01330.
.2 Submit duplicate full-size samples of each type acoustical units.

1.4 Environmental Requirements

.1 Permit wet work to dry before commencement of installation.
.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20-40% before and during installation.

1.5 Extra Materials

.1 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
.2 Extra materials to be from same production run as installed materials.
.3 Clearly identify each type of acoustic unit, including colour and texture.
.4 Store where directed by Consultant.

2 PRODUCTS

2.1 Materials

.1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
  .1 General.
  .2 Flame spread rating of 25 or less.
  .3 Smoke developed 50 or less.
  .4 Noise reduction coefficient (NRC) designation of 55 or better
  .5 Light reflectance range of over 75

.2 Types:
  .1 ACT-1:
    .1 Panels: tegular edge, white
    .2 Sizes: as indicated, 610 x 1220 x 15mm or 610 x 610 x 15mm
    .3 Tile product: non directional fissured, mineral fibre composition.

.4 Fire rated for a ULC listing, where a fire rating is indicated.
.5 Acceptable products: "Dune" by Armstrong Interiors or "Sand Micro" by CertainTeed, or approved equal.

.3 Suspension System
.1 Hangers: minimum 2.8 mm overall thickness, zinc coated to Z265.
.2 Grid: Main and Cross Tees and Edge Moulding: Double webbed, hot dipped galvanized cold rolled steel construction, prefinished white cap
.3 Fire rated for a ULC listing, where a fire rating is indicated.
.4 Acceptable products: Prelude Plus XL FireGuard, 15/16” by Armstrong Ceilings, or approved equal.

3 EXECUTION

3.1 Examination

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 Installation

.1 Install panels and tiles in ceiling suspension system to manufacturer’s instructions.

.2 Install fibrous acoustical media and spacers over entire area above suspended metal panels.

.3 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

3.3 Application

.1 Install acoustic units to clean, dry and firm substrate.

.2 Install acoustical units parallel to building lines with edge unit not less than 50% of unit width with directional pattern running in same direction to reflected ceiling plan.

.3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

3.4 Interface with Other Work

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

3.5 Schedules

.1 See Drawings, as indicated.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01610 - Basic Product Requirements

1.2 References

.1 ASTM F 1303, Specifications and ASTM 1913 for Sheet Vinyl Floor Covering
.2 CAN/CSA A 126.5 Resilient Wall Base.

1.3 Samples

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.
.2 Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long base, nosing, feature strips, treads, edge strips.

1.4 Closeout Submittals

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01780 - Closeout Submittals.

1.5 Extra Materials

.1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01780 - Closeout Submittals.
.2 Provide 20m^2 of each colour, pattern and type flooring material required for project for maintenance use.
.3 Extra materials to be in one piece and from same production run as installed materials.
.4 Clearly identify each roll of sheet flooring and each container of adhesive.
.5 Deliver and store where directed by Consultant.

1.6 Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and 48 hours after installation.

2 PRODUCTS

2.1 Materials

.1 LVT, Luxury Vinyl Plank Flooring: to applicable CSA and ASTM standards sheet vinyl flooring and product design.
  .1 Acceptable Products:
    .1 Polyflor Expona Commercial Wood, Stone, and Abstract PUR
    .2 Gerflor Creation 70
    .3 Mannington Commercial Spacia Wood, Stone, and Abstract
  .2 up to (2) colours as later selected by Consultant from manufacturer’s full colour range.

.2 VCT, Vinyl composition tile: to CSA A126.1-1984, Type “A” 3.2 mm gauge, 305 x 305 mm size, filler shall be non-asbestos.

.1 Acceptable Products:
.2 Manufacturer: Supply tile from one of the following manufacturers:
.1 Armstrong Excelon
.2 Amtico Fortress
.3 Mannington – Essentials/Designer Essentials
.3 Colour and texture shall be selected by Consultant from manufacturer's complete range, including, solids, mottled etc.; to a maximum of four base colours/textures for the project.

.3 SHV, Sheet Vinyl Flooring: to applicable CSA and ASTM standards sheet vinyl flooring and product design and up to (2) colours as later selected by Consultant.
.1 Sheet Vinyl Homogeneous: unbacked flexible homogeneous single layered 2.0mm thick
.2 to CSA A126.6 and ASTM F1913 66% vinyl content composed of polymer plus plasticizer plus stabilizer
.3 product to be dry buffed for the life of the product.
.4 product to be chip visual made up of two (2) colours
.5 floor design patterns as indicated.
.6 Acceptable Products:
.1 Medintone by Armstrong
.2 IQ Granit Micro by Tarkett
.3 or approved equal

.4 Rubber Base: covered vulcanized rubber base;
.1 RB or RB-1: standard profile, 102 mm high x 3.0 mm thick
.2 RB-2: Millwork Base Reveal, Profile TG1 Snowbound, by Tarkett
.3 Manufactured by American Biltrite (Amtico), Johsonite, Finercraft, or approved equal.
.4 Colours: from manufacturer's full standard colour range as later selected by consultant to a minimum of two (2) colours for project.

.5 Rubber Stair and Treads: fitted, vulcanized rubber base, with contrasting leading edge carborundum strips, with rounded textured pattern
.1 Manufactured by American Biltrite (Amtico), Johsonite, Finercraft, or approved equal.
.2 Equal to Roundel pattern from Johnsonsite
.3 Colours: from manufacturer's full standard colour range as later selected by consultant to a minimum of one (1) colour for project.

.6 Primers and adhesives: waterproof, of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

.7 Sub-floor filler and leveler: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product

.8 Sealers and wax: type recommended by resilient flooring material manufacturer for material type and location.

3 EXECUTION

3.1 Site Verification of Conditions

.1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.2 Preparation

.1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
.2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
.3 Prime and or Seal concrete slab to flooring manufacturer's printed instructions.

3.3 Application: Flooring

.1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air re-circulate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
.2 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritation, headaches, dizziness, and vomiting.
.3 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
.4 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
.5 Run sheets in direction of traffic. Double cut sheet joints and continuously seal heat weld according to manufacturer's printed instructions.
.6 Heat weld seams of sheet flooring in accordance with manufacturer's printed instructions.
.7 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
.8 Cut flooring neatly around fixed objects.
.9 Install feature strips and floor markings where indicated. Fit joints tightly.
.10 Install flooring in pan type floor access covers. Maintain floor pattern.
.11 Continue flooring over areas which will be under built-in furniture.
.12 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
.13 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
.14 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 Application: Stairs

.1 Install stair nosings / stair treads / stair risers one piece for full width of stair. Adhere over entire surface and fit accurately.

3.5 Application: Base

.1 Install flash cove base at Resilient Seamless floor where indicated.
.2 Lay out base to keep number of joints at minimum.
.3 Clean substrate and prime with one coat of adhesive.
.4 Apply adhesive to back of base.
.5 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
.6 Install straight and level to variation of 1:1000.
.7 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.8 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.
.9 Use toeless type base where floor finish will be carpet, coved type elsewhere.
.10 Install toeless type base before installation of carpet on floors.
.11 Heat weld base in accordance with manufacturer's printed instructions.

3.6 Cleaning

.1 Remove excess adhesive from floor, base and wall surfaces without damage.
.2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.7 Protection

.1 Protect new floors from time of final set of adhesives until final waxing.
.2 Prohibit traffic on floor for 48 hours after installation.
.3 Use only water-based coating for linoleum.

3.8 Schedules

.1 Provide the following seam layout and pattern unless otherwise indicated to Consultants colour selection.
  .1 Rooms: Provide maximum width rolls centred in one direction with borders
  .2 Welding: to later colour selection
  .3 Provide patterning as per floor pattern diagram.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01330 Submittal Procedures.
.2 Section 01610 - Basic Product Requirements
.3 Section 06200 - Finish Carpentry

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM D 3960- 93, Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-1.36- 97, General Purpose Interior Varnish.
  .2 CAN/CGSB-1.38- M91, Interior Enamel Undercoater.
  .3 CAN/CGSB-1.57- 96, Alkyd, Interior, Semigloss, Enamel.
  .4 CAN/CGSB-1.60- 97, Interior Alkyd Gloss Enamel.
  .5 CAN/CGSB-1.100- 95, Interior Latex Type, Flat Paint.
  .6 CAN/CGSB-1.119- 95, Primer-Sealer, Wall, Interior Latex Type.
  .7 CAN/CGSB-1.121- 93, Vinyl Pretreatment Coating for Metals (Vinyl Wash Primer).
  .8 CAN/CGSB-1.145- 97, Solvent-Based Pigmented Stain.
  .9 CAN/CGSB-1.150- M91, Clear Lacquer for Wood Furniture.
  .10 CAN/CGSB-1.175- 97, Polyurethane Interior Coating, Oil Modified, Clear, Gloss and Satin.
  .11 CAN/CGSB-1.188- 96, Emulsion Type Filler Masonry Block.
  .12 CAN/CGSB-1.195- 95, Interior Semigloss Latex Paint.
  .13 CAN/CGSB-1.198- 95 , Cementitious Primer (for Galvanized Surfaces).
  .14 CAN/CGSB-1.209- 93, Low Sheen Latex Interior Paint.
  .15 CGSB 85-GP-16M- 79, Painting Galvanized Steel.
  .16 CGSB 85-GP-20M- 79, Painting copper and Copper Alloys.
  .17 CGSB 85-GP-33M- 79, Painting Interior Plaster and Wallboard.
  .18 CAN/CGSB-85.100- 93, Painting.
.3 Painting Specifications Manual 1993.
.4 National Fire Code of Canada 1995.
.5 Steel Structures Painting Council (SSPC).
  .1 Systems and Specifications Manual 1989.

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 01330 - Submittal Procedures.
.2 Submit full records of all products used. List each product in relation to finish formula and include the following:
  .1 Finish formula designation.
  .2 Product type and use.
  .3 CGSB number.
  .4 Manufacturer's product number.
  .5 Colour numbers.
  .6 Manufacturer's Material Safety Data Sheets (MSDS).
  .7 Maximum VOC classification.
  .8 Eco-Logo certification.

.3 Submit manufacturer's installation application instructions for each product specified.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.
.2 Submit duplicate 300 mm x 200 mm sample panels of each paint stain coating specified.
.3 Submit full range of available colours where colour availability is restricted.
.4 Use 3 mm plate steel for finishes over metal surfaces. Use 12.5 mm birch plywood for finishes over wood surfaces. Use 12.5 mm concrete board for finishes over concrete or concrete masonry surfaces. Use 12.5 mm gypsum board for finishes over gypsum board and other smooth surfaces.

1.5 QUALITY ASSURANCE

.1 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.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in original containers, sealed, with labels intact.
.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.
.3 Remove damaged, opened and rejected materials from site.
.4 Provide and maintain dry, temperature controlled, secure storage.
.5 Observe manufacturer's recommendations for storage and handling.
.6 Store materials and supplies away from heat generating devices.
.7 Store materials and equipment in a well ventilated area with temperature range 7 to 30 EC.
.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
.10 Provide minimum one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
.11 Remove only in quantities required for same day use.
.12 Fire Safety Requirements:
  .1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
  .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Environmental Choice Program (ECP)
  .1 Provide paint products certified to meet the requirements of the Environmental Choice Program, Department of the Environment.

.2 Submit CSA Certification Reports that products proposed for use are certified under the Environmental Choice Program. Water based paints to be certified to ECP-07. All other surface coatings to be certified to ECP-12.

.2 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.3 Ventilate enclosed spaces during all painting activities.

.4 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

.5 Substrate and ambient temperature must be within limits prescribed in paint standard and by manufacturer to approval of Engineer.

.6 Maintain minimum substrate and ambient air temperature of 5 degrees C for Alkyd and 7 degrees C for latex paints. Maximum relative humidity 85%. Maintain supplemental heating until paint has cured sufficiently.

.6 Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.

.7 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.

.8 Apply paint only when surface to be painted is dry, properly cured, adequately prepared and cleaned.

.9 Provide minimum 270 lx on surfaces to be painted.

1.8 EXTRA MATERIALS

.1 Submit maintenance materials in accordance with Section 01780 - Closeout Submittals.

.2 Submit one - one four litre can of each type and colour of primer finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.

.3 Deliver to Owner and store where directed.

2 PRODUCTS

2.1 MATERIALS

.1 Qualified products: only paint materials listed on the CGSB Qualified Products List are acceptable for use on this project.

.2 Qualified products: only paint materials listed to meet the requirements of the environmental choice program, Department of the Environment are acceptable for use on this project.

.3 Paint materials for each coating formula to be products of a single manufacturer.

.4 Low odour products: Whenever possible, select products exhibiting low odour characteristics. If two products are otherwise equivalent, select the product with the lowest odour.

2.2 COLOURS

.1 Consultant will provide Colour Schedule. Notify Consultant 10 working days before colour schedule required.

.2 Colour schedule will be based upon the selection of eight base colours and three accent colours. No more than three colours will be selected per room / or walls and ceilings.

.3 Selection of colours will be from manufacturers full range of colours.

.4 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.5 Perform all colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials allowed only with Consultant's permission.
.6 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

3 EXECUTION

3.1 GENERAL

.1 Perform all painting operations in accordance with CAN/CGSB-85.100 except where specified otherwise.
.2 Apply all paint materials in accordance with paint manufacturer’s written application instructions.
.3 Paint all wall surfaces in each room as per finish schedules. Wall surfaces/types may vary in each room. Paint all surfaces as required to meet painting specification for surface type to produce homogenous product.
.4 General Contractor to finish paint all flush mounted electrical panels to match the adjoining wall colour.

3.2 PREPARATION

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, door stops, bath accessories and all other surface mounted fittings and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.

3.3 PROTECTION

.1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed.
.2 Protect items that are permanently attached such as Fire Labels on doors and frames.
.3 Protect factory finished products, fixtures, finishes and equipment.

3.4 EXISTING CONDITIONS

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant all damage, defects, unsatisfactory or unfavourable conditions before proceeding with work.
.2 Investigate moisture content of surfaces to be painted. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
.3 Maximum moisture content as follows:
    .1 Plaster and wallboard: 12%.
    .2 Masonry/Concrete: 12%.
    .3 Concrete Block/Brick: 12%.
    .4 Wood: 15%.

3.5 CLEANING

.1 Remove all dust, dirt, and other surface debris.
.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 To prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
.5 Clean new metal surfaces to be painted by removing rust, loose mill scale, dirt, grease, oil, or other foreign substances.

3.6 SURFACE PREPARATION

.1 Prepare new wood surfaces to CGSB 85-GP-1M.
.2 Where possible, prime all surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
.3 Prepare previously painted wood surfaces to CGSB 85-GP-2M.
  .1 Apply vinyl sealer to CAN/CGSB-1.126 over knots, pitch, sap and resinous areas.
  .2 Apply wood filler to nail holes and cracks.
  .3 Tint filler to match stains for stained woodwork.
.4 Prepare stucco, brick, concrete masonry and concrete surfaces to CGSB 85-GP-31M.
.5 Prepare concrete floors to CGSB 85-GP-32M. Prepare new concrete floor by acid etching. Rinse with clean water and thoroughly dry.
.6 Prepare plaster and wallboard surfaces to CGSB 85-GP-33M.

3.7 SURFACE PREPARATION – METAL

.1 Touch-up shop primer to CGSB 85-GP-10M with primer as specified in applicable section. Touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas.
.2 Prepare galvanized steel and zinc coated steel surfaces to CGSB 85-GP-16M.
.3 Prepare copper and copper alloys surfaces to CGSB 85-GP-20M.
.4 Prepare new steel surfaces exposed normally to dry conditions to CGSB 85-GP-14M.
.5 Prepare previously painted steel surfaces exposed normally to dry conditions to CGSB 85-GP-15M.
.6 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.8 MIXING PAINT

.1 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.
.2 Thin paint for spraying according to manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Engineer.
.3 Do not use kerosene or any such organic solvents to thin water-based paints.

3.9 APPLICATION

.1 Apply paint to CAN/CGSB-85.100. Conform to manufacturer's application instructions unless specified otherwise.
.2 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.
.3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
.4 Sand and dust between each coat to remove visible defects.
.5 Finish tops of cupboards, cabinets and projecting ledges, both above and below sight lines as specified for surrounding surfaces.
.6 Finish inside of cupboards and cabinets as specified for outside surfaces.

.7 Finish closets and alcoves as specified for adjoining rooms.
.8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.10 MECHANICAL ELECTRICAL EQUIPMENT

.1 In finished areas: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment. Colour and texture to match adjacent surfaces, except as noted otherwise.
.2 In boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
.3 In other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
.4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
.5 Do not paint over nameplates.
.6 Keep sprinkler heads free of paint.
.7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
.8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
.9 Paint all fire protection piping red.
.10 Paint all natural gas piping yellow.
.11 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.11 RESTORATION

.1 Clean and re-install all hardware items that were removed before undertaken painting operations.
.2 Remove protective coverings and warning signs as soon as practical after operations cease.
.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
.4 Protect freshly completed surfaces from paint droppings and dust to approval of Engineer. Avoid scuffing newly applied paint.
.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

4 PAINT SCHEDULE

4.1 PAINT SCHEDULE INTERIOR PAINTING

.1 Formula 1 (Latex): eggshell for gypsum board, plaster, hardboard walls, existing wall surfaces
  .1 one coat latex primer sealer CAN/CGSB - 1.119
  .2 two coats eggshell enamel CAN/CGSB - 1.195

2. Formula 2 (Latex): flat for gypsum board, plaster, hardboard ceilings.
  .1 one coat latex primer sealer CAN/CGSB - 1.119
  .2 two coats flat enamel CAN/CGSB - 1.209

3. Formula 3 (Latex): Flat for acoustic tile and textured ceilings:
  .1 two coats latex flat CAN/CGSB-1.100

4. Formula 4 (Latex): Eggshell for concrete block and concrete walls:

.1 one coat block filler CAN/CGSB-1.188.
.2 one coat primer-sealer CAN/CGSB-1.119.
.3 two coats eggshell enamel CAN/CGSB-1.195.

.5 Formula 5 (Latex): Semi Gloss for hollow metal doors and frames:
.1 primer-sealer touch up
.2 two coats latex semigloss CAN/CGSB-1.195.

.6 Formula 6 (Alkyd): Semi Gloss for primed ferrous metal:
.1 two coats semigloss enamel CAN/CGSB-1.57.

.7 Formula 7 (Alkyd): semi gloss for galvanized and zinc coated metal:
.1 one coat cementitious primer CAN/CGSB-1.198.
.2 two coats semigloss enamel CAN/CGSB-1.57.

.8 Formula 8 (Latex): flat for galvanized metal deck:
.1 one coat cementitious primer CAN/CGSB-1.198.
.2 two coats flat paint CAN/CGSB-1.100.

.9 Formula 9 (Alkyd): for insulation covering :
.1 one coat latex primer-sealer CAN/CGSB-1.119.
.2 two coats low gloss enamel CAN/CGSB-1.57.

.10 Formula 10 (Alkyd): for copper piping and fittings:
.1 one coat vinyl wash primer CAN/CGSB-1.121.
.2 two coats low gloss enamel CAN/CGSB-1.202.

.11 Formula 11 (Polyurethane): for woodwork to receive stain finish :
.1 one coat wood filler.
.2 one coat solvent based stain CAN/CGSB-1.145. Type 2.
.3 one coat polyurethane CAN/CGSB-1.175 thinned.
.4 two coats polyurethane CAN/CGSB-1.175 Type 2.

.12 Formula 12 (Polyurethane): for wood floors:
.1 one coat wood filler.
.2 one coat solvent based stain CAN/CGSB-1.145.
.3 three coats, two-component polyurethane CGSB1-GP-180Ma.

.13 Formula 13 (Latex): Interior painted wood work.
.1 one coat primer sealer.
.2 two coats paint.

.14 Formula 14 (Stain and Varnish finish): (Stain for Decking) glulam columns and beams.
.1 Provide Sansin SDF, one coat enviro stain - standard - or equal, colour to later selection

.15 Formula 15 (Alkyd): Semi Gloss for concrete block at shower walls and ceilings
.1 two coats semigloss enamel CAN/CGSB-1.57.

END OF SECTION

1 GENERAL

1.1 Related Sections

.1 Section 01330 - Submittal Procedures.
.2 Section 01610 - Basic Product Requirements
.3 Section 06200 - Finish Carpentry
.4 Section 07900 - Sealants
.5 Section 08800 - Glazing for custom mirrors
.6 Division 16 - Electrical Hand Dryers

1.2 References

.1 CAN/CGSB-12.5-M86, Mirrors, Silvered.
.2 CAN/CSA-B651-95, Barrier-Free Design.
.3 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330 - Submittal Procedures.
.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.

1.4 Samples

.1 Submit samples in accordance with Section 01330 - Submittal Procedures.
.2 Samples to be returned for inclusion into work.

1.5 Closeout Submittals

.1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01780 - Closeout Submittals.

1.6 Extra Materials

.1 Provide special tools required for accessing, assembly/disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01780 - Closeout Submittals.
.2 Deliver special tools to Owner.

1.7 Warranty

.1 Submit warranty against defects in accordance with GC 12.3 but for (5) five years.

2 PRODUCTS

2.1 Materials

.1 Sheet steel: to ASTM A653/A653M with ZF001 designation zinc coating.
.2 Stainless steel sheet metal: to ASTM A167, Type 304, with No. 4 finish.

.3 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
.4 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.
.5 Solid Acrylic: Homogenous sheet material composed of acrylic resins, fire-retardant filler materials and colouring agents.
.6 Manufacturer's or brand names on face of units is not acceptable.

2.2 Acceptable Products and Manufacturer's

.1 Products listed are based on Watrous Inc., Bobrick Washroom Equipment of Canada Ltd. and Elcano Inc.
.2 Corresponding products from Frost Products Ltd. and Dunleavy Cordun Associates Inc. are acceptable.
.3 Provide products for the work of this section from a single manufacturer and keyed alike.

2.3 Components

.1 Toilet tissue dispenser: single, double roll type, surface mounted, stainless steel, satin finish
.1 Acceptable material: Bobrick - 76867

.2 Surface mounted Paper Towel Disposal.
.1 Acceptable Material: Bobrick B-43699

.3 Grab bars: 1.2 mm thick 30 mm diameter tubing of stainless steel, 80 mm diameter wall flanges; concealed screw attachment; Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.
.1 Acceptable material: Bobrick Model Series 5806 to profiles indicated.

.5 Robe hook: wall surface mounted, stainless steel, satin finish
.1 Acceptable material: Bobrick – B-76717

.6 Fixed Mirror: Stainless steel one piece tamper proof with 6mm thick mirror tempered glass (10 year warranty). Install 1000mm above finished floor.
.1 Acceptable material: Bobrick Model B-1658. Size 24"x36" unless otherwise indicated.

.7 Mirrors with Shelf: Stainless steel one piece tamper proof with 6mm thick mirror tempered glass (10 year warranty).
.1 Acceptable material: Bobrick Model B-1668 series to sizes indicated. Size 24"x36" unless otherwise indicated.

.8 Liquid Soap Dispenser: Type 304 stainless steel with satin finish
.1 Acceptable material: Bobrick Model, Contura Series B-4112

.9 Surface-Mounted Towel Bar: Stainless steel. 3/4″ (19mm) diameter round towel bar. Projects 3 1/4″ (85mm) from wall.
.1 Acceptable product: Bobrick Model B-674 Series; B-6747
.2 length: 24" (610mm) unless otherwise noted.
.3 Satin Finish

.10 Fixed Custom Mirror: Custom mirrors, to sizes indicated in drawings.
- .1 Silver mirror to CAN/CGSB-12-5, 3mm thick,
- .2 adhered and fastened to wall surface with brushed aluminum perimeter edging/supports.

.11 Automatic Hand Dryer. Surface mounted, provide power connection

.12 Freestanding Garbage: supplied by owner

.13 Sanitary Napkin Disposal:
- .1 Acceptable material: Bobrick – B-270

.14 Stainless steel shelf:
- .1 Acceptable material: Bobrick – B-295 x 18”

2.4 Fabrication

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .1 Brake form sheet metal work with 1.5 mm radius bends.
- .2 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .3 Back paint components where contact is made with building finishes to prevent electrolysis.
- .4 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CSA G164.
- .5 Shop assemble components and package complete with anchors and fittings.
- .6 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .7 Provide steel anchor plates and components for installation on studding and building framing.

2.5 Finishes

.1 Chrome and nickel plating: to ASTM B456, satin finish.

.2 Baked enamel: condition metal by applying one coat of metal conditioner to CGSB 31-GP-107Ma, apply one coat Type 2 primer to CAN/CGSB-1.81 and bake, apply two coats Type 2 enamel to CAN/CGSB-1.88 and bake to hard, durable finish. Sand between final coats. Colour selected from standard range by Consultant.

.3 Manufacturer's or brand names on face of units not acceptable.

3 EXECUTION

3.1 Installation

.1 Install and secure accessories 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 Toilet/shower compartments: use male/female through bolts.

.2 Install grab bars on built-in anchors provided by bar manufacturer.
.3 Use tamper proof screws/bolts for fasteners.
.4 Fill units with necessary supplies shortly before final acceptance of building.
.5 Install mirrors in accordance with Section 08800 - Glazing.

3.2 Schedule of Washroom Accessories

.1 Washrooms 114, 207 and 208
- .1 Toilet tissue dispenser – 1
- .2 Surface Mounted Paper Towel Dispenser – 1 per washroom
- .3 Robe Hook – 1
- .4 Fixed Mirror with shelf – 1
- .5 Towel Rod – 1
- .6 Liquid soap dispenser – by Owner
- .7 Waste Receptacles – by Owner

.2 Barrier-Free Washroom 112 (universal washroom)
- .1 Toilet tissue dispenser – 1
- .2 Surface Mounted Paper Towel Dispenser – 1 per washroom
- .3 Grab Bars – (x1) 760mm x 760mm L-shaped grab bar, (x1) rear 610mm grab bar, (x2) grab bars for urinal, as indicated.
- .4 Robe Hook – x2 (mount one at 1100mm AFF)
- .5 Fixed Mirror with shelf - 1
- .6 Liquid soap dispenser – by Owner
- .7 Waste Receptacles – by Owner

3.3 General

.1 Locate accessories where indicated on drawings and as per OBC Barrier Free requirements. Coordinate exact locations with consultant if not otherwise indicated.

END OF SECTION

ONTC OFFICE CONVERSION
435 WHITSON AVE., NORTH BAY, ON
PROJECT NO. 6761
AUGUST 2025

Piotrowski Consultants Ltd.
1820 Bond Street
North Bay, ON P1B 4V6

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PART 1- GENERAL

1.1. GENERAL

1. This section covers items common to all sections of Division 15 and is supplementary to requirements of Division 1.

2. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

3. Coordinate all requirements with General Contractor.

1.2. CODE OF STANDARDS

1. Do complete installation in compliance with latest editions and all amendments of the following Codes and Standards. Where conflicts in requirements occur, the higher standard shall apply:

    1. ASHRAE

    2. SMACNA

    3. CSA

    4. Ontario Building Code

    5. All governing municipal requirements

    6. ULC

    7. LEED Canada for New Construction and Major Renovations 2009.

1.3. DEFINITIONS

1. “Provide” means supply and install.

2. “Approved” means approved in writing by Consultant.

3. “Consultant” means designated qualified professional engineer acting as representative of Owner for monitoring of work.

4. “Manual” means Operations and Maintenance manual.

1.4. SCOPE OF WORK

1. Demolition of all mechanical equipment & associated components.

2. Decommissioning existing natural gas service – coordinated with utilities provider.

3. Replacement of water meter and relocation to suit new floorplan layout – coordinate with the city of North Bay and carry all costs.

4. Replacement of sanitary sewer serving building back to the road curb.

5. Provision of two new heat pump systems HP#1, HP#2 to serve the main floor and second floor c/w pad mounted outdoor unit, and indoor wall mounted, ducted fan coil and cassette unit(s) as indicated. Electric resistance reheat coils provided for ducted fan coil units, electric baseboard heaters (by electrical) for rooms served by wall mounted or cassette units.

6. Provision of two new ERVs ERV#1, ERV#2, c/w exhaust only defrost control and electric resistance reheat coils, ductwork, grilles, etc

7. Provision of new thermostat controlled exhaust fan EF#1 for IT data room.

8. Provision of two new electric domestic hot water tanks DHWT#1 & DHWT#2, and plumbing fixtures throughout as indicated on plans. New domestic CW, & HW piping to serve new fixtures.

1.5. "Manual" means Operations and Maintenance manual

1.6. CARE, OPERATION, START-UP AND INSTRUCTION TO OWNERS

1. Provide certified personnel to instruct Owner of operation mechanical equipment. Provide maintenance specialist personnel to instruct on maintenance and adjustment of mechanical equipment and any changes or modification equipment must be under terms of guarantee.

2. Provide instruction during regular work hours prior to acceptance and turn over to Owner's staff for regular operation.

3. Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

4. Use operation and maintenance data manual for instruction purposes. On completion of instruction, turn three manuals over to the Owner.

5. Operation and maintenance manual to be approved by and final copies deposited with Consultant before final inspection.

6. Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

1.7. PERMITS, CERTIFICATES, FEES AND INSPECTIONS

1. Submit to the Building Department the necessary number of drawings and specifications for examination prior to commencement of work to obtain a building/plumbing permit. Obtain and pay for all building/plumbing permits. Include all costs in the tender price.

2. Submit Notice of Project to Ministry of Labour.

3. Submit all applicable forms, registrations, documents, etc to TSSA (refrigeration piping, etc) and other authorities having jurisdiction. Obtain TSSA registration and submit final certifications to consultant and include in close out documents. Cost of application fees to TSSA to be paid by Owner or cash allowance.

4. Contractor shall be responsible to pay associated fees.

5. Notify Consultant of changes required by Building Department prior to making changes.

6. Notify Consultant upon completion of work.

1.8. COORDINATION WITH EXISTING UTILITIES

1. Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in or inferable from the Contract Documents, or that are inferable from an inspection of the Place of the Work.

2. All existing utilities are to be maintained and protected for the length of construction.

3. Contractor to notify consultant if any conflicts arise and allow for minimum 48 hours for consultants review.

1.9. EQUIPMENT REQUIREMENTS AND INSTALLATION

1. Permit equipment maintenance and disassembly by use of unions or flanges to minimize disturbance to connecting piping and duct systems and without interference from building structure or other equipment.

2. Provide accessible means for lubricating equipment including permanent lubricated "lifetime" bearings.

3. Pipe drain lines to drains.

4. Line-up equipment, rectangular cleanouts and similar items with building walls wherever possible.

5. Provide equipment commissioning and preliminary balancing and confirm the proper operation of all equipment and related systems.

1.10. RESPONSIBILITY FOR TRIAL USAGE

1. Obtain written permission to start and test permanent equipment and systems prior to acceptance by Consultant.

2. Consultant may use ventilating equipment and systems for testing.

3. Protect equipment and systems' openings from dirt, dust and other foreign materials during test usage.

1.11. ELECTRICAL

1. Division 15 shall supply and install motors, controls and control wiring, supply starters, switches, contactors and relays for all motor driven equipment under Division 15. Starters, switches, contactors and relays shall be handed over to Division 16 for installation and wiring.

2. Electrical equipment not supplied by Division 15 is listed on the drawings or elsewhere in the Specification for quality of material and workmanship.

3. Safety disconnect switches shall be supplied for each rotating equipment unless within viewing distance for motor control but max 6 m (20') supplied by Division 15 and installed by Division 16.

4. Wiring and controls for connections below 50 V, which are related to control systems are the responsibility of Division 15. Refer to Division 16 for quality of materials and workmanship.

    1. Control cables, type LVT, soft annealed copper conductors with thermoplastic insulation and colour coding. Installation in EMT conduit.

    2. Two conductors parallel with an overall thermoplastic jacket; three or more conductors twisted with an overall thermoplastic jacket.

    3. Cable to be installed in EMT conduit or if concealed in ceiling space to be plenum rated FT6 type.

1.12. THERMOSTATS AND SENSORS

1. All thermostats, sensors etc to be mounted at 1200mm (47”) above finished floor to centre line of device. Any interference with other devices such as switches, etc to be coordinated with Consultant.

1.13. MOTORS

1. Provide motors for mechanical equipment as specified.

2. If delivery of specified motor will delay delivery of installation of any equipment, install an acceptable motor for temporary use. Final acceptance of equipment will not occur until specified motor is installed.

3. Motors under 373 W (1/2 HP) speed as indicated, continuous duty high efficiency, built in overload protection, resilient mount, single phase, 120 V unless otherwise specified or indicated.

4. Motors 373 W (1/2 HP) to 150 kW (200 HP) T frame, to or exceeding the current Ontario Hydro Motor Efficiency Levels and be listed in the current Ontario Hydro Motor Efficiency Levels Guide as tested to CSA C390M 1985 or IEEE 112B and approved under the Canadian Safety Code, speed as indicated, continuous duty, drip proof, ball bearing, maximum temperature rise 40°C (72°F), 3 phase, 208 V or 600 V unless otherwise specified or indicated.

5. Provide a suitable manual or magnetic starter for each piece of equipment supplied under this Division.

6. Provide safety disconnect switches for the above equipment.

7. Division 16 will install all starters, disconnects, contactors and line voltage control devices and perform all wiring under supervision of this Division.

1.14. PIPE HANGERS AND SUPPORTS

1. See Section 15140 – Hangers and Supports.

1.15. BUILDING PERMIT

1. Prepare permit application and apply for building permit at local Building Department. Include all costs in tender price. Consultant will provide contract documents in PDF format, contractor responsible to produce hard copies.

1.16. DRAIN VALVES

1. Locate at low points and at section isolating valves unless otherwise specified.

2. Minimum NPS 3/4 unless otherwise specified: bronze, with hose end male thread and complete with cap and chain.

1.17. PENETRATIONS

1. Where pipes pass through fire rated walls, floors or partitions, maintain fire rating of assembly in compliance with OBC. Submit shop drawings and details on all products.

2. Provide pipe sleeves at penetrations where pipes pass through masonry or concrete, or where protection is required from galvanic action or physical abrasion.

    1. Coat exposed exterior surfaces of ferrous sleeves with heavy application of zinc-rich paint.

    2. Where sleeves pass through masonry or concrete: backfill space around sleeve with masonry or concrete.

    3. Where sleeves pass through walls or floors: caulk space between insulation and sleeve or between pipe and sleeve with waterproof fire retardant non-hardening mastic.

    4. In foundation walls and below grade floors: pipe sleeve to be 1.25x pipe outside diameter or minimum 50mm. Fill space between pipe and sleeve with soft foam insulation.

3. Ensure no contact between copper tube or pipe and ferrous material or sleeve.

4. Continue insulation through penetrations where pipe is required to be insulated.

5. Temporarily plug all openings during construction.

1.18. SLEEVES

1. Size:

    1. Provide 5 mm (1/4") clearance between sleeve and pipe or between sleeve and insulation.

    2. Where piping passes below footings, provide min clearance of 50 mm (2") between sleeve and pipe. Fill void with elastic, water proof material. Backfill up to underside of footing with concrete of same strength as footing.

2. Provide sleeves of minimum 1.0 mm (20 GA) galvanized sheet steel with lock seam joints or use PVC pipe in non rated walls.

3. Use cast iron or steel pipe sleeves with annular fin continuously welded at mid-point through foundation walls.

1.19. ESCUTCHEONS AND PLATES

1. Provide on pipes passing through finished walls, partitions, floors and ceilings.

2. Use split type chrome plated brass, with set screws for ceiling or wall mounting.

3. Inside diameter shall fit around finished pipe. Outside diameter shall cover opening or sleeve.

4. Where sleeve extends above finished floor, escutcheons or plates shall clear sleeve extension.

5. Secure to pipe or finished surface but not insulation.

1.20. TESTS

1. Provide the following supplementary requirements to tests specified:

    1. Give 48 h notice of date when tests will be made.

    2. Do not insulate or conceal work until tested and approved.

    3. Conduct tests in presence of Consultant.

    4. Bear costs including retesting and make good.

    5. Pipe pressure:

        1. Hydraulically test water supply systems at 1-1/2 times system operating

pressure or minimum 1050 kPa (150 psig).

2. Maintain test pressures without loss of 4 h unless otherwise specified.

3. Record pressure test results, indicating:

    1. Portion of piping tested.

    2. Test pressure.

    3. Test duration.

    4. Results/Comments.

    5. Type of pipe.

    6. Type of system.

    7. Size of pipe.

4. Submit results to Consultant.

1.21. PAINTING

1. Apply at least one coat of corrosion resistant primer paint to supports, and equipment fabricated from ferrous metals.

2. Restore to new condition, finishes which have been damaged too extensively to be merely primed and touched up.

1.22. SPECIAL TOOLS

1. Provide one set of special tools required to service equipment as recommended by manufacturers.

1.23. ACCESS DOORS

1. Supply access doors to concealed mechanical equipment for operating, inspecting, adjusting and servicing.

2. Flush mounted 600 mm x 600 mm for body entry and 300 mm x 300 mm for hand entry unless otherwise noted. Flush mounted **and sized to suit maintenance and removal of equipment** where applicable (ERV, Reheat Coil). Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.

3. Material:

    1. Special areas such as tiled or marble surfaces: use stainless steel with brushed satin or polished finish as directed by Consultant.

2. Remaining areas: use prime coated steel.

4. Installation:

1. Locate so that concealed items are accessible.

2. Locate so that hand or body entry (as applicable) is achieved.

3. Installation is specified in applicable sections.

5. Acceptable Material: Nailor 0900 or approved equal.

1.24. DIELECTRIC COUPLINGS

1. Provide wherever pipes of dissimilar metals are joined.

2. Provide felt or rubber gaskets to prevent dissimilar metal contact.

1.25. CUTTING AND PATCHING

1. All cutting and patching shall be by Division 2, coordinated by Division 15. Coordinate with other trades. Notify Structural Engineer before cutting any structural members and obtain written permission.

1.26. CONCRETE WORK

1. By General Contractor.

1.27. EXCAVATION AND BACKFILLING

1. This Division shall be responsible for coordination for bedding of lines or equipment and for backfilling and compaction to 98% Standard Proctor Density.

1.28. EXISTING SYSTEMS

1. Before submitting tender price verify on job site location of all accessible existing systems affecting execution of this contract. Difficulties arising during construction will not be considered as grounds for additional payment.

2. Where work involves breaking into or connecting to existing systems, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian traffic.

3. Submit schedule to and obtain approval from Consultant for any shut down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

4. Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

1.29. INSTRUCTIONS TO OWNERS & TRAINING

1. Provide certified personnel to instruct Owner of operation mechanical equipment. Provide maintenance specialist personnel to instruct on maintenance and adjustment of mechanical equipment and any changes or modification equipment must be under terms of guarantee.

2. Training plans to be submitted prior to the execution of the training. At a minimum, training plans to include the list of systems and equipment which are to be trained on. Instructor's name and qualifications and allotted time for training. Training plans to be reviewed and approved by Owner and Consultant prior to commencement of training.

3. Provide instruction during regular work hours prior to acceptance and turn over to Owner's staff for regular operation.

4. Use operation and maintenance data manual for instruction purposes. On completion of instruction, turn two manuals over to the Owner.

5. Operation and maintenance manual to be approved by and final copies deposited with Consultant before final inspection.

6. Provide minimum of four 6 hour training sessions on systems.

7. Include for training in Fall to winterize system.

1.30. OPERATION & MAINTENANCE MANUALS

1. Provide one (1) paper copy and one "PDF" format on USB stick of Mechanical Operation and Maintenance Manuals complete with As-built Drawings, in accordance to the following and Section 01300 - Submittals.

2. Mechanical Operation and Maintenance Manuals to be delivered to the Engineer's office in accordance with Section 01300 - Submittals.

3. Manuals to be bound in hard cover neatly labeled: "OPERATING AND MAINTENANCE INSTRUCTIONS".

4. The Operation and Maintenance Manuals shall be divided into sections with neatly labeled and tabbed dividers between each section. The sections to be included in the manual are:

    1. Section I – General

    2. Section II – Piping and Pump Systems

    3. Section III – Heating, Air Conditioning and Ventilation

    4. Section IV – Automatic Controls

    5. Section V – Sprinkler System

    6. Section VI – Air and Hydronic Balancing Report

    7. Section VII – Extended Warranties

5. The following information shall be contained within the sections:

    1. SECTION I: A list giving name, address and telephone number of the Consultant, Engineers, Construction Manager, Mechanical Trade and Controls Trade. Written guarantees for the Mechanical Systems. A copy of the Valve directory giving number, valve location, normal valve position, and purpose of valve. A framed copy of valve directory to be hung in Mechanical Room. Equipment lists and certificates shall be provided. Certificates shall be signed and sealed by the appropriate suppliers. All major equipment including but not limited to boilers, cooling towers, chillers, air handling units, isolators, silencers, pumps and humidifiers are to be inspected by the manufacturer to ensure the equipment has been installed in accordance with their recommendations.

    2. SECTION II, III and IV: A copy of all pressure tests and operational tests for pumping system. A copy of Gas Operational Tests for gas fired equipment. A list giving name, address and telephone number of all suppliers. A copy of all approved Shop Drawings. Copies of warranties.

    3. SECTION IV: Complete Control Diagrams, Wiring Diagrams and description of Control system and the functioning of the system. A copy of all shop drawings and all calibration certificates. Shop drawings shall be the updated record drawings.

    4. SECTION V: A copy of all shop drawings. Copies of all warranties. Maintenance information.

    5. SECTION VI: Provide complete air balance report including pump and fan curves, measured values and floor plans showing location of all traverse readings and grille measurements. Provide copies of all pressure tests completed on the systems.

    6. SECTION VII: Provide a list of equipment with description of extended warranties.

6. MAINTENANCE MATRIX

    1. A maintenance matrix is to be provided in the Operation and Maintenance Manuals. The matrix shall indicate each piece of equipment and the required maintenance tasks and the frequency at which they are to be carried out.

1.31. OWNER OCCUPANCY SCHEDULE

1. The existing building will remain unoccupied during normal occupancy hours.

2. Provide temporary protection for all finishes, appliances or equipment in the existing building.

1.32. AS-BUILT DRAWINGS

1. Site records:

    1. One set to be kept on site and all changes to be recorded on daily basis. At the completion of the project, all changes shall be transferred to clean set, signed and passed to the Consultant. Provide “PDF” format of As-Built Drawings on USB stick

with Maintenance Manuals at completion of project.

2. Make these drawings available for reference purposes and to inspection at all times.

2. Submit 2 copies of as-built marked up prints with final TAB report.

3. As-built drawings must be delivered before system acceptance.

1.33. BUILDING SERVICE CONNECTIONS

1. Make arrangements with all Utilities for work related to the existing building service connections and include all costs in tender price. (Water service and meter relocation, New Sanitary Service)

1.34. WATER METERS

1. Coordinate with Municipality and relocate or provide new water meter as directed by the Municipality. Include all costs in the tender price.

2. New water meter to be compound or turbine type, suitable for remote reader and interface to BMS by Neptune.

1.35. SPARE PARTS

1. Provide two (2) sets of spare filters for each fan coil and energy recovery ventilator.

2. One (1) set of each size of water mixing valve.

3. Leave spare parts on site. Coordinate storage location with the Owner.

END OF SECTION 15010

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. ASME B31.1-2024, (SI), Power Piping, (SI Edition).
2. MSS-SP-58-2018, Pipe Hangers and Supports - Materials, Design and Manufacture.
3. LEED Canada for New Construction and Major Renovations 2009.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings and product data in accordance with Section 01300 - Submittals.
2. Indicate on manufacturer's catalogue literature the following:
    1. Upper attachment.
    2. Middle attachment.
    3. Pipe attachment.
    4. Riser clamps.
    5. Shields and saddles.
    6. Sway braces.

1.4. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 - Submittals.

PART 2- PRODUCTS

2.1. GENERAL

1. Fabricate hangers, supports and sway braces in accordance with ANSI B31.1 and MSS-SP-58.

2. Support from structural members. Where structural bearing does not exist or inserts are not in suitable locations, provide supplementary structural steel members.

2.2. UPPER ATTACHMENTS

1. Concrete:

    1. Anchors for existing concrete roof structure, heavy duty anchors Hilti HSL.

2. Steel beam (bottom flange):

    1. Cold piping NPS 2 and under: malleable iron C clamp to MSS-SP-58, type 19. ULC listed.

    2. Cold piping NPS 2-1/2 and larger and all hot piping: malleable iron beam clamp to MSS-SP-58, type 28 or 29. ULC listed.

3. Steel beam (top):

    1. Cold piping NPS 2 and under: malleable iron "top of beam" C clamp to MSS-SP-58, type 19. ULC listed.

    2. Cold piping NPS 2-1/2 and larger and all hot piping: steel jaw, hook rod with nut, spring washer and plain washer, to MSS-SP-58, type 25. ULC listed.

4. Steel joist:

    1. Cold piping NPS 2 and under: steel washer plate with double locking nuts.

    2. Cold piping NPS 2-1/2 and larger and all hot piping: steel washer plates with double locking nut, carbon steel clevis and malleable iron socket.

5. Steel channel or angle (bottom):

    1. Cold piping NPS 2 and under; malleable iron C clamp to MSS-SP-58, type 23. ULC listed.

    2. Cold piping NPS 2-1/2 and larger and all hot piping; universal channel clamp. ULC listed.

6. Wood trusses and joists.

    1. Hold piping NPS2 and under. Secure angle iron 32 x 32 x 3 mm (1 1/2" x 1 1/2" x 3/16") on top of joist or bottom chord trusses. Space min. 2 joints. Use rod hanger with locking nut and clevis hanger.

    2. Cold piping NPS 2 1/2 and larger. Secure angle iron 50 x 50 x 4 mm on top of joists or bottom chord of trusses. Span min. 4 members. Use rod hangers with locking nut and clevis hanger.

2.3. MIDDLE ATTACHMENT (ROD)

1. Carbon steel threaded rod black finish, galvanized in mechanical rooms.

2.4. PIPE ATTACHMENT

1. Cold piping, steel or cast iron: hot piping steel, with less than 25 mm, 1" horizontal movement; hot piping, steel, with more than 300 mm, 12" middle attachment rod length: adjustable clevis to MSS-SP-58, type 1. ULC listed.

2. Cold copper piping; hot copper piping with less than 25 mm, 1" horizontal movement; hot copper piping with more than 300 mm, 12" middle attachment rod length: adjustable clevis to MSS-SP-58, type 1. Copper plated.

3. Suspended hot piping, steel and copper, with horizontal movement in excess of 25 mm, 1"; hot steel piping with middle attachment rod 300 mm, 12" or less; pipe roller to MSS-SP-58, type 43.

4. Bottom supported hot piping, steel and copper: pipe roller stand to MSS-SP-58, type 45.

2.5. RISER CLAMPS

1. Steel or cast iron pipe: black carbon steel to MSS-SP-58, type 42. ULC listed.

2. Copper pipe: carbon steel copper finished to MSS-SP-58, type 42.

2.6. SADDLES AND SHIELDS

1. Hot and Cold piping NPS 1-1/4 and over: protection shield with high density insulation under shield with uninterrupted vapour barrier.

PART 3- EXECUTION

3.1. HANGER SPACING

1. Spacing and middle attachment rod diameter as specified in paragraphs below or as in table below, whichever is more stringent.

    1. Plumbing piping: most stringent requirements of Ontario Building Code, or authority having jurisdiction.

    2. Fire protection: to applicable fire code.

    3. Gas piping: up to NPS 1/2: every 6', 1.8 m

    4. Copper piping: up to NPS 1/2: every 5' 1.5 m

5. Flexible joint roll groove pipe: in accordance with table below, but not less than one hanger at joints.

6. Within 12" of each horizontal elbow.

Pipe Size (Nominal)	Rod Diameter	Maximum Steel	Spacing Cooper
NPS 1/2	10 mm 3/8"	1.8m 6'	5' 1.5m
NPS 3/4, 1	10 mm 3/8"	2.1m 7'	6' 1.8m
NPS 1-1/4	10 mm 3/8"	2.1m 7'	8' 2.4m
NPS 1-1/2	10 mm 3/8"	2.7m 9'	8' 2.4m
NPS 2	10 mm 3/8"	3.0m 10'	9' 2.7m
NPS 2-1/2	10 mm 3/8"	3.0m 10'	10' 3.0m
NPS 3 to 4	10 mm 3/8"	4.6m 15'	12' 3.6m
NPS 6	19 mm 3/4"	5.1 m 17'	--

3.2. HANGER INSTALLATION

1. Offset hanger so that rod is vertical in operating position.

2. Adjust hangers to equalize load.

3. Loads suspended from steel structure to be reviewed and analyzed with structural engineer/general contractor.

END OF SECTION 15140

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. CGSB 1-GP-60M, Enamel, Interior, Gloss, Alkyd Type.
2. CGSB 24-GP-3a Identification and Classification of Piping Systems.

1.3. SAMPLES

1. Submit samples in accordance with Section 01300 - Submittals.
2. Submit samples and lists of proposed wording for approval before engraving.

PART 2– PRODUCTS

2.1. MANUFACTURERS NAMEPLATES

1. Provide metal nameplate on each piece of equipment, mechanically fastened complete with raised or recessed letters.
2. Indicate size, equipment model, manufacturer's name, serial number, voltage, cycle, phase and power of motors.

2.2. SYSTEM NAMEPLATES

1. Colour:
    1. Hazardous: red letters, white background.
    2. Elsewhere: black letters, white background (except where required otherwise by applicable codes).
2. Construction:
    1. 3 mm thick, laminated plastic or white anodized aluminum, matte finish, square corners, letters accurately aligned and machine engraved into core.
3. Sizes:

1. Conform to following table:

Size #	Dimensions (mm)	(in)	No. of Lines	Letter Height (mm)	(in)
1	10 x 50	3/8 x 2	1	3	1/8
2	13 x 75	1/2 x 3	1	5	1/4
3	13 x 75	1/2 x 3	2	3	1/8
4	20 x 100	3/4 x 4	1	8	3/8
5	20 x 200	3/4 x 8	1	8	3/8
6	20 x 100	3/4 x 4	2	5	1/4
7	25 x 125	1 x 5	1	12	1/2
8	25 x 125	1 x 5	2	8	3/8
9	35 x 200	1-1/4 x 8	1	20	3/4

2. Use average of 25 letters/numbers (maximum) per nameplate.

3. Use size #6 for terminal cabinets and control panels.

4. Use size #9 for equipment in mechanical rooms.

5. Facilities Inspection Program (FIP) identification:

1. General: use system of Main Identifier, Source Identifier, Destination Identifier.

2. Equipment and Mechanical Rooms: Main Identifier: size #9; Source and Destination Identifiers: size #5.

3. Elsewhere: Sizes as appropriate.

2.3. PIPING

1. General

1. To CGSB 24-GP-3a.

2. Identify medium by lettered legend, classification by primary and secondary colours, direction of flow by arrows.

2. Sizes:

1. Legend: block capitals to following table:

Outside Dia. of Pipe or Insulation mm	in	Size of Letters mm	in
30	1-1/4	13	1/2
50	2	19	3/4
150	6	32	1-1/4
250	7	63	2-1/2
Over 250	8	88	3

2. Primary colour bands:

    1. At valves and fittings: 460 mm, 18" long.

    2. Elsewhere: 1.8 m, 42" long.

    3. Secondary colour bands: 50 mm, 2" wide, 75 mm, 3" in from one end of primary colour band.

3. Arrows:

    1. Outside diameter of pipe/insulation 75 mm and greater: 150 mm, 6" long x 50 mm, 2" high.

    2. Outside diameter of pipe/insulation less than 75 mm, 3": 100 mm, 4" long x 50 mm, 2" high.

    3. Use double headed arrows where flow is reversible.

3. Material:

    1. Paint: to CGSB 1-GP-60M.

    2. Legend markers, arrow colour bands: plastic coated cloth material with protective overcoating and waterproof contact adhesive undercoating, suitable for 100% RH and continuous operating temperature of 150°C (300°F). Apply to prepared surfaces. Wrap tape around pipe or pipe covering with ends overlapping one (1) pipe diameter.

    3. Waterproof and heat resistant plastic marker tags: for pipes and tubing 3/4" nominal and smaller.

    4. Acceptable material: Brady

4. Colours:

    1. Where not covered by table below, submit legend, primary and secondary classification colours to Consultant for approval.

5. Table:

    1. Pipe and valve identification.

Pipe Marker Legend	Valve Tag Legend	Primary Colour	Secondary Colour
Hot Water Htg Supply	H.W.H.S	Green	None
Hot Water Htg Return	H.W.H.R.	Green	None
Glycol Heating Supply	G.H.S.	Green	None

Glycol Heating Return	G.H.R.	Green	None
Gas Line	Gas	Green	None
Cold Water	C.W.	Green	None
Hot Water	H.W.	Green	None
Recirc. Hot Water	R.H.W.	Green	None

2. Legend and arrows:

    1. Black or white to contrast with primary colour.

    2. Fire protection: white on red background.

3. Fire protection system:

    1. Exposed piping identify only.

4. Natural gas:

    1. Paint entire system.

5. Low voltage control wiring installed by Division 15.

2.4. DUCTWORK

1. 2" high black stencilled letters and directional flow arrows 6" long x 2" high.

2.5. VALVES AND CONTROLLERS

1. Brass tags with 1/2" stamped code lettering and numbers filled with black paint.

2. Furnish Consultant with six identification flow diagrams of approved size for each system. Include valve tag schedule, designating number, service, function and location of each tagged item and normal operating position of valves.

2.6. CONTROLS IDENTIFICATION

1. Identify all systems, equipment, components, controls and sensors.

2. Inscription to identify function and fail-safe position.

PART 3- EXECUTION

3.1. GENERAL

1. Do identification work in accordance with CGSB 24-GP-3a except where specified otherwise.

2. Provide ULC and/or CSA registration plates, as required by respective agency.

3. Identify systems and equipment to conform to PWC, FIP.

3.2. LOCATION OF NAMEPLATES

1. In conspicuous location to facilitate easy reading from operating floor and to properly identify equipment and/or system.

2. Provide stand-offs for nameplates on hot surfaces and insulated surfaces.

3. Do not insulate or paint over plates.

3.3. PIPING

1. Locations:

    1. On long straight runs in open areas in boiler rooms, mechanical room, and tunnel so that at least one is clearly visible from any one viewpoint in operating areas or walking aisles and not at more than 15 m, 50' intervals.

    2. Adjacent to all changes in direction.

    3. At least once in each small room through which piping passes.

    4. On both sides of visual obstruction or where run is difficult to follow.

    5. On both sides of any separation such as walls, floors and partitions.

    6. Where piping is concealed in pipe chase, ceiling space, or other confined space, at entry and leaving points and adjacent to each access opening.

    7. At beginning and end points of each run and at each piece of equipment in run.

    8. At point immediately upstream of major manually operated or automatically controlled valves. Where this is not possible, place identification as close to valve as possible, preferably on upstream side.

    9. Legend to be easily and accurately readable from usual operating areas and all readily accessible points.

    10. Plane of legend to be approximately at right angles to most convenient line of sight with consideration of operating positions, lighting conditions, reduced visibility of colour or legends caused by dust and dirt and risk of physical damage.

3.4. DUCTWORK

1. Stencil over final finish only.

2. Locations of ductwork identification:

    1. On long straight runs in open areas in boiler rooms, equipment rooms, so that at least one is clearly visible from any one viewpoint in operating areas or walking isles and not at more than 15 m, 50' intervals.

    2. Adjacent to all changes in direction.

    3. At least once in each small room through which ductwork passes.

    4. On both sides of visual obstruction or where run is difficult to follow.

    5. On both sides of any separation such as walls, floors and partitions.

    6. Where ductwork is concealed in duct chase, or other confined space, at entry and leaving points and adjacent to each access opening.

    7. At beginning and end points of each run and at each piece of equipment in run.

    8. At point immediately upstream of major manually operated or automatically controlled dampers. Where this is not possible, place identification as close to damper as possible, preferably on upstream side.

    9. Legend to be easily and accurately readable from usual operating areas and all readily accessible points.

    10. Plane of legend to be approximately at right angles to most convenient line of sight with consideration of operating positions, lighting conditions, reduced visibility of colour or legends caused by dust and dirt and risk of physical damage.

    11. Beside each access door.

3.5. VALVES AND CONTROLLERS

1. Secure tags with non-ferrous chains or closed "S" hooks for valves and operating controllers except at plumbing fixtures and radiation.

2. Install one copy of flow diagram and valve schedule mounted in frame with non-glare glass where directed by Consultant. Provide one copy in each operating and maintenance instruction manual.

3. Consecutively number valves system.

END OF SECTION 15190

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. Do thermal insulation in accordance with ACNBC, ASTM E96-66(1972) and ASTM C411-61 (1975).

2. Fire hazard rating:

    1. Meet NFPA 90A-2002, NFPA 225-2021 and CAN4-S102-M83 for all components of insulation system.

1.3. DEFINITIONS

1. “CONCEALED” - insulated mechanical services in chases, furred spaces, pipe shafts or hung ceilings.

2. “EXPOSED” - will mean “not concealed” as defined herein.

PART 2- PRODUCTS

2.1. FORMED FIBROUS GLASS TO 200°C

1. Application: insulation system for piping, valves, heat exchangers, headers, fittings, etc. maximum temperature 200°C. On domestic hot water and recirculating piping, fittings and all hydronic heating hot water and glycol systems.

2. Materials:

    1. CGSB 51-GP-9M, rigid mineral fibre sleeving for piping, including foilcraft laminate packet with open mesh fibre scrim reinforcing.

    2. Acceptable materials: Knauff; Fibreglass Rigid-Wrap pipe insulation.

3. Thickness:

    1. Domestic hot water and recirculating lines – located in conditioned spaces:

Line Size Nominal	Thickness Nominal
Up to NPS 1 1/4"	25 mm (1")
NPS 1 1/2" and larger	40 mm (1 1/2")
Run-outs to fixtures	

For max. of 2.4 m (8')	25 mm (1")

2. Hydronic hot water and glycol heating media temperature up to 200°F/93°C:

Line Size Nominal	Thickness Nominal
Run-outs Up to 3.7 m (12')	38 mm (1 1/2")
NPS 3/4" to 1 1/4"	38 mm (1 1/2")
NPS 1 1/2" to 8"	50 mm (2")

2.2. FORMED FIBROUS GLASS WITH V.B. -14 TO 37°C

1. Application: insulation system for piping, valves, heat exchangers, headers, fittings, etc., for temperature range - 14 to 37°C. On domestic cold water, rain water leaders, above grade storm and condensate lines.

   Media Temperature 41 to 56°F / 5 to 13°C

Line Size Nominal	Thickness Nominal
Up to NPS 1 1/4"	13 mm (1/2")
NPS 1 1/2 and over	25 mm (1")

2. Materials:

   1. CGSB 51-GP-9M, rigid mineral fibre sleeving for piping, and CGBS 51-GP-52M vapour barrier jacket. Complete with factory applied foil laminate, reinforced with open mesh fibre scrim.

3. Thickness – Media temperature <41°F/<5°C:

Line Size Nominal	Thickness Nominal
Up to NPS 3/4"	13 mm (1/2")
Up to NPS 1" - 6"	25 mm (1")
NPS 8" and larger	38 mm (1 ½")

2.3. FLEXIBLE ELASTOMERIC CLOSED CELL FOAM TO 82°C

1. Application – insulation of refrigeration lines, oil cooler piping, purge lines, evaporator heads, and other parts subject to sweating.

2. Material:

   1. ASTM C534, sheet self-adhering, roll type, elastomeric closed cell foam, thermal performance 0.04 W/M/C @ 24°C.

3. Acceptable Material:

   1. Armstrong – AP Armaflex self-adhering sheet insulation; Rubatex

   2. Insulation Thickness – 20 mm

2.4. FASTENINGS

1. Self-adhesive tape and 100% coverage lagging adhesives.
    1. Self-adhesive tape rated under 25 for flame spread and under 50 for smoke development.
2. For vapour barrier:
    1. Quick-setting adhesive for joints and lamps sealing of vapour barriers. Flame spread 10 smoke development 0.

2.5. JACKETS

1. Fire retardant PVC jackets:
    1. Apply in all exposed areas (mechanical, boiler, storage rooms, classrooms, etc,) or other areas as noted on drawings.
    2. One-piece moulded type and sheet with pre-formed shapes at elbows, tees, valves, end-caps, reducers etc. as required.
    3. Fastening: Use solvent weld adhesive compatible with insulation, tacks, and/or vinyl tape of matching colour to seal laps and joints.
    4. Indoor: flame/smoke rating of 25/50 or less.
    5. Outdoor: UV rated material at least 0.5 mm thick.
2. Aluminum Outer Jacket:
    1. Fabricated weather resistant coating, gauge as manufacturer's recommendation.
    2. Apply to all piping exposed to weather.

PART 3- EXECUTION

3.1. APPLICATION

1. Apply insulation after required tests have been completed and approved by Consultant. Insulation and surfaces shall be clean and dry when installed and during application of any finish. Apply insulation materials, accessories and finishes in accordance with manufacturer's recommendations and as specified herein.
2. On piping with insulation and vapour barrier, install high density calcium silicate block under hanger shield and metal saddle. Maintain integrity of vapour barrier over full length of pipe without interruption at sleeves, fittings and supports.

3.2. INSTALLATION

1. Install in accordance with ANSI/NFPA 90A and ANSI/NFPA 90B.

2. Perform insulation work using qualified insulation applicators, in accordance with latest trade application methods and to the Consultant’s approval.

3. Work to begin only when building is enclosed preventing insulation from getting wet due to elements such as rain, snow, construction, etc. All damaged or wet insulation to be replaced.

4. All piping (Section 15260) and ductwork (Section 15270) insulation to be continuous except at fire barriers.

5. Preformed: sectional up to NPS 12, sectional or curved segmented above NPS 12.

6. Multi-layered: staggered butt joint construction.

7. Vertical pipe over NPS 3: insulation supports welded or bolted to pipe directly above lowest pipe fitting. Thereafter, locate on 3 m, 15' centres.

8. Expansion joints in insulation: terminate single layer and each layer of multiple layers in straight cut at intervals recommended by manufacturer. Leave void of 25 mm, 1" between terminations. Pack void lightly with flexible mineral insulation.

9. Seal and finish exposed ends and other terminations with insulating cement.

10. Expansion joints in piping: provide for adequate movement of expansion joint without damage to insulation or finishes.

11. Orifice plate mounting flanges, flanges and unions at equipment, expansion joints, valves, other components requiring regular maintenance.

12. Insulation is not required for:

    1. Chrome plated piping, valves and fittings.

3.3. FASTENINGS

1. Secure pipe insulation by tape at each end and centre of each section, but not greater than 1 m (36") on centres.

END OF SECTION 15260

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. ASTM C411-11, Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
2. CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies.
3. ANSI/NFPA 90A-2012, Air Conditioning and Ventilating Systems, Installation of.
4. ANSI/NFPA 90B-2012, Warm Air Heating and Air Conditioning Systems.
5. CGSB 51-GP-10M-76, Thermal Insulation, Mineral Fibre, Block or Board, for Ducting, Machinery and Boilers.
6. CGSB 51-GP-11M-76, Thermal Insulation, Mineral Fibre, Blanket for Piping, Ducting, Machinery and Boilers.
7. CGSB 51-GP-52Ma-89, Vapour Barrier Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.

1.3. SHOP DRAWINGS

1. Submit shop drawings in accordance with Section 01300 - Submittals.
2. Submit for approval manufacturer's catalogue literature related to installation.

1.4. DEFINITIONS

1. For purposes of this section:
    1. "CONCEALED" - insulated mechanical services and equipment in hung ceilings and non-accessible chases and furred spaces.
    2. "EXPOSED" - will mean "not concealed" as defined herein.

PART 2 - PRODUCTS

2.1. GENERAL

1. All components of insulation system to have maximum flame spread rating of 25 and maximum smoke developed rating of 50 in accordance with CAN/ULC-S102.

2. Materials to be tested in accordance with ASTM C411.

2.2. D-2 MINERAL FIBER BLANKET WITH VAPOUR BARRIER MINUS 40 TO PLUS 150°F

1. Application: on round or oval ducting, either cold or dual temperature.

    1. Supply air conditioning ducting with exception of where exposed to conditioned space.

    2. Fresh air intake from louvre to HRV, ERV and A/H units.

    3. Exhaust and relief air ducting from HRV, ERV and A/H units to exhaust louvre or hood.

    4. Exhaust air from exhaust fan, hood.

    5. Or as indicated.

2. Material:

    1. CGSB 51-GP-11M, mineral fiber blanket; CGSB 51-GP-52M for vapour barrier.

    2. Acceptable material: Fibreglass MDS 103

3. Thickness: 25 mm, 1"

2.3. D-4 MINERAL FIBER RIGID WITH VAPOUR BARRIER TO 65°C

1. Application: on cold or dual temperature rectangular ducting.

    1. Supply air conditioning ducting with exception of where exposed in conditioned space.

    2. Fresh air intakes from louvre to HRV, ERV and A/H units.

    3. Exhaust and relief air ducting from HRV, ERV and A/H units to exhaust louvre or hood.

    4. Exhaust air from exhaust fan, hood.

    5. Or as indicated.

2. Material:

    1. CGSB 51-GP-10M, rigid mineral fiber board; CGSB 51-GP-52M vapour barrier, jacket and facing material.

2. Acceptable material: Fibreglass MDS 101

3. Thickness:

1. One 25 mm, 1" layer on: supply return and exhaust air ducts.

2. Two-1 1/2" layers on: intake ducts, supply and return ductwork installed on roof or outside.

2.4. FASTENINGS

1. Tape: self adhesive, 100 mm, 4" wide, aluminum, ULC labelled for less than 25 flame spread and less than 50 smoke developed.

2. Contact adhesive: quick-setting.

3. Lap seal adhesive: quick-setting for joints and lap sealing of vapour barriers.

4. For Canvas:

1. Washable adhesive for cementing canvas lagging cloth to duct insulation.

5. Pins.

1. Weld pins 4 mm, 3/16" diameter, with 40 mm, 1 1/2" diameter head for installation through the insulation. Length to suit thickness of insulation.

2.5. JACKET

1. Canvas.

1. Apply in exposed areas (boiler, mechanical, electrical, IT rooms and other areas as noted on drawings): ULC listed, fire rated, plain weave, cotton fabric at 220 g/m^2.

2. Acceptable material: Fatal Thermo Canvas

PART 3– EXECUTION

3.1. APPLICATION

1. Apply insulation after required tests have been completed and approved by Consultant. Insulation and surfaces shall be clean and dry when installed and during application of any finish. Apply insulation materials, accessories and finishes to manufacturer's recommendations and as specified.

2. Vapour barriers and insulation to be unbroken over full length of duct or surface, without penetration for hangers, standing duct seams and without interruption at sleeves and supports.

3. Use stand-offs for all duct mounted control accessories.

4. Apply 1 mm. 20 ga galvanized sheet metal corners to all ductwork in mechanical rooms.

3.2. INSTALLATION

1. General:

    1. Install in accordance with ANSI/NFPA 90A and ANSI/NFPA 90B.

    2. Perform insulation work using qualified insulation applicators, in accordance with latest trade application methods and to the Consultant’s approval.

    3. Work to begin only when building is enclosed preventing insulation from getting wet due to elements such as rain, snow, construction, etc. All damaged or wet insulation to be replaced.

    4. All piping (Section 15260) and ductwork (Section 15270) insulation to be continuous except at fire barriers.

    5. Adhere and seal vapour barrier using vapour seal adhesives.

    6. Stagger longitudinal and horizontal joints, on multilayered insulation.

2. Mechanical fastenings:

    1. On rectangular ducts, use 50% coverage of insulating cement and weld pins at not more than 200 mm, 8" centres, but not less than 2 rows per side and bottom.

END OF SECTION 15270

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. SMACNA HVAC Duct Construction Standards, Metal and Flexible.
2. ASTM C177-2019, Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
3. CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies.
4. CGSB 51-GP-10M, Thermal Insulation, Mineral Fibre, Block or Board, for Ducting, Machinery and Boilers.
5. CGSB 51-GP-11M, Thermal Insulation, Mineral Fibre, Blanket, for Piping, Ducting, Machinery and Boilers.
6. NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
7. NFPA 90B, Installation of Warm Air Heating and Air Conditioning Systems.

1.3. PRODUCT DATA

1. Submit product data in accordance with Section 01300 – Submittal Procedures.

PART 2– PRODUCTS

2.1. GENERAL

1. Fibrous glass duct liner: air stream side faced with mat facing.
2. Flame spread rating shall not exceed 25. Smoke development rating shall not exceed 50 when tested in accordance with CAN4-S102.
3. Rigid:
    1. Use on flat surfaces.
    2. 13 mm (1/2") thick and 25 mm (1") thick, to CGSB 51-GP-10M, fibrous glass rigid board duct liner.

3. Density: 48 kg/m^3 minimum.

4. Thermal resistance to be minimum 0.37 m^2.°C/W for 13 mm (1/2") thickness, when tested in accordance with ASTM C177, at 24°C mean temperature.

4. Flexible:

1. Use on round or oval surfaces and for fittings.

2. 13 mm (1/2") thick, to CGSB-51-GP-11M, fibrous glass blanket duct liner.

3. Density: 24 kg/m^3 minimum.

4. Thermal resistance to be minimum 0.37 m^2.°C/W for 12 mm (1/2") thickness, when tested in accordance with ASTM C177, at 24°C mean temperature.

5. Acceptable Material: Johns-Manville “Linacoustic” and Knauf Duct Liner E-M.

2.2. ADHESIVE

1. Meet requirements of NFPA-90A and NFPA-90B.

2. Flame spread rating shall not exceed 25. Smoke development rating shall not exceed 50. Temperature range minus 29°C to plus 93°C.

3. Acceptable material: Duro Dyne 1A-22, Foster 85-60.

2.3. FASTENERS

1. Weld pins 2.0 mm (1/12") diameter, length to suit thickness of insulation. Metal retaining clips, 32 mm (1 1/2") square.

2. Acceptable material: Duro Dyne PN series with NC or PC-1 series clips.

2.4. JOINT TAPE

1. Poly-Vinyl treated open weave fibreglass membrane 50 mm (2") wide.

2. Acceptable material: Duro Dyne FT2.

2.5. SEALER

1. Meet requirements of NFPA 90A and NFPA 90B.

2. Flame spread rating shall not exceed 25. Smoke development rating shall not exceed 50. Temperature range minus 68°C to plus 93°C.

3. Acceptable material: Duro Dyne S-2, Foster 30-35.

PART 3- EXECUTION

3.1. GENERAL

1. Do work in accordance with recommendations of SMACNA duct liner standards as indicated in SMACNA HVAC Duct Construction Standards, Metal and Flexible, except as specified otherwise.

2. Line inside of ducts 3 m (10') downstream of all supply air fans and 3 m (10') upstream of all exhaust and return air fans and as indicated on drawings with 25 mm (1") rigid board duct liner unless otherwise indicated.

3. Duct dimensions, as indicated, are clear inside duct lining.

3.2. DUCT LINER

1. Install in accordance with manufacturer's recommendations, and as follows:

    1. Fasten to interior sheet metal surface with 100% coverage of adhesive.

    2. In addition to adhesive, install weld pins not less than 2 rows per surface and not more than 425 mm (16") on centres.

3.3. JOINTS

1. Seal all butt joints, exposed edges, weld pin and clip penetrations and all damaged areas of liner with joint tape and sealer. Install joint tape in accordance with manufacturer's recommendations, and as follows:

    1. Bed tape in sealer.

    2. Apply 2 coats of sealer over tape.

2. Replace badly damaged areas of liner at discretion of Consultant.

3. Protect leading and trailing edges of each duct section with sheet metal nosing having 15 mm (1/2") overlap and fastened to duct.

END OF SECTION 15290

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. ANSI/NFPA 10, Portable Fire Extinguishers.
2. CAN4-S508, Rating and Fire Testing of Fire Extinguishers.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings and product data in accordance with Section 01300 - Submittals.

1.4. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 - Submittals.

PART 2- PRODUCTS

2.1. MULTI-PURPOSE DRY CHEMICAL EXTINGUISHERS

1. Cartridge operated type or Stored pressure rechargeable type with hose and shut-off nozzle, ULC labelled for A, B and C class protection. Size 4.5 kg 4-A, 60-BC rated.
2. For kitchen appliances use 3A:1B:C:K type fire extinguisher.

2.2. EXTINGUISHER BRACKETS

1. Type recommended by extinguisher manufacturer.

2.3. IDENTIFICATION

1. Identify extinguishers in accordance with recommendations of ANSI/NFPA 10 CAN4-S508.
2. Attach bilingual tag or label to extinguishers, indicating month and year of installation. Provide space for service dates.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install or mount extinguishers in cabinets or on brackets as indicated.

END OF SECTION 15305

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.
2. All brass, bronze fittings and valves shall be “Lead Free Design”.

1.2. REFERENCE STANDARDS

1. Do the work in accordance with Ontario Building Code and local authority having jurisdiction except where specified otherwise.
2. LEED Canada for New Construction and Major Renovations 2009.

1.3. SHOP DRAWINGS

1. Submit product data in accordance with Section 01300 - Submittals.
2. Indicate the following: valves.

PART 2- PRODUCTS

2.1. PIPING

1. Domestic hot, cold and recirculating tubing, within building.
    1. Above ground: copper tube, hard drawn, type L: to ASTM B88M-16.
    2. Buried: soft copper tube, type K soft, with silfoss soldered joints: to ASTM B88M-16.

2.2. FITTINGS

1. Brass or bronze flanges and flanged fittings: to ASME B16.24-2021.
2. Brass or bronze threaded fittings: to ASME B16.15-2024.
3. Cast bronze to ASME B16.18-2012 or wrought copper and bronze to ASME B16.22-2021.
4. Roll groove full flow standard radius cast bronze fitting for sizes NPS 4 and larger to AWWA C606.

2.3. JOINTS

1. Solder, tin antimony, 95:5 to ASTM B32-08 (2014) or approved type lead free – up to NPS 2 1/2.

2. Silver brazing alloy – NPS 3 and larger.

3. Roll grooved piping to be made up with roll groove positive clamp gasketed couplings or roll groove flange adapters for copper piping to AWWA C606.

2.4. VALVES

1. Ball Valves:

    1. For Sizes 50mm (2") and under 1034KPA (150psig) 600 WOG, Brass Body to NSF/ANSI 61-G (Lead Free Brass) Full Port, PTFE Seats, Double "O" Ring or Teflon packing. TEA Plated Forged Brass C49300 Vented Solid Ball, Blowout Proof Stem, Lever handle. Provide stem extensions on all valves with greater than 1" insulation.

        1. Standard of Acceptance: Kitz 859 (Solder) Kitz 858 (NPT) or equivalent by Toyo.

    2. NPS 2 1/2 and over, grooved ends: Epoxy Coated Cast Iron Body Grooved ends, Teflon Fused Solid Ball, Full Port Rated 200 WOG @200F Class VI shutoff, 100% Lead Free,Ansi,NSF61-8

        1. Acceptable material: American 3700V or Approved Equal
        2. Option American 3700 Flanged end connection 2" to 8" or Approved Equal

2.5. SWING CHECK VALVES

1. Check Valves- Back Flow Prevention

    1. For sizes 50mm (2") and under, 860kPa (125psig) 200WOG. Bronze body to ASTM C89530 (Lead Free Bronze) Screwed Cap C49300 (Lead Free Brass) Integral Seat, PTFE Disc.

        1. Swing "Y" Pattern

        2. Screwed Ends Kitz 822T

        3. Soldered Ends Kitz 823T

    2. For sizes 65mm (2 ½") and over use Class 150 Stainless Steel A351 CF8M Body, Trim#10, Bolted Cover PTFE Gasket, Flanged.

        1. Swing Check Flanged Kitz 150UOAM or Approved Equal

        2. Option:

            1. Wafer Check
            2. Stainless Steel, A351 CF8M Body, Class 150, 316 Stainless steel Trim
            3. Single Flapper – Moygro W15A-666 or Approved Equal

3. Double Door

    1. Stainless Steel A351 CF8M body, Class 150, 316 Stainless steel Trim Mueller Steam Specialty Model # 72HHHTH, or Approved Equal.

2.6. GLOBE VALVES

1. Globe valves NPS 2 and under, soldered:

    1. 850 kPa, to MSS SP-80, 300 CWP, bronze body, renewable composition PTFE disc, threaded over bonnet, lock shield handles as indicated.

        1. Standard of Acceptance:

            1. Kitz 10
            2. Crane 1334/1320
            3. Jenkins 813J
            4. Newman Hattersley 13 with NPT copper adaptors
            5. Nibco S-235-Y

2. Globe valves NPS 2 and under, threaded:

    1. 1000 kPa, to MSS SP-80, Class 150, bronze body, renewable composition PTFE disc, union bonnet, lock shield handles as indicated.

        1. Standard of Acceptance:

            1. Kitz 09
            2. Crane 7TF
            3. Jenkins 106BJ
            4. Newman Hattersley 13
            5. Nibco T-235-Y

PART 3– EXECUTION

3.1. INSTALLATION

1. Connect to fixtures and equipment in accordance with manufacturer’s instructions unless otherwise indicated.

2. Install tubing close to building structure to minimize furring, conserve head room and space. Group exposed piping and run parallel to walls.

3. Cut square, ream and clean tubing and tube ends, clean recesses of fittings and assemble without binding.

4. Lay buried tubing in accordance with AWWA Class “B” bedding.

5. Isolate equipment, fixtures and branches with gate valves.

6. Provide necessary chemicals and equipment and disinfect system to requirements of

authority having jurisdiction.

7. Pressure test piping before insulation is applied.

8. Balance supply systems and recirculation systems using DVR (double regulating valve).

9. Install shut off valves at branch take-offs, in locations shown, and to isolate piping to each piece of equipment.

10. Select valves with pressure rating as specified for piping service and location.

11. Install valves in upright position with stem above horizontal.

12. Remove internal parts of valves before soldering, welding or brazing pipe to valve body.

13. Valve hand wheels and operating levers to be accessible.

14. In equipment rooms and service spaces provide chain operators for valves mounted more than 2 m above floor or access platform. Chains to extend to 1.5 m above floor or platform and to be hooked on clips secured to building structure, clear of walking aisles.

15. Coordinate with the Building Inspector to witness tests and inspect work.

END OF SECTION 15412

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do the work in accordance with Ontario Building Code and local authority having jurisdiction except where specified otherwise.
2. LEED Canada for New Construction and Major Renovations 2009.

PART 2- PRODUCTS

2.1. COPPER TUBE AND FITTINGS

1. Above ground sanitary and vent Type DWV to: ASTM B306-13 up to 2 1/2".
    1. Fittings.
        1. Cast brass: to CSA B158.1-1976.
        2. Wrought copper: to ANSI B16.29-2022.
    2. Solder: tin-lead, 50:50, to ASTM B32-08, type 50A.

2.2. CAST IRON PIPING AND FITTINGS

1. Above ground sanitary storm and vent: to CAN3-B70-M86 3" and larger.
    1. Joints.
        1. Mechanical joints.
            1. Neoprene or butyl rubber compression gaskets with stainless steel clamps.
    2. Cast iron couplings.
        1. Complete with neoprene gaskets and stainless steel bolts and nuts.

PART 3 - EXECUTION

3.1. INSTALLATION

1. Install buried pipe on 6" bed of clean washed sand, shaped to accommodate hubs and fittings, to line and grade as indicated. Backfill with 6" of clean washed sand.

2. Install piping parallel and close to walls and ceilings to conserve headroom and space, and to grade indicated.

3. Coordinate with the Building Inspector to witness tests and inspect work.

END OF SECTION 15413

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do the work in accordance with Ontario Building Code and local authority having jurisdiction except where specified otherwise.

2. LEED Canada for New Construction and Major Renovations 2009.

PART 2- PRODUCTS

2.1. PIPING AND FITTINGS

1. For buried sanitary storm and vent piping up to NPS3 to:

    1. CAN3-B181.2-M87 for PVC DWV with solvent weld joints.

2. For buried sanitary and storm piping NPS 4 and larger to:

    1. CAN/CSA-B182.1 and B182.2, BNQ 3624-130DR35. With Ring-Tite joints.

3. Pipe, fittings, jointing system, fire stopping to be supplied by pipe manufacturer with written installation instructions, IT support and fire stopping.

    1. Standard of Acceptance: IPEX – “System 15 DWV”.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install buried pipe on 6" bed of washed clean sand, shaped to accommodate fittings, to line and grade as indicated. Backfill with washed clean sand.

2. Place pipe referenced in this section for **below grade only**. For above grade refer to Section 15413.

3. Provide ULC or Warnock Hersey listed and labelled fire seals at penetration of fire rated walls, ceilings, etc.

4. Do not install in ceiling spaces used as return air plenums.

5. Installation shall be in accordance with manufacturer's instructions and building code.

6. Coordinate with the Building Inspector to witness tests and inspect work.

END OF SECTION 15414

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do the work in accordance with Ontario Building Code and local authority having jurisdiction except where specified otherwise.

2. LEED Canada for New Construction and Major Renovations 2009.

1.3. SHOP DRAWINGS

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

1.4. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.

2. Indicate dimensions, construction details and materials for the following: floor drains, backflow preventers, hose bibbs, strainers, traps, trap seal primer.

1.5. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 - Submittals.

2. Data to include:

    1. Description of plumbing specialties and accessories, giving manufacturers name, type, model, year and capacity.

    2. Details of operation, servicing and maintenance.

    3. Recommended spare parts list.

PART 2- PRODUCTS

2.1. FLOOR DRAINS

1. Floor drains and trench drains: to CAN3-B79.

2. Type I: general duty; cast iron body round, adjustable head, nickel bronze strainer, integral seepage pan, and clamping collar.

    1. Acceptable material: Zurn ZN 401B; Watts FD-100-C-A.

3. Type II: general duty where sheet vinyl flooring is used. Cast iron body round, adjustable head, nickel bronze strainer, integral seepage pan, clamping ring suitable for sheet vinyl flooring.

    1. Acceptable material: Zurn ZN-211-R6; Watts FD-200-FC.

4. Type III: combination funnel floor drain; cast iron body with integral seepage pan, clamping collar, nickel-bronze adjustable head strainer with integral funnel.

    1. Acceptable material: Zurn 401B; Watts FD-100-C-EG.

5. Type IV – Shower drain – cast iron body with rectangular 4” x 8” polished nickel bronze strainer, clamping collar, 4” threaded end for strainer, bottom outlet.

    1. Acceptable Material: Zurn #ZN-400-J and ZN-211.

2.2. CLEANOUTS

1. In floors:

    1. Line size for NPS 2, NPS 3 and NPS 4 and NPS 4 in larger lines

2. Consisting of:

    1. Seal and test plug

    2. Cast iron body with clamp and collar

    3. In unfinished areas:

        1. cast iron frame heavy duty scoriated cast iron round or square tractor cover and internal plug, and

    4. In finished areas:

        1. nickel bronze frame and round or square nickel bronze adjustable access cover

        2. recessed for tile infill in tiled areas

        3. recessed for carpet infill in carpeted areas

        4. deeply recessed for terrazzo infill in terrazzo finished areas, and with

        5. extended flange around frame in areas with monolithic floor finishes.

3. Standard of Acceptance: J.R. Smith 4000 series; Mifab C1100 series; Zurn Z-1400 series.

    1. In exposed areas, ceiling spaces and accessible pipe chases:

        1. Cast iron caulking ferrule with neoprene jacket and plug secured to body with cap screws.

2.3. WALL HYRDANTS

1. Concealed key operated non-freeze type with:

    1. vacuum breaker,

    2. stainless steel or bronze box,

    3. hinged locking door,

    4. galvanized casing, and

    5. adjustable wall flange.

    6. Standard of Acceptance: J.R. Smith 5509QT; Mifab MHY-26; Zurn Z-1320.

2. Key operated non-freeze type with:

    1. bronze face,

    2. galvanized casing and

    3. adjustable wall flange

    4. Standard of Acceptance: J.R. Smith 5609QT; Mifab MHY-16; Zurn ZN-1321

2.4. PRESSURE REDUCING VALVES

1. Self-contained type with:

    1. bronze body, lead free,

    2. single renewable nickel alloy seat and resilient disc,

    3. diaphragm suitable for 90°C service,

    4. close coupled bronze strainer with stainless steel screen.

2. Standard of Acceptance: Watts, Zurn, Fisher Controls, Conbraco.

2.5. VACUUM BREAKERS

1. Atmospheric vacuum breaker: to CSA B64 Series-2011.

2. Hose connection vacuum breaker: to CSA B64 Series-2011.

2.6. TRAP SEAL PRIMERS

1. All brass, with integral vacuum breaker, pressure drop (3-5 psi) activated, NPS 1/2 solder ends, NPS 1/2 drip line connection, to be "lead free", NSF 61.

2. Acceptable material: PPP PR-500, MIFAB M500, J.R. Smith 2694 Series.

PART 3– EXECUTION

3.1. INSTALLATION

1. Install in accordance with manufacturer's instructions and as specified.

2. Coordinate with the Building Inspector to witness tests and inspect work.

3.2. CLEANOUTS

1. Install at base of soil and waste stacks, and rainwater leaders and at changes in direction. .

2. Extend cleanouts flush to wall or finished floor unless serviceable from below floor.

3. Install cleanouts located in floors clear of obstructions.

3.3. WALL HYDRANTS

1. Install 600 mm above finished grade.

3.4. PRESSURE REDUCING VALVES

1. Install with shut-off valve upstream and 115 mm dia. pressure gauge downstream.

3.5. TRAP SEAL PRIMERS

1. Install on cold water supply to nearest plumbing fixture, in concealed space.

2. Install soft copper tubing to floor drain.

3. Use distribution units as required.

3.6. COMMISSIONING

1. After start-up, test and adjust to suit site conditions.

END OF SECTION 15430

PART 1- GENERAL

1.1. RELATED WORK

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

2. See Section 15430 - Plumbing Specialties and Accessories.

PART 2- PRODUCTS

2.1. PLUMBING FIXTURES AND TRIM

1. Plumbing fixtures shall be product of one manufacturer, and of same colour in any one washroom or location, unless listed otherwise.

2. Materials:

    1. Vitreous china to CSA B45.1-02 (R2013).

    2. Stainless steel fixtures to CSA B45.04-02 Class II, type 302 unless otherwise stated.

    3. Plumbing fittings to CSA B125-01.

    4. Exposed plumbing brass and metal work shall be heavy triple chromium plated.

    5. Acceptable manufacturers of same quality, appearance and colour as selected fixtures:

        Crane, Kohler, Fiat, Kindred Industries, Bradley, Symmons, American Standard, AMI, Acudor-Acorn, Zurn, MOEN Commercial.

2.2. COUNTER SINKS

1. CS #1: COUNTERTOP Floor MOUNT SINK -

    Frank Commercial - 203 mm (8") centerset, With faucet ledge, 18 gauge Type 304 Stainless steel Polished to #4 satin finish, Factory installed EZ TORQUE™ fasteners, Factory applied rim seal, Center back waste location, 38 mm (1-1/2") (DN38) brass tailpiece, 89 mm (3-1/2") crumb cup strainer, Undercoated to reduce condensation and resonance, Compliances and certifications: ASME A112.19.3 compliant, CSA B45.4 compliant, Bowl Dimension: Left bowl is 457mm (18") long and right bowl is 305mm (12") long, 406 mm (16") wide, 203 mm (8") deep, Overall Dimension: 508 mm (20") long, 521 mm (20-1/2") wide, 203 mm (8") high.

    Chicago Faucet - **434-ABCP 434-008KJKCP** Counter mounted, Manual, Single handle, Sink faucet, Polished chrome finish, 203 mm (8") centerset, 203 mm (8") deck plate (434-008KJKCP), Lead Free ANSI/NSF 61 compliant ECAST® brass construction, With supply, Ceramic cartridge with volume control, 5.7 LPM (1.5 GPM) maximum flowrate, Spray outlet, Swivel Gooseneck spout, Pull down, 210 mm (8-1/4") spout reach, 432 mm (17") high, Lever handle, 13 mm (1/2") NPSM supply inlet for 10 mm (3/8") or 13 mm (1/2") flexible riser,

Includes hot limit safety stop.

McGuire Supply - LFH165LK HEAVY PREMIERE Line Heavy pattern Faucet Supply kit, consisting of (2) stop valves, (2) risers, (2) flanges (standard), Lead Free Brass body, Chrome-plated finish, 138 - 862 kPa (20 - 125 PSI) operating pressure, 4 to 60 °C (40 to 140 °F) operating temperature, Loose key handle, Full turn, Angle stop, C.P. wrought steel shallow wall flange (standard), 305 mm (12") C.P. lavatory flexible copper riser tubes (standard), 10 mm (3/8") I.P.S. inlet x 10 mm (3/8") O.D. outlet, 82 °C (180 °F) maximum during high-temperature system flush, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

McGuire P-Trap - **8912C** Adjustable P-Trap, Heavy cast brass, 38 x 38 mm (1-1/2" x 1-1/2") size, With cleanout plug, 292 mm (11-1/2") length, Seamless tubular brass bend, Slipnuts.

2. CS #2: COUNTERTOP MOUNT SINK - SINGLE LEVER FAUCET

Franke Commerical Sink - LBD6408P-1-3 203 mm (8") centerset, With faucet ledge, 18 gauge Type 304 Stainless steel Polished to #4 satin finish, Factory installed EZ TORQUE™ fasteners, Factory applied rim seal, Center back waste location, 38 mm (1-1/2") (DN38) brass tailpiece, 89 mm (3-1/2") crumb cup strainer, waste fitting included, Undercoated to reduce condensation and resonance, Compliances and certifications: ASME A112.19.3 compliant, CSA B45.4 compliant, Bowl Dimension: Left bowl is 356 mm (14") long and right bowl is 356 mm (14") long, Left bowl is 406 mm (16") wide and right bowl is 406 mm (16") wide, Left bowl is 203 mm (8") deep and right bowl is 203 mm (8") deep, Overall Dimension: 794 mm (31-1/4") long, 521 mm (20-1/2") wide, 203 mm (8") high.

Chicago Faucet - **786-GN8AE35ABCP** Counter mounted, Manual, Two handles, Sink Faucet Chrome-plated finish, 203 mm (8") centerset, Lead Free ANSI/NSF 61 and ANSI/NSF 372 compliant ECAST® brass construction, -377-XTAB quaturn compression cartridge, 5.7 LPM (1.5 GPM) maximum flowrate, -E35AB 5.7 LPM (1.5 GPM) pressure compensating Softflo™ aerator outlet, Rigid/swing Gooseneck spout, 203 mm (8") spout reach, -317-PR vandal-resistant 102 mm (4") metal wrist blade handles with red & blue index, Grid drain included, 13 mm (1/2") NPSM supply inlet for 10 mm (3/8") or 13 mm (1/2") flexible riser.

McGuire Supply - **LFBV170** CONVERTIBLE™ Commercial Faucet Supply kit, consisting of (2) stop valves, (2) risers, (2) flanges (standard), Lead Free Brass body, Chrome plated finish, 138 - 862 kPa (20 - 125 PSI) operating pressure, 4 to 60 °C (40 to 140 °F) operating temperature, Convertible loose key/triangle handle, Quarter turn ball valve, Angle stop, Brass ball valve, C.P. wrought steel deep bell wall flange (standard), C.P. prefabricated 127 mm (5") copper sweat tube extension nipple, 305 mm (12") C.P. lavatory flexible copper riser tubes (standard), 13 mm (1/2") Sweat inlet x 10 mm (3/8") O.D. outlet, 82 °C (180 °F) maximum during high temperature system flush, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

McGuire P-Trap **8912C** Adjustable P-Trap, Heavy cast brass, 38 x 38 mm (1-1/2" x 1-1/2") size, With cleanout plug, 292 mm (11-1/2") length, Seamless tubular brass bend, Slipnuts.

2.3. LAVATORIES

1. L#1: WALL HUNG BASIN - SINGLE LEVER FAUCET

American Standard Basin – 0355012.020 - Wall-hung Lavatory, Vitreous china, White finish, 102 mm (4") centerset, Front overflow, With faucet ledge, 102 mm (4") high backsplash, For wall hanger (included) or concealed arms (by others), Overall Dimensions: 540 mm (21-1/4") long, 464 mm (18-1/4") wide, Bowl Dimensions: 254 mm (10") long, 381 mm (15") wide, 165 mm (6-1/2") deep.

Chicago Faucet - 420-E2805ABCP Counter mounted, Manual, Single handle, Lavatory faucet, Polished chrome finish, 102 mm (4") centerset, Lead Free ANSI/NSF 61 compliant ECAST® brass construction, Ceramic cartridge, 1.9 LPM (0.5 GPM) maximum flowrate, Vandal-resistant pressure compensating non-aerated spray outlet, Fixed Cast brass spout, 118 mm (4-5/8") spout reach, 133 mm (5-1/4") high, Lever handle, 13 mm (1/2") NPSM supply inlet.

Lawer Mixing Valve TMM-1070-87500 The point of use mechanical mixing valve with thermostatic limit stop, MECHANICAL MIXING VALVE, Compression Fitting.

McGuire Fixture Drain - 155A Straight drain, Cast brass, Chrome-plated finish, Open grid PO plug, 7/32" (5.5 mm) Ø holes size, 17 gauge 32 mm (1-1/4") Ø tailpiece, 17 gauge 152 mm (6") long

McGuire Supply - LFBV170 CONVERTIBLE™ Commercial Faucet Supply kit, consisting of (2) stop valves, (2) risers, (2) flanges (standard), Lead Free Brass body, Chromeplated finish, 138 - 862 kPa (20 - 125 PSI) operating pressure, 4 to 60 °C (40 to 140 °F) operating temperature, Convertible loose key/triangle handle, Quarter turn ball valve, Angle stop, Brass ball valve, C.P. wrought steel deep bell wall flange (standard), C.P. prefabricated 127 mm (5") copper sweat tube extension nipple,305 mm (12") C.P. lavatory flexible copper riser tubes (standard), 13 mm (1/2") Sweat inlet x 10 mm (3/8") O.D. outlet, 82 °C (180 °F) maximum during high temperature system flush, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

McGuire P-Trap - 8872C Adjustable P-Trap, Heavy cast brass, 32 mm (1-1/4") x 32 mm (1-1/4") size, With cleanout plug, 292 mm (11-1/2") distance, 17 gauge seamless tubular wall bend, Slipnuts,

Watts Carrier - WCA-411 WCA-411/WCA-411-WC, Single floor-mounted lavatory carrier with concealed arms, For concealed arm carrier, adjustable arms, epoxy coated cast iron, integral welded feet, upper tie rod, Heavy gauge steel offset uprights, basin locking device, Plated hardware, levelling screws.

1. L#2**:** WALL HUNG BASIN - SINGLE LEVER FAUCET

American Standard Basin – 0355012.020 - Wall-hung Lavatory, Vitreous china, White finish, 102 mm (4") centerset, Front overflow, With faucet ledge, 102 mm (4") high backsplash, For wall hanger (included) or concealed arms (by others), Overall Dimensions: 540 mm (21-1/4") long, 464 mm (18-1/4") wide, Bowl Dimensions: 254 mm (10") long, 381 mm (15") wide, 165 mm (6-1/2") deep.

Chicago Faucet - 420-E2805ABCP Counter mounted, Manual, Single handle, Lavatory faucet, Polished chrome finish, 102 mm (4") centerset, Lead Free ANSI/NSF 61 compliant

ECAST® brass construction, Ceramic cartridge, 1.9 LPM (0.5 GPM) maximum flowrate, Vandal-resistant pressure compensating non-aerated spray outlet, Fixed Cast brass spout, 118 mm (4-5/8") spout reach, 133 mm (5-1/4") high, Lever handle, 13 mm (1/2") NPSM supply inlet.

Lawer Mixing Valve TMM-1070-87500 The point of use mechanical mixing valve with thermostatic limit stop, MECHANICAL MIXING VALVE, Compression Fitting.

McGuire Fixture Drain - 155A Straight drain, Cast brass, Chrome-plated finish, Open grid PO plug, 7/32" (5.5 mm) Ø holes size, 17 gauge 32 mm (1-1/4") Ø tailpiece, 17 gauge 152 mm (6") long

McGuire Supply - LFBV170 CONVERTIBLE™ Commercial Faucet Supply kit, consisting of (2) stop valves, (2) risers, (2) flanges (standard), Lead Free Brass body, Chromeplated finish, 138 - 862 kPa (20 - 125 PSI) operating pressure, 4 to 60 °C (40 to 140 °F) operating temperature, Convertible loose key/triangle handle, Quarter turn ball valve, Angle stop, Brass ball valve, C.P. wrought steel deep bell wall flange (standard), C.P. prefabricated 127 mm (5") copper sweat tube extension nipple,305 mm (12") C.P. lavatory flexible copper riser tubes (standard), 13 mm (1/2") Sweat inlet x 10 mm (3/8") O.D. outlet, 82 °C (180 °F) maximum during high temperature system flush, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

McGuire P-Trap - PW2125WC Lavatory, 17 Gauge Molded Closed cell vinyl (anti-microbial) wrapped cast brass, 32 mm x 38 mm (1-1/4" x 1-1/2") size, Offest grid drain, With cleanout, Seamless supply riser tube covers, supply angle stop covers, seamless drain tailpiece cover and angle stop wheel handle covers and chrome-plated box flange.

Watts Carrier - WCA-411 WCA-411/WCA-411-WC, Single floor-mounted lavatory carrier with concealed arms, For concealed arm carrier, adjustable arms, epoxy coated cast iron, integral welded feet, upper tie rod, Heavy gauge steel offset uprights, basin locking device, Plated hardware, levelling screws.

2.4. WATER CLOSETS

1. WC #1: FLOOR MOUNTED TOILET - VITREOUS CHINA

American Standard – 215CA174.020 - Tank type Toilet, Floor mounted with floor outlet, High Efficiency HET 4.8 LPF (1.28 GPF), Vitreous china, White finish, EverClean® antimicrobial surface, Elongated bowl, 381 mm (15") rim height, Minimum 305 mm (12") rough-in from wall to the center of waste outlet, Siphon jet flush action, Manual, Polished chrome left-hand trip lever (7381231-200.0020A), Tank with Aquaguard liner, With tank cover locking device, Gravity-assisted flush, Cadet® flushing system, 76 mm (3") flush valve, Tank coupling components, Fully-glazed 54 mm (2-1/8") trapway, PowerWash™ rim scrubs bowl with pressurized water every flush, Includes EZInstall Tools, Trade exclusive tank, Toilet seat not included, Colour-matched bolt caps, Consisting of: 3517C101 bowl, 4188A174 tank complete with Aquaguard Liner and tank cover locking device tank, Overall Dimensions: 441 mm (17-3/8") wide x 765 mm (30-1/8") from finished wall x 733 mm (28-7/8") high Water Surface: 229 x 203 mm (9" x 8") water surface area. Map Score: >=1000 MaP® flush score. Compliances and certifications: ASME A112.19.2 compliant, CSA B45.1 compliant, EPA WaterSense® compliant.

Bemis Seat - 1955CT 000 BEMIS Commercial Heavy-duty Open front Toilet seat Without cover, Fits most manufacturers' elongated toilets, White, Eco-friendly heavy-duty plastic with molded-in color, Color-matched plastic check hinges with stainless steel posts and pintles, preventing the seat from exceeding 11° beyond vertical, Stay·Tite® Seat Fastening System™, Four (4) ring bumpers, Compliances and certifications: IAPMO/ANSI Z124.5 compliant, IAPMO/ANSI Z124.5 compliant, Dimensions: 471 mm (18-9/16") long x 368 mm (14-1/2") wide x 60 mm (2-3/8") high.

McGuire Supply - LFBV172 CONVERTIBLE™ Commercial Toilet Supply kit, consisting of (1) stop valve, (1) riser, (1) flange, Lead Free Brass body, Chrome-plated finish, 138 – 862 kPa (20 - 125 PSI) operating pressure, Convertible loose key/triangle handle, Quarter turn ball valve, Angle stop, Brass ball valve, C.P. wrought steel deep bell wall flange (standard), C.P. prefabricated 127 mm (5") copper sweat tube extension nipple, 305 mm (12") C.P. toilet flexible copper riser tube (standard), 13 mm (1/2") Sweat inlet x 10 mm (3/8") O.D. outlet, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

2. WC #2: FLOOR MOUNTED TOILET - VITREOUS CHINA (BARRIER FREE)

American Standard 215AA174.020 - Tank type Toilet, Floor mounted with floor outlet, High Efficiency HET 4.8 LP (1.28 GPF), Vitreous china, White finish, EverClean® antimicrobial surface, Elongated bowl, Right Height® rim at 419 mm (16-1/2"), Minimum 305 mm (12") rough-in from wall to the center of waste outlet, Siphon jet flush action, Manual, Polished chrome left-hand trip lever (7381231-200.0020A), Tank with Aquaguardliner, With tank cover locking device, Gravity-assisted flush, Cadet® flushing system, 76 mm (3") flush valve, metal shank fill valve, Tank coupling components, Fully-glazed 54 mm (2-1/8") trapway, PowerWash™ rim scrubs bowl with pressurized water every flush, Includes EZ-Install Tools, Trade exclusive tank, Toilet seat not included, Colour-matched bolt caps, Consisting of: 3517A101 bowl, 4188A174 tank complete with Aquaguard Liner and tank cover locking device tank, Overall Dimensions: 441 mm (17-3/8") wide x 765 mm (30-1/8") from finished wall x 772 mm (30-3/8") high Water Surface: 229 x 203 mm (9" x 8") water surface area Map Score: >=1000 MaP® flush score Compliances and certifications: ASME A112.19.2 compliant, CSA B45.1 compliant, EPA WaterSense® compliant.

Bemis Seat - 1950 000 BEMIS Commercial Heavy-duty Open front Toilet seat With cover, Fits most manufacturers' elongated toilets, White, Eco-friendly heavy-duty plastic with molded-in color, Color-matched plastic hinges, Installed from above the toilet bowl with Top-Tite® hinges, Non-corroding Hex-Tite™ bolts and wing nuts, Four (4) ring bumpers, Compliances and certifications: IAPMO/ANSI Z124.5 compliant, IAPMO/ANSI Z124.5 compliant, Dimensions: 471 mm (18-9/16") long x 360 mm (14-3/16") wide x 57 mm (2-1/4") high

McGuire Supply - LFBV172 CONVERTIBLE™ Commercial Toilet Supply kit, consisting of (1) stop valve, (1) riser, (1) flange, Lead Free Brass body, Chrome-plated finish, 138 – 862 kPa (20 - 125 PSI) operating pressure, Convertible loose key/triangle handle, Quarter turn ball valve, Angle stop, Brass ball valve, C.P. wrought steel deep bell wall flange (standard), C.P. prefabricated 127 mm (5") copper sweat tube extension nipple, 305 mm (12") C.P. toilet flexible copper riser tube (standard), 13 mm (1/2") Sweat inlet x 10 mm (3/8") O.D. outlet, Compliances and certifications: AB 100 compliant, ASME A112.18.1 compliant, ASME A112.18.2-2 (risers), CSA B125.2 compliant (risers), Certified to NSF/ANSI 372, Certified to NSF/ANSI 61, UPC compliant.

2.5. SERVICE SINK

1. SS#1: SINGLE COMPARTMENT – FLOOR MOUNTED

   Frank Commercial Sink – SL2424-1-2 - 203 mm (8") centerset, Without faucet ledge, 16 gauge Type 304 Stainless steel Polished to #4 satin finish, With 229 mm (9") high backsplash, Radius coved corners on front and back only, Stainless steel tubular legs with adjustable feet for leveling, Center waste location, 38 mm (1-1/2") (DN38) brass tailpiece, standpipe with guard, 89 mm (3-1/2") crumb cup strainer, Compliances and certifications: ASME A112.19.3 compliant, CSA B45.4 compliant, Bowl Dimension: 610 mm (24") long, 610 mm (24") wide, 356 mm (14") deep, Overall Dimension: 691 mm (27-3/16") long, 691 mm (27-3/16") wide, 1119 mm (44-1/16") high.

   Chicago Faucet - **631-GN8FCABCP** Wall-hung, Manual, Two handles, Sink faucet, Polished chrome finish, 203 mm (8") centerset, Lead Free ANSI/NSF 61 compliant ECAST brass construction, 10 mm (3/8") offset inlet supply arms, Quaturn™ compression cartridge (90° turn), 5.7 LPM (1.5 GPM) maximum flowrate, Plain end outlet with laminar flow control insert in spout inlet, Rigid/swing Gooseneck spout, 203 mm (8") spout reach, 295 mm (11-5/8") high, Vandal-resistant 102 mm (4") wrist blade handles with indexed buttons, 13 mm (1/2") NPT female thread inlet.

   McGuire P-Trap - **8912C** Adjustable P-Trap, Heavy cast brass, 38 x 38 mm (1-1/2" x 1-1/2") size, With cleanout plug, 292 mm (11-1/2") length, Seamless tubular brass bend, Slipnuts.

PART 3- EXECUTION

3.1. FIXTURE INSTALLATION

1. Connect fixtures complete with supplies and drains, trapped, supported level and square. Each fixture must have lockshield valves on supplies. Hot water faucet shall be on left. Mixing faucets and thermostatically controlled mixing valves to have check valves on supplies. Fixtures on outside walls to have supplies from floor; other fixtures to be served from wall.

2. Provide chrome plated rigid supplies to fixtures with screwdriver or handwheel stops, reducers and escutcheons.

3. Provide supports, required to set fixtures level and square. Mount fixtures so that 200 lb mass will not loosen or distort mounting.

4. Provide shock absorbers for each fixture or group of fixtures.

5. Mounting heights for wall hung fixtures and showers measured from finished floor:

   1. Standard: to comply with manufacturers roughing-in details and Ontario Building Code, unless otherwise indicated or specified.

   2. Physically handicapped: to comply with OBC 2024.

6. Installation to follow manufacturer installation instructions/recommendations.

7. Test all devices and equipment.

END OF SECTION 15440

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. ASME B16.5-2020, Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.
2. ASME B16.18-2021, Cast Copper Alloy Solder Joint Pressure Fittings.
3. ASME B16.20-2023, Ring-Joint Gaskets and Grooves for Steel Pipe Flanges.
4. ASME B16.21-2021, Non-metallic Flat Gaskets for Pipe Flanges.
5. ASME B16.22-2021, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
6. ASME B18.2.1-2012, Square and Hex Bolts and Screws.
7. ASTM A47M/47M-99(2009), Specification for Ferritic Malleable Iron Castings.
8. ASTM A53/A53M-12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
9. ASTM B32-08, Specification for Solder Metal.
10. ASTM B75/B75M-11, Specification for Seamless Copper Tube Metric.
11. CSA B149.1-10, Natural Gas Installation Code.
12. CSA W47.1-09, Certification of Companies for Fusion Welding of Steel Structures.
13. LEED Canada for New Construction and Major Renovations 2009.

1.3. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.

1.4. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 - Submittals.

PART 2 - PRODUCTS

2.1. PIPE

1. Steel pipe: to ASTM A120 ASTM A53, Schedule 40, seamless as follows:
    1. NPS 1/2 to 2, screwed.
    2. NPS 2 1/2 and over, plain end.
2. Copper tube: to ASTM B75M.

2.2. JOINTING MATERIAL

1. Screwed fittings: pulverized lead paste.
2. Welded fittings: to CSA W47.1.
3. Flange gaskets: to ANSI B16.21 or ANSI B16.20.
4. Soldered: to ASTM B32, tin antimony 95:5.

2.3. FITTINGS

1. Steel pipe fittings, screwed, flanged or welded:
    1. Malleable iron: screwed, banded, Class 150.
    2. Steel pipe flanges and flanged fittings: to ANSI B16.5.
    3. Steel butt-welding fittings.
    4. Unions: malleable iron, brass to iron, ground seat, to ASTM A47M.
    5. Bolts and nuts: to ANSI B18.2.1.
    6. Nipples: Schedule 40, to ASTM A53.
2. Copper pipe fittings, screwed, flanged or soldered:
    1. Cast copper fittings: to ANSI B16.18.
    2. Wrought copper fittings: to ANSI B16.22.

2.4. VALVES

1. Ball Valves - Up to 50mm (2").
    1. 1034 KPA (150psig) / 600WOG Rating.
    2. Brass and or Bronze body, Full port, TFE seats, Double O-Ring Design, or Teflon

packing, Chrome plated solid Bronze ball, 3.16 Rating, CGA/CSA Approved, Lever Handle, Threaded connection.

3. Acceptable Products:

1. Kits 58, Toyo 5044A, or approved equal.

2. Lubricated Plug Valve - 65mm (2 1/2") & Over.

1. Class 125, flanged to ANSI B16.1, Regular pattern, Regular port, Full bore lubricated plug valves.

2. Acceptable Products:

1. NH Canada 205m or approved equal.

PART 3– EXECUTION

3.1. PIPING

1. Install in accordance with applicable Provincial/Territorial Codes.

2. Install in accordance with CAN1-B149.1 CAN1-B149.2.

3. Assemble piping using fittings manufactured to ANSI standards.

4. Connect to equipment in accordance with manufacturer's instruction unless otherwise indicated.

5. Slope piping down in direction of flow to low points.

6. Install drip points:

1. At all low points in piping system.

2. At each connection to equipment.

7. Use eccentric reducers at pipe size change installed to provide positive drainage.

8. Provide clearance for access and for maintenance.

9. Ream pipes, clean scale and dirt, inside and out.

10. Install piping to minimize pipe dismantling for equipment removal.

11. Paint all gas piping yellow unless otherwise directed. Where pipe is visible on exterior walls of building, paint to match building (colour by consultant) and provide yellow banding as per CAN/CSA B149.1.

3.2. VALVES

1. Install valves with stems upright or horizontal unless otherwise approved by Consultant.

2. Install valves at all branch take-offs to isolate each piece of equipment, and as indicated.

3.3. TESTING

1. Test system in accordance with CAN1-B149.1 CAN1-B149.2.

3.4. PURGING

1. Purge after pressure test in accordance with CAN1-B149.1 CAN1-B149.2.

END OF SECTION 15482

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do the work in accordance with Ontario Building Code, ASHRAE, ARI and SMACNA.

1.3. SHOP DRAWINGS

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

1.4. PRODUCT DATA

1. Submit product data in accordance with Section 01300 – Submittals.
2. Indicate dimensions, construction details, heating/cooling capacity, air flow, efficiency, construction details, electrical requirements and materials.

1.5. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 – Submittals.
2. Data to include:
    1. Description of all components and accessories, giving manufacturer’s name, type, model, year and capacity.
    2. Details of operation, servicing and maintenance.
    3. Recommended spare parts list.

PART 2 - PRODUCTS

2.1. ENERGY-EFFICIENT CONDENSING UNIT

1. Features:
    1. SEER (Seasonal Energy Efficiency Ratio) of 13.0 or higher.

2. All components shall be UL or ULC listed and ARI certified.

3. Refrigerant R410a.

.4 Low ambient temperature kit (-20°F).

2. Indoor unit shall be matched to outdoor condensing unit with following features:

1. High wall mounting.

2. Low sound levels – sound pressure max. 53.0 dba.

3. Simple servicing and maintenance with self-diagnostic.

4. Fitted with cleanable air filter.

5. Remote wall mounted thermostats with microprocessor based controls.

6. Matched pre-charged refrigerant lines provided by manufacturer.

7. Provide low ambient temperature kit below -25°C to allow operation in the winter time.

8. Condensate pump kit as required (Giant pump).

2.2. SYSTEM DESCRIPTION

1. Variable Refrigerant Flow (VRF) HVAC system shall be a direct expansion (DX) Hitachi heat Pump system. The outdoor unit shall consist of one frame (module). The module shall have a single inverter compressor. Each module shall be connected to multiple indoor units (ducted, non-ducted or mixed combinations) through a common refrigerant piping network and integrated system controls and communication network.

2. The outdoor unit shall be an air cooled condensing unit with horizontal air discharge that uses refrigerant R32. All zones are each capable of operating separately with individual temperature control.

3. Each indoor unit shall be controlled individually or as a group.

4. The Hitachi condensing unit shall be interconnected to Hitachi indoor units in accordance with Hitachi's engineering manual detailing each available indoor unit. The indoor units shall be connected to the condensing unit utilizing Hitachi's specified piping joints and headers to ensure correct refrigerant flow and balancing. T-style joints are not acceptable for a variable refrigerant system.

2.3. QUALITY ASSURANCE

1. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL) – Heating and Cooling Equipment and shall bear the listed mark.

2. All wiring shall be in accordance with the National Electric Code (NEC). The System shall be rated in accordance with applicable Air Conditioning Refrigeration Institute (AHRI) Standard and bear the AHRI label.

3. The system shall be manufactured in an ISO 9001 and ISO 14001 facility, in accordance with the standards set by the International Standard Organization (ISO).

4. Efficiency shall be published in accordance with the DOE alternative test procedure, which is based on the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standard.

2.4. DELIVERY, STORAGE AND HANDLING

1. Equipment shall be stored and handled according to the manufacturer's recommendations.

2.5. HITACHI MINI VRF

1. Hitachi Mini VRF shall be the Basis of Design. Acceptable standards shall be supplied based upon the Hitachi Mini VRF model specified. At least 10 days prior to the bid date, alternate manufacturers shall request permission to bid, in writing, from the engineer. This request by the contractor to bid an alternate supplier for the basis of design, listed or not listed, shall not relieve the contractor from supplying all materials, options, controls, sequences, efficiencies, and intent of the original specifications written or implied by Hitachi Mini VRF model number or model family or as otherwise specified. The written request and engineers' written response to such request shall be included in all submittal documents for approval.

2.6. SUBMITTALS

1. A complete submittal package shall be compiled, and copies shall be forwarded to the general contractor who shall supply the prime consultant with the submittals for dissemination to all parties. The submittal shall be a collection of documents that represent the technical aspects of each product or collection of products to be used on the project. All performance submissions shall be calculated at the design temperatures; nominal performance data shall not be allowed. The submission and approval of said submittals does not relieve the contractor from supplying all requirements set forth in the specification and drawings. Any substitutions offered by the contractor shall include, as a separate document, any and all differences between the submitted products and the specified products including but not limited to, all dimensions, electrical, control, weights, warranties, country of origin, and a statement from the manufacture that no child labor has been used in the manufacture or assembly of said products, and a copy shall be supplied with the product outdoor unit submittal.

2. If submittals contain any proposed alternate equipment specifications, calculations, dimensions, electrical specifications, sound specifications or any other mandated submissions which are not accepted, are noted or rejected for any reason, the contractor shall be allowed to correct any deficiency and re-submit a second time. Should there be any issues found on second submission, the contractor will be directed to and agree to submit on the original specified products and provide the specified products without any additional compensation.

2.7. INDOOR UNIT SYSTEM

1. The system shall consist of multiple Hitachi VRF indoor units, branch joints and headers. T-style joints shall not be permitted due to the large pressure differential through these fittings. The sum of connected capacity of all indoor units shall range from 60% to 130% of outdoor rated capacity.

2.8. OUTDOOR UNIT SYSTEM

1. The Hitachi Mini VRF outdoor unit shall be interconnected to the indoor units with capacities from 6,000 Btu/h to 60,000 Btu/h. Each Hitachi VRF indoor unit or selected group of indoor units shall be capable of operating independently and be able to provide set temperatures through a wide variety of control options including simplified wired, wired, wireless, central station, computerized controller, LONWorks adapter, or BACnet adapter; a VRF H-Link Smart Gateway (BACnet) – Metasys compatible device that makes Hitachi VRF viewable from all BACnet IP BMS/BAS systems; a Web interface and automatic point mapping to the BMS; a VRF Cloud Gateway Device – VRF accessed through mobile device (tablet/phone using Android/iOS operating system); and a VRF compatible with Nest thermostat.

PART 3 - PERFORMANCE

3.1. PERFORMANCE

1. The Mini VRF system performance shall be rated in accordance with AHRI test conditions.

2. The VRF system shall be listed in the AHRI directory.

3. The system efficiency shall meet or exceed the following certified performance criteria:

System	EER2		SEER2		HSPF2 (R IV)	
	Non Ducted	Ducted	Non Ducted	Ducted	Non Ducted	Ducted
3 TON: YVAHP036C23S	16.8	14.1	22.3	20.6	10.8	9.7

3.2. OPERATING TEMPERATURE RANGES

1. The ambient air temperature operating ranges shall be as follows:

Category	Range (°F)
Cooling Operating Range	23 – 118
Heating Operating Range	-13 – 59
Cooling Mode - Indoor Temperature Range (WB)	59 – 73
Heating Mode - Indoor Temperature Range (DB)	59 – 80

2. If an alternate equipment manufacturer is selected, the mechanical contractor shall provide, at their own risk and cost, all additional material and labor to meet ambient operating conditions and performance.

PART 4– PRODUCTS

4.1. REFRIGERANT PIPING

1. All refrigerant piping shall be installed in accordance with manufacturer's recommendations. No additional sight glasses or filter/dryers shall be required. All field installed refrigerant piping shall be nitrogenized ACR copper tubing and shall meet ASTM B280. All branch piping joints shall be approved by the manufacturer.

2. The Mini VRF system shall be capable of the following refrigerant piping lengths:

    1. Maximum total system piping length: 984 ft.

    2. Maximum vertical separation from outdoor unit to indoor unit, when outdoor unit is above: 164 ft.

    3. Maximum vertical separation from outdoor unit to indoor unit, when outdoor unit is below: 131 ft.

4.2. GENERAL FEATURES

1. The air-conditioning system shall use R32 refrigerant.

2. Each system shall consist of one air source outdoor unit.

3. Refrigerant circuit configuration

    1. The refrigerant circuit shall be constructed using field-provided ACR copper, de-hydrated, and piped together with manufacturer-supplied Y- branches or headers connected to multiple (ducted, non-ducted or mixed combination) indoor units to effectively and efficiently control heating or cooling operation of the Mini VRF

system. Other pipe materials shall not be allowed.

4. Each refrigerant pipe, y-branches, elbows and valves shall be individually insulated with no air gaps. Insulation R-value (thickness) shall not be less than the minimum called for by the local building code, local energy code or as a minimum per manufacture installation requirements. In no case shall the insulation be allowed to be compressed at any point in the system.

5. The condensing unit will be factory charged with R32.

6. Depending on the size and length of the piping when installed, it may require additional trim charging in the field.

4.3. ELECTRICAL

1. The condensing unit power supply shall be 208/230V 1 phase, 60 Hertz per schedule.

2. The condensing unit shall have an acceptable voltage range of 187-253V.

3. The control circuit between the units in the system shall use AWG18-2 type control wire.

4.4. SAFETY

1. The condensing unit shall include protection devices including a high pressure switch at 4.15 MPa (601psi), over current protection for the inverter and for the PCB, and over heat protection for the inverter and the compressor.

4.5. INDOOR UNIT TYPES

Indoor Unit – 4-Way Cassette

1. General:

    1. The unit shall have the ability to be recessed into the ceiling with a ceiling grill and shall be a 4-way air distribution type.

    2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.

    3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.

    4. The 4-way cassette shall be equipped with an electronic expansion valve.

    5. All sizes of 4-Way Cassettes shall be equipped with a built-in condensate pump with 33.5” lift.

    6. The unit shall have an automatic louver control.

7. The 4-way cassette shall be able to be configured for 2-way or 3-way airflow as well.

8. The 4-way cassette shall be available with optional energy-saving motion and radiant heat sensor for optimized airflow and temperature control.

2. Performance:

1. Each 4-way cassette's performance is based on nominal operating conditions shown in mechanical schedules.

3. Unit Cabinet:

1. The unit cabinet shall be space saving and have the ability to be recessed into a ceiling.

2. The 4-way panel shall be affixed to the bottom of the unit allowing for 4-way airflow.

3. The 4-way cassette (without panel) shall be no larger than 11-23/32" x 33-5/64" x 33-5/64" and weigh no more than 57 lbs.

4. An outside air knockout shall exist to for branch ducting supply air.

4. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.

2. The 4-way cassette shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

5. Filter

1. The standard 1" air filter shall be of a washable type.

6. Sound:

1. The 4-way cassette sound pressure shall range 27 dB(A) to 35 dB(A) at low speed.

7. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.

2. The 4-way cassette shall have an acceptable voltage range of 187-255V.

3. The control circuit between the units in the system shall use AWG18-2 type control wire.

Indoor Unit – Wall Mount

1. General:

1. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.

2. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.

3. The unit shall have an automatic wide angle louver control.

4. The unit shall have a removable front panel for easy cleaning.

5. The unit shall have an auto-swing function to ensure efficient air distribution and uniform temperature.

6. The unit shall have a built-in wireless sensor.

2. Performance:

1. Each wall mount indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

3. Unit Cabinet:

1. The wall mount indoor unit shall be no larger than 11-13/16" x 43-3/16" x 10-5/8" and weigh no more than 38 lbs.

2. The unit shall be affixed to a separate galvanized steel back plate to secure the unit firmly to the wall.

4. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.

2. The wall mount shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

5. Filter

1. The standard 1" air filter shall be of a washable type.

6. Sound:

1. The wall mount indoor unit sound pressure shall range 30 dB(A) to 41 dB(A) at low speed.

7. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.

2. The wall mount indoor unit shall have an acceptable voltage range of 187-255V.

3. The control circuit between the indoor units shall use AWG18-2 type control wire.

8. Piping:

1. Refrigerant and drain piping shall have the ability to be connected at the right, left or

rear of the unit for ease of installation.

Indoor Unit – Ducted Medium Static

1. General:

    1. The ducted medium static indoor unit shall be a built-in ceiling type.

    2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.

    3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.

    4. All sizes of Ducted Medium Static units shall be equipped with a built-in condensate pump with 25” minimum drain lift.

    5. The unit shall have bottom access for easy service and troubleshooting.

2. Performance:

    1. Each ducted medium static indoor unit’s performance is based on nominal operating conditions shown in the mechanical schedules.

3. Unit Cabinet:

    1. The cabinet shall be ceiling-concealed and ducted to the supply and return openings.

    2. The ducted medium static indoor unit shall be no larger than 9-13/16” x 55-1/8” x 31-1/2” and weigh no more than 97 lbs.

4. Fan:

    1. Unit shall be equipped with a brushless DC fan motor drive.

    2. The ducted medium static indoor unit shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

5. Filter

6. 4” Deep Filter box with high efficiency 2” thick filters (MERV 13) shall provided for each unit.

7. Sound:

    1. The ducted medium static indoor unit sound pressure shall range 27 dB(A) to 34 dB(A) at low speed.

8. Electrical:

    1. The unit shall be 208-230V, 1 phase, 60 Hertz.

2. The ducted medium static indoor unit shall have an acceptable voltage range of 187-255V.

3. The control circuit between the units in the system shall use AWG18-2 type control wire.

9. Static Pressure

1. The ducted medium static indoor unit shall have adjustable static pressure up to .6 in WG.

PART 5- CONTROLLERS

5.1. CIW04-H -WIRED ZONE CONTROLLER

1. Backlit display
2. Built-in thermistor
3. Standard wall controller
4. Controls temperature, mode, fan speed
5. Seven-day timer with multiple setpoints
6. Controls up to 16 indoor units
7. Built-in 23-hour timer
8. Room name and service company name programmable
9. Help menus and error code diagnosis
10. Large LCD display permits users to see the operating conditions and settings
11. The timer can be set at half-hour intervals
12. Monitors the operating conditions in the system, and an alarm is issued if a problem occurs.
13. A “self-diagnosis function” checks for problems on:
    1. printed boards in indoor and
    2. outdoor units
14. Temperature range limit
15. Individual function lockout. (mode, temperature, fan speed)

PART 6 - EXECUTION

6.1. INSTALLATION

1. Install in accordance with manufacturer's instructions and as specified.

2. Install refrigerant lines between indoor and outdoor units.

3. Provide control wiring and power supply.

4. Test unit at outdoor conditions of 22°C (72°F) or higher for minimum of 4 hours with interruption in 15 minute intervals in last hour.

5. Provide a condensate drain from indoor unit to nearest drain line or sanitary fixture upstream of trap. In absence of nearby drainage, provide drain line to outside.

6. Provide safety disconnect switches at indoor and outdoor units.

6.2. COMMISSIONING

1. Demonstrate to Owner's staff, unit operation including controls.

2. Perform unit start-up by manufacturer's representative. (provide at least two site visits. 8H each by manufacturers technician and follow-up visits as required to leave systems fully functional) .

END OF SECTION 15784

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do work in accordance with:
    1. SMACNA HVAC Duct Construction Standards, Metal and Flexible, 2005.
    2. SMACNA HVAC Duct Leakage Test Manual, 2012 Edition.
    3. ASHRAE Handbook, Fundamentals, and Systems Volumes.
    4. LEED Canada for New Construction and Major Renovations 2009.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings and product data in accordance with Section 01300 - Submittals.
2. Indicate following:
    1. Sealants
    2. Tape
    3. Proprietary Joints

1.4. CERTIFICATION OF RATINGS

1. Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.

PART 2– PRODUCTS

2.1. CLASSIFICATION

1. Ductwork classification as follows:

Maximum Pressure		SMACNA Seal
Pa	" WG	Class

500	2	B
250	1	C
125	0.5	C

2.2. SEAL CLASSIFICATION

1. Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.

2. Class B: longitudinal seams, transverse joints and connections made airtight with sealant tape or combination thereof.

3. Class C: transverse joints and connections or made air tight with gaskets, sealant tape or combination thereof. Longitudinal seams unsealed.

4. Unsealed seams and joints.

2.3. SEALANT

1. Sealant: water based polymer type flame resistant duct sealant. Temperature range of minus 30°C to plus 93°C.

    1. Acceptable material: Duro-Dyne DWN/water based, 3M Fastbond 900.

2.4. TAPE

1. Tape: polyvinyl treated, open weave fiberglass tape, 50 mm (2") wide.

    1. Acceptable material: Duro-Dyne

2.5. DUCT LEAKAGE

1. In accordance with SMACNA HVAC Duct Leakage Test Manual, 2012 Edition.

2. In accordance with ASHRAE 90.1

2.6. FITTINGS

1. Fabrication: to SMACNA.

2. Radiused elbows: standard radius and or short radius with single thickness turning vanes.

3. Square elbows: to 460 mm (18") with single thickness turning vanes.

4. Square elbows: over 460 mm (18") with double thickness turning vanes.

5. Main supply duct branches with splitter damper.

6. Sub branch duct with 45° entry and balancing damper on branch or sub branch duct with square connection, volume extractor and branch duct balancing damper.

7. Transitions:

    1. Diverging: 20° maximum included angle.

    2. Converging: 30° maximum included angle.

8. Offsets: square elbows or full radiused elbows.

9. Obstruction deflectors: maintain full cross-sectional area. Maximum included angles as for transitions.

2.7. FIRESTOPPING

1. Retaining angles all around duct, on both sides of fire separation.

2. Firestopping material and installation must not distort duct.

2.8. GALVANIZED STEEL

1. Lock forming quality: to ASTM A525M-86, Z90 zinc coating.

2. Thickness: to ASHRAE and SMACNA.

3. Fabrication: to ASHRAE and SMACNA.

4. Joints: to ASHRAE and SMACNA or proprietary manufactured duct joint.

    1. Acceptable material: Duct-Mate

2.9. HANGERS AND SUPPORTS

1. Strap hangers: of same material as duct, but next sheet metal thickness heavier than duct.

2. Hanger configuration: to ASHRAE and SMACNA. Maximum size duct supported by strap hanger 20".

3. Hangers: galvanized steel angle with black steel rods to ASHRAE and SMACNA.

PART 3– EXECUTION

3.1. GENERAL

1. Install ducts in accordance with ASHRAE and SMACNA.

2. Do not break continuity of insulation vapour barrier with hangers or rods. Insulate strap hangers 100 mm (4") beyond insulated duct.

3. Support risers in accordance with ASHRAE and SMACNA.

4. Install breakaway joints in ductwork on each side of fire separation.

3.2. HANGERS

1. Strap hangers: install in accordance with SMACNA.

2. Angle hangers: complete with locking nuts and washers.

3. Hanger spacing: in accordance with ASHRAE.

3.3. WATERTIGHT DUCT

1. Provide watertight duct for:

    1. Fresh air intake.

    2. Range hood exhaust.

    3. Dishwasher exhaust

    4. Shower areas.

    5. As indicated.

2. Form bottom of horizontal duct without longitudinal seams. Seal all other joints with duct sealer.

3. Slope horizontal branch ductwork down towards hoods served. Slope header ducts down toward risers.

4. Fit base of riser with 100 mm (4") deep drain sump and 1 1/4" drain connected, with deep seal trap and discharging to open funnel drain.

3.4. LEAKAGE TESTS

1. In accordance with SMACNA HVAC Duct Leakage Test Manual, 2012 Edition.

2. Make trial leak test to demonstrate workmanship.

3. Install no additional ductwork until trial test has been passed.

4. Test section minimum of 30 m (100') long with not less then 3 branch takeoffs and 2 90° elbows.

5. Conduct leak testing in accordance with Air Balance Council (AABC) recommended procedures – See Section 15990.

3.5. SEALING AND TAPING

1. Apply sealant to outside of joint to manufacturer's recommendations.

2. Bed tape in sealant and recoat with minimum of 1 coat of sealant to manufacturer’s recommendations.

END OF SECTION 15891

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do work in accordance with the following standards except where specified otherwise:
    1. CAN/ULC S110-13 for fire tests for air ducts.
    2. UL 181-2013 for factory made air ducts and connectors.
    3. NFPA 90A-2012 for installation of air conditioning and ventilating systems.
    4. NFPA 90B-2012 for installation of warm air heating and air conditioning systems.
    5. SMACNA HVAC Duct Construction Standards - Metal and Flexible, 2020.
    6. LEED Canada for New Construction and Major Renovations 2009.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.
2. Indicate the following:
    1. Thermal properties.
    2. Friction loss.
    3. Acoustical loss.
    4. Leakage.
    5. Fire rating.

1.4. CERTIFICATION OF RATINGS

1. Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.

1.5. SAMPLES

1. Submit samples with product data of each different type of flexible duct being used in

accordance with Section 01300 - Submittals.

PART 2– PRODUCTS

2.1. GENERAL

1. Factory fabricated.
2. Pressure drop coefficients listed below are based on relative sheet metal duct pressure drop coefficient of 1.00.
3. Flame spread rating not to exceed 25. Smoke developed rating not to exceed 50.

2.2. METALLIC - INSULATED

1. Spiral wound flexible aluminum with factory applied flexible glass fibre thermal insulation with vapour barrier and aluminum jacket.
2. Performance:
    1. Minimum working pressure: 2500 Pa (10" WG)
    2. Maximum relative pressure drop coefficient: 3.
3. Acceptable material: Flexmaster

PART 3– EXECUTION

3.1. DUCT INSTALLATION

1. Install where indicated and in accordance with SMACNA.
2. Support in accordance with SMACNA.
3. Maximum length of flexible duct: 1.8 m, 6' for diffuser / grille duct connection.

END OF SECTION 15893

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.
2. Indicate the following:
    1. Flexible connections.
    2. Sealants and tapes.
    3. Duct access doors.
    4. Turning vanes.
    5. Instrument test ports.

1.3. CERTIFICATION OF RATINGS

1. Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.

PART 2– PRODUCTS

2.1. FLEXIBLE CONNECTIONS

1. Frame: galvanized sheet metal frame 16 GA, 1.6 mm, with fabric clenched by means of double locked seams.
2. Material:
    1. Fire resistant, self extinguishing, neoprene coated glass fabric, temperature rated at minus 40°F to plus 200°F, density of 0.3 lb/sq.ft.
    2. Flame resistant, 0.56 mm thick vinyl coated fabric, 12 kg/m^3 fibreglass insulation for operation of 82°C continuous – connections for insulated duct system, less than 250 mm dia or less than 300 mm – negative pressure duct connection.
        1. Duro-Dyne-Insulflex

3. Silicon rubber coated woven fibreglass fabric to UL 214 for operation up to 260°C – for fume hood exhaust systems.

    1. Duro-Dyne-Thermafab.

2.2. ACCESS DOORS IN DUCTS

1. Non-insulated ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame.

2. Insulated ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame and 25 mm thick rigid glass fibre insulation.

3. Gaskets: neoprene or foam rubber.

4. Hardware:

    1. Up to 250 mm x 250 mm, 12 x 12": 2 sash locks complete with safety chain.

    2. 275 to 460 mm, 13 to 18": 4 sash locks complete with safety chain.

    3. 485 mm to 910 mm, 19 to 36": piano hinge and minimum 2 sash locks.

    4. Doors over 920 mm, 37": piano hinge and 2 handles operable from both sides.

    5. Hold open devices.

    6. 250 mm x 250 mm, 12" x 12": glass viewing panels.

2.3. TURNING VANES

1. Factory or shop fabricated single thickness and double thickness with trailing edge, to recommendations of SMACNA and as indicated.

2.4. INSTRUMENT TEST PORTS

1. 1.6 mm, 16 GA steel zinc plated after manufacture.

2. Cam lock handles with neoprene expansion plug and handle chain.

3. 1" minimum inside diameter. Length to suit insulation thickness.

4. Neoprene mounting gasket.

PART 3– EXECUTION

3.1. INSTALLATION

1. Flexible connections.
    1. Install in following locations:
        1. Inlets and outlets to supply air units and fans.
        2. Inlets and outlets of exhaust and return air fans.
        3. As indicated.
    2. Length of connection: 6" (150 mm)
    3. Minimum distance between metal parts when system in operation: 3" (75 mm)
    4. Install in accordance with recommendations of SMACNA.
    5. When fan is running:
        1. Ducting on each side of flexible connection to be in alignment.
        2. Ensure slack material in flexible connection.
2. Access doors:
    1. Size: to allow inspection and servicing.
    2. Location:
        1. At fire and smoke dampers.
        2. At control dampers.
        3. At devices requiring maintenance.
        4. At locations required by code.
        5. At reheat coils.
        6. As indicated.
3. Instrument test ports.
    1. General:
        1. Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.
    2. Locations.
        1. For traverse readings:
        2. At ducted inlets to roof and wall exhausters.

1. At inlets and outlets of other fan systems.
2. At main and sub-main ducts.
3. And as indicated.

3. For temperature readings:

1. At outside air intakes.
2. In mixed air applications in locations as approved by Consultant.
3. At inlet and outlet of coils.
4. Downstream of junctions of two converging air streams of different temperatures.
5. And as indicated.

4. Turning vanes.

1. Install in accordance with recommendations of SMACNA and as indicated.

END OF SECTION 15911

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCE STANDARDS

1. Do work in accordance with SMACNA HVAC Duct Construction Standards, Metal and Flexible, 1995, except where specified otherwise.

2. LEED Canada for New Construction and Major Renovations 2009.

1.3. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.

PART 2– PRODUCTS

2.1. SPLITTER DAMPERS

1. Of same material as duct but one sheet metal thickness heavier.

2. Single thickness construction.

3. Control rod with locking device.

4. Bend end of rod to prevent end from entering duct.

5. Pivot: piano hinge.

2.2. SINGLE BLADE DAMPERS

1. Of same material as duct, but one sheet metal thickness heavier. V-groove stiffened.

2. Size and configuration to recommendations of SMACNA, except maximum height 9", 225 mm.

3. Locking quadrant.

4. Inside and outside end bearings.

2.3. MULTI-BLADED DAMPERS

1. Factory manufactured of material compatible with duct.

2. Opposed blade: configuration to recommendations of SMACNA.

3. Maximum blade height: 4", 100 mm.

4. Bearings: pin in bronze bushings.

5. Linkage: shaft extension with locking quadrant.

6. Channel frame of same material as adjacent duct, complete with angle stop.

PART 3– EXECUTION

3.1. INSTALLATION

1. Install at each take off and where indicated.

2. Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.

3. For supply, return and exhaust systems, volume dampers are to be located in each branch duct. Each grille, register and diffuser connection to have volume damper located as close as possible to main ducts.

END OF SECTION 15912

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. ASTM A525M-87, Specification for General Requirements for Steel and Extruded Aluminum frame.
2. American Society for Testing and Materials International (ASTM)
    1. ASTM A 653/A653M-04a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
3. Health Canada/Workplace Hazardous Materials Information System (WHMIS).
    1. Material Safety Data Sheets (MSDS).
4. LEED Canada for New Construction and Major Renovations 2009.

1.3. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.
2. Indicate the following:
    1. Pressure drop curve.
    2. Free area.

1.4. CERTIFICATION OF RATINGS

1. Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or those ordered by him from independent testing agency.

PART 2– PRODUCTS

2.1. MULTI-LEAF DAMPERS

1. Use opposed for mixing duty, parallel for tight shut-off.
2. Extruded aluminum, interlocking blades, complete with butyl rubber, extruded vinyl seals or

neoprene on blade edges and frames top and bottom and side seals.

3. Thermally broken frames and blades, frames insulated with extruded polystyrene foam with 12 2.19 or better, blades constructed from aluminum extension with internal hollows insulated with polyurethane or polystyrene foam RSI 0.88.

4. Pressure fit self-lubricated bronze bearings.

5. Linkage: plated steel tie rods, brass pivots and plated steel brackets, complete with plated steel control rod.

6. Operator: 24 V electric actuator with spring return for "fail safe" – supplied by control contractor.

7. Performance: leakage in closed position to be less than 2% of rated air flow at 1200 kPa differential across damper. Pressure drop at full open position to be less than 25 Pa differential across damper at maximum air flow.

8. Acceptable Products for insulated dampers to be Tamco 9000BF, Nailor 2020IBF, Alumavent 3960. Acceptable Products for non-insulated dampers to be Tamco 1000, Nailor 2020IB, Alumavent 3100.

2.2. BACK AND RELIEF DRAFT DAMPERS

1. Automatic gravity operated, multi-single leaf, aluminum construction with nylon bearings, centre pivotted, spring assisted.

PART 3– EXECUTION

3.1. INSTALLATION

1. Install where indicated. Provide insulated dampers on all ducts leading to outside.

2. Install in accordance with recommendations of SMACNA and manufacturer's instructions.

3. Seal multiple damper modules with silicon sealant.

4. Upon system start-up, ensure that dampers operate properly.

END OF SECTION 15913

PART 1– GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. NFPA 90A-2012, Installation of Air Conditioning and Ventilating Systems.
2. CAN/ULC-S112-10, Fire Test of Fire Damper Assemblies.
3. CAN/ULC-S112.2-07, Fire Test of Ceiling Firestop Flap Assemblies.
4. ULC-S505-1974, Fusible Links for Fire Protection Service.
5. LEED Canada for New Construction and Major Renovations 2009.

1.3. PRODUCT DATA

1. Submit product data in accordance with Section 01300 - Submittals.
2. Indicate the following:
    1. Fire dampers.
    2. Smoke dampers.

1.4. MAINTENANCE DATA

1. Provide maintenance data for incorporation into manual specified in Section 01300 - Submittals.
2. Provide following:
    1. 6 fusible links of each type.

1.5. CERTIFICATION OF RATINGS

1. Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or those ordered by him from independent testing agency signifying adherence to codes and standards.

PART 2– PRODUCTS

2.1. FIRE DAMPERS

1. Fire dampers: listed and bear label of ULC and meet requirements of provincial fire authority and NFPA 90A - to be dynamic type.

2. Mild steel, factory fabricated for fire rating requirement to maintain integrity of fire wall and/or fire separation.

3. Top hinged: interlocking type sized to maintain full duct cross section.

4. Fusible link actuated, weighted to close and lock in closed position when released or having negator-spring-closing operator for multi-leaf type or roll door type in horizontal position with vertical air flow.

5. 40 x 40 x 3 mm (1 1/2" x 1 1/2" x 1/8") retaining angle iron frame, on full perimeter of fire damper, on both sides of fire separation being pierced.

6. Acceptable material: Ruskin, Alumavent, Nailor.

PART 3– EXECUTION

3.1. INSTALLATION

1. Install in accordance with NFPA 90A and in accordance with conditions of ULC listing.

2. Fire damper assemblies to be fire tested in accordance with CAN/ULC-S112.

3. Fire stop flap assemblies to be fire tested in accordance with CAN4-S112.2.

4. Maintain integrity of fire separation.

5. After completion and prior to concealment obtain approvals of complete installation from authority having jurisdiction.

6. Install access door adjacent to each damper. See Section 15911 - Duct Accessories.

7. Coordinate with installer of firestopping.

8. Select interlocking curtain type blade damper frames as follows; (Width is duct dimension parallel to blades. Height is duct dimension perpendicular to blades.)

    1. Type A - folded blades completely within airstream:

        1. for rectangular ducts with both height and width greater than 300 mm, and where duct velocity is less than 7.5 m/s.

    2. Type B - folded blades out of airstream:

        1. for rectangular ducts 200 mm to 350 mm in height and width greater than 200 mm, and where duct velocity is less than 7.5 m/s.

3. Type C – folded blades and damper frame shielded with airstream impingement:

    1. for circular or flat oval ducts

    2. for rectangular duct less than 200 mm in height

    3. for rectangular duct less than 350 mm in height when width is less than 200 mm, and

    4. for rectangular ducts where duct velocity is greater than 7.5 m/s.

END OF SECTION 15914

PART 1– GENERAL

1.1. SHOP DRAWINGS

1. Submit shop drawings and technical information in accordance with Section 01300 - Submittals.

2. Clearly indicate the following: material, gauge, finish, ratings and accessories.

1.2. RELATED WORK

1. Low Pressure Ductwork - Section 15891.

2. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.3. MANUFACTURED ITEMS

1. Grilles, registers and diffusers shall be product of one manufacturer.

1.4. CERTIFICATION OF RATINGS

1. Catalogued or published ratings shall be those obtained from tests carried out by an independent testing agency signifying adherence to applicable codes and standards.

PART 2– PRODUCTS

2.1. GRILLES, REGISTERS AND DIFFUSERS GENERAL

1. Sizes indicated are nominal. Provide correct standard product nearest to nominal for capacity noise level, throat and outlet velocity.

2. Furnish factory prime coated steel frames for setting into fire protecting membrane.

3. Where penetrating fire partitions, provide approved steel sleeve attached to structure and secured in accordance with NFPA 90.

4. Frame:

    1. Steel: Prime coated, cold rolled steel with exposed joints welded and ground flush, mitred corners and completely closed.

    2. Provide full perimeter sponge rubber gaskets.

3. Provide plaster frame or gypsum board.

4. Provide concealed fasteners and operators.

5. Sizes and capacities: as indicated.

6. Standard of Acceptance: E.H. Price, Krueger, Titus, Nailor Industries, Metal Aire, Tuttle and Bailey.

2.2. SUPPLY GRILLES AND REGISTERS

1. Double deflection with horizontal face and vertical rear bars or as indicated in schedule.

2. Steel or aluminum construction.

2.3. EXHAUST GRILLES AND REGISTERS

1. Single deflection, horizontal adjustable bar type or as indicated in schedule.

2. Steel or aluminum construction.

2.4. AIR DIFFUSERS

1. Square, rectangular or linear with removable, flow straightening core and blank-off quadrants.

2. Steel or aluminum construction.

2.5. FINISHES

1. Primer: to CGSB 1-GP-40M, off white.

2. Enamel: to CGSB 1-GP-88E, off white.

PART 3– EXECUTION

3.1. INSTALLATION

1. Install in accordance with manufacturers instructions.

2. Fit frame with gasket to prevent leakage, and smudging.

3. Install with flat head screws in countersunk holes where fastenings are visible.

4. Diffusers to be installed with concealed fastenings.

END OF SECTION 15942

PART 1 - TAB AGENCY

1. General:
    1. The basic testing and balancing shall be provided by Division 15 and in accordance with this Section.
    2. The independent TAB Agency employed and paid by Division 15 will be providing the final testing and balancing.
    3. Division 1, General Requirements is part of this Section and shall apply as if repeated here.
2. Quality assurance:
    1. TAB to be performed to standards of ASHRAE.
3. Co-ordination:
    1. Co-ordinate all work specified in this Section.
    2. Provide all facilities required by TAB Agency in order to carry out work of this Section.
4. Adequacy of work for TAB:
    1. TAB Agency to review contract documents before work is started and confirm in writing to Consultant adequacy of provisions for TAB and all other aspects of installation pertinent to TAB.
    2. Division 15 shall provide equipment commissioning and preliminary balancing and confirm the proper operation of all systems.
5. List of TAB Agencies:
    1. ABG Air Balance Group
    (416) 283-0637
    2. Aerodynamics Inspecting Consultants Ltd.
    (905) 625-4388
    3. Design Test Balance
    (905) 886-6513

PART 2 - GENERAL

1. TAB: means to test, adjust and balance all systems to perform in accordance with Contract Documents.
2. Follow start-up procedures as recommended by manufacturer unless otherwise specified.

3. Special start-up procedures may be specified elsewhere.

4. Notify Consultant 7 days prior to start of TAB.

5. Operate all systems to permit TAB to be performed.

6. TAB to apply to systems, equipment and related controls specified in Division 15.

7. Reference organization standards:

    1. Do TAB over entire operating range in accordance with most stringent conditions of this specification and standard of following organization.

8. Alternate season testing to be provided by TAB Contractor where applicable.

9. TAB Contractor to inspect site during construction in order to assure that all balancing devices are installed properly and in pre-selected locations.

10. Mechanical contractor to provide the TAB contractor with all related approved shop drawings and change notices.

11. Start TAB only when building is essentially completed, including:

    1. Installation of ceilings, doors, windows and other construction affecting TAB.

    2. Application of sealing, caulking and weatherstripping.

    3. All pressure, leakage and other tests specified elsewhere in Division 15 completed.

    4. All provisions for TAB are installed and operational.

12. Start-up, verification for proper, safe and normal operation of mechanical and associated electrical and control systems affecting TAB including, but not limited to, the following:

    1. Proper thermal overload protection in place for electrical equipment.

    2. Air Systems:

        1. Filters in place and in clean condition.

        2. Duct systems clean of debris.

        3. Air shafts, ceiling plenums are airtight to within specified tolerances.

        4. Correct fan rotation.

        5. Fire and volume dampers in place and open.

        6. Coil fins cleaned and combed.

        7. Access doors closed and duct end caps in place.

8. All outlets installed and connected.

13. Accuracy tolerances:

    1. Do TAB to following tolerances of design values:

        1. HVAC systems: Plus 5%; minus 5%.

        2. As original tolerances.

        3. Measurements to be accurate to within plus or minus 2% of actual values.

    2. Instrument calibration: to be in accordance with TAB referenced organization standard, but within 3 months of commencement of TAB.

14. Submittals prior to commencement of TAB:

    1. Proposed methodology and procedures for performing TAB.

    2. Proposed check lists and report forms.

    3. List of instrumentation, including details and certificates of calibration.

15. Report:

    1. Format to be in accordance with TAB referenced organization standard, but using SI units.

    2. Report to include as built full system schematics showing results of TAB.

    3. Submit, prior to formal submission of TAB reports, for checking and approval by Consultant, sample of rough TAB sheets. Include:

        1. Details of instruments used.

        2. Details of TAB procedures employed.

        3. Calculations procedures.

        4. Summaries.

    4. Submit 3 copies of TAB reports, each in "D" ring binders, complete with index tabs for verification and approval of Consultant.

16. Verification:

    1. Reported measurements shall be subject to verification by Consultant. Provide instrumentation and manpower to verify results of up to 30% of all reported measurements. Number and location of verified measurements to be at discretion of Consultant.

    2. Bear costs to repeat TAB, as required, to satisfaction of Consultant.

1. Settings: lock and permanently mark settings as required by reference standard.

2. Completion: TAB to be considered complete only when final reports are approved by Consultant.

PART 3 - AIR MOVING SYSTEMS

1. General: measurements as required by referenced organization standards, including, but not limited to, following:

    1. Measurements:

        1. Air velocity.

        2. Static pressure.

        3. Velocity pressure.

        4. Temperature:

            1. Dry bulb.

        5. Cross sectional area.

        6. RPM.

        7. Electrical power:

            1. Voltage
            2. Current draw.

2. Location of equipment measurements:

    1. Inlet and outlet of each:

        1. Fan.

        2. Coil.

        3. Filter.

        4. Damper.

        5. Humidifiers.

        6. Terminal Units.

        7. Other auxiliary equipment.

3. Location of system measurements at:

    1. Main ducts.

2. Main branch ducts.

3. Sub-branch ducts.

4. Each supply, exhaust and return air inlet and outlet.

5. Other auxiliary equipment.

6. All areas served by system.

7. Each thermostatically controlled zone.

PART 4 - BUILDING GENERALLY

1. Measure DBT, WBT, %RH, air velocity, air flow patterns, and noise data in occupied zone of all occupied areas.

END OF SECTION 15990

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.
2. This Section covers items common to Sections of Division 16. This Section supplements requirements of Division 1.
3. Coordinate all requirements with general contractor.

1.2. CODES AND STANDARDS

1. In this document, all references to Code numbers shall mean “Latest Edition”.
2. Do complete installation in accordance with Ontario Electrical Safety Code.
3. Do complete installation in accordance with CSA C22.1-12 except where specified otherwise.
4. Comply with all CSA and inspection Authority Bulletins in force at time of Tender.
5. Do overhead and underground systems in accordance with CSA C22.3 No.1-10 except where specified otherwise.
6. Abbreviations for electrical terms: to CSA Z85-1983.
7. Where requirements of this specification exceed those of above mentioned standards, this specification shall govern.

1.3. DEFINITIONS

1. “Provide” means supply and install.
2. “Approved” means approved in writing by Consultant.
3. “Inspection Authority” means Electrical Safety Authority.
4. “Supply Authority” means North Bay Hydro.
5. “Consultant” means designated qualified professional engineer acting as representative of Owner for monitoring of work.
6. “Manual” means Operations and Maintenance manual.
7. “OESC” means latest edition of Ontario Electrical Safety Code

1.4. CARE, OPERATION, START-UP AND INSTRUCTION TO OWNERS

1. Provide certified personnel to instruct Owner of operation of electrical equipment. Provide maintenance specialist personnel to instruct on maintenance and adjustment of electrical equipment and any changes or modification of equipment must be under terms of guarantee.

2. Provide instruction during regular work hours prior to acceptance and turn over to Owner's staff for regular operation.

3. Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

4. Use operation and maintenance data manual for instruction purposes. On completion of instruction, turn three manuals over to the Owner.

5. Operation and maintenance manual to be approved by and final copies deposited with Consultant before final inspection.

1.5. AS-BUILT DRAWINGS

1. Site records:

    1. One set to be kept on site and all changes to be recorded on daily basis. At the completion of the project, all changes shall be transferred to clean set, signed and passed to the Consultant.

    2. Make these drawings available for reference purposes and to inspection at all times.

2. As-built drawings must be delivered before system acceptance.

1.6. VOLTAGE RATINGS

1. Operating voltages: to CAN3-C235-83 (R2006).

2. Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.7. PERMITS, FEES AND INSPECTION

1. Submit to Inspection Authority and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.

2. Consultant will provide drawings and specifications required by Inspection Authority and Supply Authority at no cost.

3. Submit Notice of Project to Ministry of Labour.

4. Pay associated fees and obtain all permits required for the performance of the work.

5. Notify Consultant of changes required by Inspection Authority prior to making changes.

6. Furnish Certificates of Acceptance from Inspection Authority on completion of work to Consultant.

7. Where partial occupancy is required, additional Inspection Authority inspections and reports shall be provided at no additional cost to the contract.

1.8. MATERIALS AND EQUIPMENT

1. Provide materials and equipment in accordance with Division 1.

2. Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Inspection Authority.

3. Factory assemble control panels and component assemblies.

1.9. ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

1. Verify installation and co-ordination responsibilities related to motors, equipment and controls with other trades and as indicated.

2. Mechanical contractor shall supply and install all motors, controls and control wiring. Mechanical contractor shall supply all disconnect switches, starters, motor rated switches, contactors and relays, for all motor driven equipment under mechanical contract. All disconnect switches, starters, motor rated switches, contactors and relays shall be handed over to electrical contractor for installation and wiring. Both mechanical and electrical contractors to coordinate to ensure proper protection and equipment is provided and included in contract.

3. Control wiring and conduit to be installed in accordance with Section 16111 and 16122, except for connections below 50V which are related to control systems specified in mechanical sections and as shown on mechanical drawings.

4. Electrical equipment not supplied by mechanical contractor is listed on the drawings or elsewhere in the specifications. Electrical contractor to coordinate with mechanical contractor to ensure proper protection and equipment is provided for all equipment and is included in Contract.

1.10. FINISHES

1. Apply at least one coat of corrosion resistant primer paint to supports, and equipment fabricated from ferrous metals.

2. Restore to new condition, finishes which have been damaged too extensively to be merely primed and touched up.

3. Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

4. Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

1.11. EQUIPMENT IDENTIFICATION

1. Identify electrical equipment with nameplates and labels as follows:

2. Nameplates:

    1. Lamacoid 3 mm (1/8") thick plastic engraving sheet, white face, black core, mechanically attached with self tapping screws. For emergency power circuits, use a red face and black core.

NAMEPLATE SIZES

Size 1	10 x 50 mm (3/8 x 2")	1 line	3 mm (1/8") high letters
Size 2	12 x 70 mm (1/2 x 3")	1 line	5 mm (1/4") high letters
Size 3	12 x 70 mm (1/2 x 3")	2 lines	3 mm (1/8") high letters
Size 4	20 x 90 mm (3/4 x 4")	1 line	8 mm (3/8") high letters
Size 5	20 x 90 mm (3/4 x 4")	2 lines	5 mm (1/4") high letters
Size 6	25 x 100 mm (1" x 4")	1 line	12 mm (1/2") high letters
Size 7	25 x 100 mm (1" x 4")	2 lines	6 mm (1/4") high letters

3. Labels:

    1. Embossed plastic labels with 6 mm (1/4") high letters unless specified otherwise.

4. Wording on nameplates and labels to be approved by Consultant prior to manufacture.

5. Allow for average of twenty-five (25) letters per nameplate and label.

6. Identification to be English.

7. Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

8. Disconnects, starters and contactors: indicate equipment being controlled and voltage.

9. Terminal cabinets and pull boxes: indicate system and voltage.

10. Coordinate names of equipment and systems with Division 15 to ensure that identical names are used.

1.12. WIRING IDENTIFICATION

1. Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

2. Maintain phase sequence and colour coding throughout.

3. Colour code: to CSA C22.1.

4. Use colour coded wires in communication cables, matched throughout system.

1.13. CONDUIT AND CABLE IDENTIFICATION

1. Colour code conduits, boxes and metallic sheathed cables.

2. Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.

3. Colours: 25 mm (1") wide prime colour and 20 mm (3/4") wide auxiliary colour.

	PRIME	AUXILIARY
up to 250 V	yellow	
up to 600 V	yellow	green
up to 5 kV	yellow	blue
up to 15 kV	yellow	red
Telephone	green	
Other communication systems	green	blue
Fire alarm	red	
Emergency Voice	red	blue
Other security systems	red	yellow

1.14. WIRING TERMINATIONS

1. Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

1.15. MANUFACTURERS AND CSA LABELS

1. Ensure that manufacturer's registration plates are properly affixed to all apparatus showing the size, name of equipment, serial number, and all information usually provided, including voltage, cycle, phase and the name and address of the manufacturer.

2. Do not paint over registration plates or approved labels. Leave openings through insulation for viewing the plates. Contractors or sub-contractors nameplate not acceptable.

1.16. WARNING SIGNS

1. As specified and to meet requirements of Inspection Authority and Consultant.

1.17. SINGLE LINE ELECTRICAL DIAGRAMS

1. Provide single line electrical diagrams under plexiglass in glazed frames as follows:

    1. Electrical distribution system: locate in main electrical room.

2. Drawings: 600 x 600 mm (24" x 24") minimum size.

1.18. LOCATION OF OUTLETS

1. Locate outlets as shown on drawings.

2. Do not install outlets back-to-back in wall; allow minimum 150 mm (6") horizontal clearance between boxes.

3. Change location of outlets at no extra cost or credit, providing distance does not exceed 3 m (10 ft) and information is given before installation.

4. Locate light switches on latch side of doors. Locate disconnect devices in mechanical rooms on latch side of door.

5. Provide T-bar grid support brackets for installations on T-bar ceiling.

1.19. MOUNTING HEIGHTS

1. Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

2. If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

3. Install electrical equipment at following heights unless indicated otherwise.

    1. Local switches: 1100 mm (43")

    2. Wall receptacles:

        1. General: 400 mm (16")

        2. Above top of continuous baseboard heater: 200 mm (8")

        3. Above top of counters or counter splash backs: 175 mm (7")

        4. In mechanical rooms: 1400 mm (55")

    3. Panelboards to top of trim: 1800 mm (72”)

    4. Telephone outlets: 400 mm (16")

    5. Wall mounted telephone outlets: 1200 mm (47")

    6. Emergency lighting heads: 2300 mm (90")

    7. Emergency Call Button:

        1. With centre located not less than 1000 mm and not more than 1100 mm from the floor or ground.

        2. Emergency Sign to be located directly above button

    8. Barrier-free Door Operators:

        1. Provide 100 mm x 100 mm junction;

2. With centre located not less than 1000 mm and not more than 1100 mm from the floor or ground; and

3. Be located not less than 600 mm beyond the door swing where the door opens towards the control.

1.20. LOAD BALANCE

1. Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

2. Submit, at completion of work, report listing phase and neutral currents on panelboards operating under normal load. State hour and date on which each load was measured, and voltage at time of test.

1.21. SLEEVES

1. Provide pipe sleeves at points where conduits (53 mm and larger) pass through masonry or concrete.

2. Provide sleeves of minimum 1.0 mm (20 GA) galvanized sheet steel with lock seam joints.

3. Use cast iron or steel pipe sleeves with annular fin continuously welded at mid-point.

    1. Through foundation walls.

    2. Where sleeve penetrates fire rated wall or floor ceiling assembly.

4. Sizes:

    1. Provide 5 mm (1/4") clearance all around, between sleeves and conduits.

    2. Where piping passes below footings, provide min clearance of 50 mm (2") between sleeve and conduit. Fill void with elastic, waterproof material. Backfill up to underside of footing with concrete of same strength as footing.

5. Fill voids around pipes. Remove plastic sleeves.

    1. Caulk between sleeve & conduit in foundation walls and below grade floors with oakum that lead between sleeve and pipe.

    2. Where sleeves pass through walls or floors, caulk space between conduit and sleeve with waterproof fire retardant non-hardening mastic.

    3. Coat exposed exterior surfaces of ferrous sleeves with heavy application of zinc rich paint.

6. Where pipes pass through fire rated walls, floors and partitions, maintain fire rating integrity assembly in compliance with OBC. Submit shop drawings and details on all products prior to commencing work.

7. Temporarily plug all openings during construction.

1.22. CONDUIT AND CABLE INSTALLATION

1. Install conduit and sleeve prior to pouring of concrete.

2. Install cables, conduits and fittings to be embedded or plasters over, neatly and close to building structure so furring can be kept to minimum.

3. Protect alarm and emergency system wiring from fire for the required length of time.

1.23. FIELD QUALITY CONTROL

1. All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentices program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks – the activities permitted shall be determined based on the level of training attained and the demonstration of ability to perform specific duties.

2. The work of this division to be carried out by a contractor who holds a valid Master Electrical contractor license as issued by the Province that the work is being constructed.

3. Conduct and pay for following tests:

    1. Power distribution system including phasing, voltage, grounding and load balancing.

    2. Circuits originating from branch distribution panels.

    3. Lighting and its control.

    4. Motors, heaters and associated control equipment including sequenced operation of systems where applicable.

    5. All Special Systems: emergency lighting systems, communications system.

4. Furnish manufacturer’s certificate or letter confirming the entire installation as it pertains to each system has been installed to manufacturer’s instructions.

5. Insulation resistance testing.

    1. Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

    2. Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.

    3. Check resistance to ground before energizing.

6. Carry out tests in presence of Consultant.

7. Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

8. Submit test results for Consultant's review.

1.24. ACCESS DOORS

1. Supply access doors to concealed electrical equipment for operating, inspecting, adjusting and servicing.

2. Flush mounted 600 mm x 600 mm for body entry and 300 mm x 300 mm for hand entry unless otherwise noted. Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.

3. Material:

    1. Special areas such as tiled or marble surfaces: use stainless steel with brushed satin or polished finish as directed by Consultant.

    2. Remaining areas: use prime coated steel.

4. Installation:

    1. Locate so that concealed items are accessible.

    2. Locate so that hand or body entry (as applicable) is achieved.

    3. Installation to satisfy all ESA requirements.

5. Acceptable Material: Nailor 0900 or approved equal.

1.25. CONCRETE WORK

1. Provide 100mm concrete housekeeping pads for all floor mounted equipment, including: switchboard.

1.26. EXCAVATION AND BACKFILLING

1. This Division shall be responsible for coordination for bedding of lines or equipment and for backfilling and compaction to 98% Standard Proctor Density.

1.27. CO-ORDINATION WITH POWER SUPPLY UTILITY

1. Make arrangements with power supply utility for power line extension, transformers and connections. Pay all costs.

1.28. DEMOLITION

1. Disconnect and make safe electrical equipment and services as required on site.

2. Be responsible for demolition and removal of electrical equipment and services designated on drawings for removal and as required by work unless specified otherwise under other

divisions.

3. Electrical work being removed by other division shall be carried out under direction of this division. Do all disconnecting prior to authorizing removal.

1.29. FIREPROOFING

1. Where cables or conduits pass through floors and fire rated walls, pack space between wiring and sleeve full with firestopping system to CAN 4-S115.

1.30. COORDINATION WITH EXISTING UTILITIES

1. Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in or inferable from the Contract Documents, or that are inferable from an inspection of the Place of the Work.

2. All existing utilities are to be maintained and protected for the length of construction.

3. Contractor to notify consultant if any conflicts arise and allow for minimum 48 hours for consultants review.

1.31. EXISTING SYSTEMS

1. Before submitting tender price verify on job site location of all accessible existing electrical systems affecting execution of this contract. Difficulties arising during construction will not be considered as grounds for additional payment.

2. Where work involves breaking into or connecting to existing systems, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian traffic.

3. Submit schedule to and obtain approval from Consultant for any shut down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

4. Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

1.32. OWNER OCCUPANCY SCHEDULE

1. Provide temporary protection for all finishes, appliances or equipment in the existing building.

2. Protect and maintain existing boiler room and electrical room operations during the work.

END OF SECTION 16010

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. LOCATION OF CONDUIT

1. Drawings do not indicate all conduit runs. Those indicated are in diagrammatic form only.
2. All conduits under floor slab shall be zoned in groups and run in as straight a line as possible.

1.3. REFERENCES

1. Canadian Standards Association (CSA)
    1. CSA C22.2 No. 18-98 (R2003), Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware.
    2. CSA C22.2 No. 56-04 (R2009), Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
    3. CSA C22.2 No. 83-M1985(R2013), Electrical Metallic Tubing.
    4. CSA C22.2 No. 211.2-06 (R2011), Rigid PVC (Unplasticized) Conduit.
    5. CSA C22.2 No. 227.3-05 (R2010), Flexible Non-metallic Tubing.

1.4. WASTE MANAGEMENT AND DISPOSAL

1. Separate and recycle waste materials in accordance with Division 1.
2. Place materials defined as hazardous or toxic waste in designated containers.
3. Ensure emptied containers are sealed and stored safely for disposal away from children.
4. Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Division 1.

PART 2- PRODUCTS

2.1. CONDUITS

1. Electrical metallic tubing (EMT): with steel couplings, sized as indicated.

2. Rigid PVC conduit, sized as indicated.

3. Flexible metal conduit and liquid-tight flexible metal conduit, sized as indicated.

4. Flexible PVC conduit, sized as indicated.

2.2. CONDUIT FASTENINGS

1. One hole steel straps to secure surface conduits 50 mm (2") and smaller. Two hole steel straps for conduits larger than 50 mm (2").

2. Beam clamps to secure conduits to exposed steel work.

3. Channel type supports for two or more conduits at 3 m (9') o/c.

4. 6 mm dia threaded rods to support suspended channels.

2.3. CONDUIT FITTINGS

1. Fittings: manufactured for use with conduit specified. Coating: same as conduit.

2. Fittings to be suitable sized for conduit used.

3. Fittings used for EMT to be steel, not cast.

4. Factory "ells" where 90° bends are required for 25 mm (1") and larger conduits.

2.4. EXPANSION FITTINGS FOR RIGID CONDUIT

1. Weatherproof expansion fittings with internal bonding assembly suitable for 100 or 200 mm linear expansion.

2. Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection in all directions.

3. Weatherproof expansion fittings for linear expansion at entry to panel.

2.5. FISH CORD

1. Polypropylene.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

2. Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.

3. Use electrical metallic tubing (EMT) above 2.4 m not subject to mechanical injury.

4. Use rigid PVC conduit for installation underground and in slabs.

5. Use flexible metal conduit for final connection to devices in ceiling space max. length 3 m.

6. Use liquid tight flexible metal conduit for final connection to a vibrating piece of equipment.

7. Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

8. Mechanically bend steel conduit over 21 mm diameter.

9. All unterminated conduit ends to be reamed and protected by insulating bushings.

10. Install fish cord in empty conduits and all conduits 53 mm and greater.

11. Where conduits become blocked, remove and replace blocked section. Do not use liquids to clean out conduits.

12. Run 2 - 27 mm (1") spare conduits up to ceiling space and 2 - 27 mm (1") spare conduits down to ceiling space from each flush panel. Terminate these conduits in 152 x 152 x 102 mm (6" x 6" x 4") junction boxes in ceiling space or in case of an exposed concrete slab, terminate each conduit in flush concrete surface type box.

13. Dry conduits out before installing wire.

3.2. SURFACE CONDUITS

1. Run parallel or perpendicular to building lines.

2. Locate conduits behind infrared or gas fired heaters with 1500 mm clearance.

3. Run conduits in flanged portion of structural steel.

4. Group conduits wherever possible on suspended channels.

5. Do not pass conduits through structural members except as indicated.

6. Do not locate conduits less than 75 mm (3") parallel to steam or hot water lines with minimum of 25 mm (1") at crossovers.

7. All exposed conduits in areas other than service spaces are to be painted to match existing finishes.

3.3. CONCEALED CONDUITS

1. Run parallel or perpendicular to building lines.

2. Do not install horizontal runs in masonry walls.

3. Do not install conduits in terrazzo or concrete toppings.

3.4. CONDUITS IN CAST-IN-PLACE SLABS ON GRADE

1. Run conduits 25 mm (1") and larger below slab and encased in 75 mm (3") concrete envelope. Provide 50 mm (2") of sand over concrete envelope below floor slab.

3.5. CONDUITS UNDERGROUND

1. Slope conduits to provide drainage and prevent moisture or gases from entering the building.

2. Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

END OF SECTION 16111

PART 1- GENERAL

1.1. RELATED SECTIONS

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.
2. Section 16151 – Wire and Box Connections – 0 – 1000V.

1.2. REFERENCES

1. CSA C22.2 No. 0.3-09, Test Methods for Electrical Wires and Cables.

1.3. PRODUCT DATA

1. Submit product data in accordance with Division 1.

1.4. WASTE MANAGEMENT AND DISPOSAL

1. Separate and recycle waste materials in accordance with Division 1.
2. Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Division 1.
3. Fold up metal banding, flatten and place in designated area for recycling.

PART 2- PRODUCTS

2.1. GENERAL

1. All conductors to be copper, unless otherwise noted.

2.2. BUILDING WIRES

1. All conductors to be copper, unless otherwise noted.
2. Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG for power and # 16 AWG for controls and fire alarm.
3. Copper conductors: size as indicated, with insulation of chemically cross-linked thermosetting polyethylene material type RW90, or with thermoplastic insulation and nylon jacket, type T-90 nylon.
4. 600V rating for nominal 208V system voltage; 1000V rating for nominal 600V system voltage.

5. All outdoor circuit conductors, including service entrance conductors to be type RWU90 or USEI-90, unless otherwise noted.

6. Wire and conduit sizes shown are based on RW75 XLPE and are minimum sizes. Contractor is responsible for wire and conduit sized for other approved wires.

7. Conductors shall be colour coded. Conductors size 10 AWG and smaller shall have colour impregnated into insulation at time of manufacture.

    1. Colour code wiring for 120 / 208 Volt equipment as follows

        1. Phase conductors: Red, Black, Blue

        2. Neutral conductors: White

        3. Bonding to ground: Green

2.3. ARMOURED CABLES

1. Conductors insulated copper sizes as indicated, minimum wire size #12 AWG.

2. Type: AC90.

3. Armour: interlocking type fabricated from aluminum strip.

4. Connectors: to suit.

5. Fastenings:

    1. One hole steel straps to secure surface cables 25 mm and smaller. Two hole steel straps for cables larger than 25 mm.

    2. Channel type supports for two or more cables at 1500 mm centres.

    3. Threaded rods: 6 mm dia. To support suspended channels.

6. Approved compression type lugs accurately sized to allow bolted connections at each cable end.

7. All wiring shall be concealed in floor slabs, walls, ceiling and furred spaces. AC90 armoured cable may be used only for drops to fixtures, maximum length 3 m in concealed ceiling spaces, or drops to receptacles in GWB partitions, maximum length 4.5 m. Otherwise cables shall be in EMT conduit.

2.4. CONTROL CABLES

1. Type LVT: 2 soft annealed copper conductors sized as indicated with thermoplastic insulation and outer covering thermoplastic jacket.

2. Plenum rated cable (FT-6) required in ceiling space where not in conduit.

2.5. NON-METALLIC SHEATHED CABLE

1. Non-metallic sheathed copper cable type: NMD90. Only to be used with permission from Consultant.

PART 3- EXECUTION

3.1. INSTALLATION OF BUILDING WIRES

1. Install wiring in conduit in accordance with Section 16111, unless otherwise noted.

2. Use type RW90 where required by Ontario Electrical Safety Code, for all panelboard feeders and for all conductors sized 250 MCM and larger.

3. Use type RW90 or T-90 for branch circuit wiring unless otherwise indicated.

4. Minimum wire size shall be No. 12 AWG. For 15A, 120V branch circuit home runs which exceed 23 m length shall be minimum No. 10 AWG, and minimum No. 8 AWG for runs which exceed 36 m. For 20A, 120V branch circuit home runs which exceed 17 m in length shall be minimum No. 10 AWG, and minimum No. 8 AWG for runs which exceed 27 m. Where existing wiring is re-used, minimum wire sizes shall apply and wiring shall be replaced when it does not meet the minimum size.

3.2. INSTALLATION OF ARMOURED CABLES

1. Use only for drops to fixtures maximum length 3 m in concealed ceiling spaces, or drops to receptacles in GWB partitions maximum length 4.5 m.

2. Terminate cables in accordance with Section 16151.

3. Installation of all single conductor armoured cable shall be in such a way as to prevent the flow of sheath currents (current flow in the sheath caused by induced voltage on the sheath), as per Ontario Electrical Safety Code Rule 4-008. To prevent the flow of sheath currents, it is necessary to make sure that all paths (at terminations and supports) in which they may circulate are eliminated. Cable sheaths shall be grounded at the supply end termination only and isolated from ground and each other at the load end termination by a minimum of a 6 mm thick insulated material plate. Provide a lamacoid at the supply end of the conductors indicating “ENSURE CABLES ARE INSTALLED TO PREVENT SHEATH CURRENTS”.

3.3. INSTALLATION OF CONTROL CABLES

1. Install control cables in conduit in accordance with Section 16111.

2. Ground control cable shield.

3.4. INSTALLATION OF NON-METALLIC SHEATHED CABLE

1. Install cables.

2. Install straps and box connectors to cables as required.

3. Only to be used with permission of Engineer.

END OF SECTION 16122

PART 1 – GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. SCOPE OF WORK

1. Category 6 100 OHM balanced unshielded twisted pair (UTP) plenum horizontal cable is deployed through plenum pathways from the Telecommunications Room (TR) to the wall or furniture outlets. Plenum cable is rated for air handling spaces. Horizontal UTP cable is terminated into a modular jack in the wall outlet, and is punched into a cross-connect panel in the TR. This portion of horizontal cabling, including terminations, is defined as the permanent link. Standards permit one consolidation point inter-connection in the permanent link for zone cable distribution. Several codes and standards apply to installation and termination of 100 OHM balanced UTP cable. It is the responsibility of the cable installer to follow industry standards to assure proper cable performance and long-term reliability.

2. The Telecommunications Room (TR) is Electrical Room 107.

3. This section includes minimum requirements for the following:

    1. Category 6 100 OHM Balanced UTP Cable.

1.3. VOICE AND DATA CABLING

1. Equipment price breakdown

    1. The Contractor shall provide a complete Category 6 voice/data/VOIP cabling system including terminations, patch panels and single manufacturer certification as specified below.

    2. This specification defines the cabling infrastructure required to provide Voice and Data service.

    3. The need to amend or modify the installation specification may arise. All changes, modifications or amendments must be approved by the consultant prior to commencement of the installation.

1.4. QUALITY ASSURANCE

1. Installation of Category 6 cable shall adhere to manufacturer’s guidelines.

2. Category 6 cable shall be installed according to recognized Category 6 installation practices, and applicable codes and standards.

3. Installed Category 6 cable shall be manufactured by an ISO 9001-2000 Certified facility.

4. Installed Category 6 cable shall be free from defects in material or workmanship from the manufacturer, and shall be of the quality indicated.

5. Specified cable is based on acceptable manufacturers listed in this specification.

6. All methods of construction that are not specified in the contract documents shall be subject to control and approval by the Technical Authority.

7. Installed cable shall be lot-traceable by lot number and date of manufacture printed on the outer cable jacket.

8. All critical internal manufacturing operations for Category 6 cable shall have documented in-process inspection and testing according to ISO9001-2000.

9. Where “approved equal” is stated, any substitute product shall be equivalent to all requirements specified, and is subject to approval.

10. Materials and work specified in this document shall comply with, and are not limited to the standards, codes, and publications listed below:

    1. ANSI/TIA/EIA-568-B.1, Commercial Building Telecommunications Cabling Standard (and all published addenda), Part 1: General Requirements, 2001.

    2. ANSI/TIA/EIA-568-B.2, Commercial Building Telecommunications Cabling Standard (and all published addenda), Part 2: Balanced Twisted Pair Cabling Components, 2001.

    3. ANSI/TIA/EIA-568-B.2-1, Commercial Building Telecommunications Cabling Standard (and all published addenda), Part 2: Balanced Twisted Pair Cabling Components, Addendum 1: Transmission Performance Specifications for 4-Pair 100-Ohm Category 6 Cabling 2002.

    4. National Fire Protection Association, Inc., NFPA 70: National Electric Code(NEC), 2002.

        1. NEC Article 250: Grounding

        2. NEC Article 800: Communications Circuits

    5. ANSI J-STD-607A, Commercial Building Grounding and Bonding Requirements for Telecommunications, 2002.

    6. ISO/IEC 11801, Ed. 2:2002, Information Technology – Generic Cabling for Customer Premises, 2002.

    7. ANSI.TIA/EIA-569-B, Commercial Building Standards for Telecommunications Pathways and Spaces, 2003.

    8. ANSI/TIA/EIA-606-A, Administration Standard for Commercial Telecommunications Infrastructure, 2002.

9. IEEE 802.3af, Data Terminal Equipment (DTE) Power Over Media Dependent Interface (MDI).

10. IEEE 802.3ab, Specification for 1000 Mb/s (Gigabit Ethernet) Operation over Category 5 or higher 4-Pair Balanced Twisted Pair Cabling.

11. IEEE 802.3an, Specification for 10 Gb/s (10 Gigabit Ethernet) Operation over Category 6 or higher 4-Pair Balanced Twisted Pair Cabling.

12. TIA/TSB-155, Telecommunications System Bulletin: Characterizing Existing Category 6 cabling for 10 Gb/s Ethernet Operation over 55 Meters Channel Length.

13. Underwriter's Laboratory, Inc., UL1863: Standard for Safety – Communications Circuit Accessories, 4th Ed, 2004.

14. Telecommunications Distribution Methods Manual, 10th Ed., Building Industry Consulting Services International (BICSI), 2003.

15. Information Transport Systems Installation Manual, 4th Ed., Building Industry Consulting Services International (BICSI), 2004.

11. Installations shall, as minimum, comply with the latest issues of the following Building Codes: All municipal By-laws, Provincial Codes, the National Building Code, Canadian Labour Code, and the National Fire Code. In the case of conflict or discrepancy, the more stringent code shall apply.

1.5. DEFINITIONS

1. The Technical Authority, Piotrowski Consultants Ltd. is defined as the consultant.

2. The "Contractor" is defined as the supplier of the scope of work defined in this specification.

1.6. SHOP DRAWINGS

1. Shop drawings shall be submitted to the Consultant and shall include:

    1. Specification sheets on all items, including cable types and manufacturer's cabling system specification numbers.

    2. An outline drawing of the cabling system for the Communications Rooms, showing floor plan and wall layouts for termination blocks, typical connections and major components must be included. Verification that all equipment will be supplied by manufacturer authorised Canadian Distributors.

    3. Verification that the installers are trained and authorised by the Cabling Application warranty approved manufacturer.

1.7. ACCEPTABLE BIDDERS AND BID PROCEDURES

1. Communications Contractor shall be system certified with minimum five (5) years experience. References to be available upon request.

2. Supplier shall have an in-place support facility within 450 kilometers of the site with technical staff, spare parts inventory and all necessary test and diagnostic equipment.

PART 2 - PRODUCTS

2.1. DESCRIPTION OF EQUIPMENT

1. Supply and install all cabling, jacks, patch panels and terminations, to provide a complete and operating Voice/Data Cabling system to support future computer network systems in the building. (Network hub equipment and accessories are NOT included in the scope of work unless otherwise noted).

2. The system shall comprise of horizontal UTP (Unshielded Twisted Pair) wiring from the patch panels to each Data outlet jack. Voice Backbone cable to be terminated at Voice Backboard.

3. When voice or data outlets are identified with multiple cables, provide one outlet box complete with 27 mm conduit. Refer to Legend for Wiring Details and Number of Cables per Drop.

4. The cabling system must meet or exceed Category 6 Channel performance as defined in TSB 568-B and provide a Single Manufacturer 25 year system performance certification.

2.2. HORIZONTAL CABLE

1. The Voice Cable shall be be Four Pair, Twisted 24 AWG solid copper, unshielded twisted cable meeting TIA/EIA-568-B Category 6. The maximum cable length for each run shall be limited to 90 meters. Cable to have white sheath.

2. The Data Cable shall be Four Pair, Twisted 24 AWG solid copper, unshielded twisted cable meeting TIA/EIA-568-B Category 6. The maximum cable length for each run shall be limited to 90 meters. Cable to have blue sheath.

3. The VOIP Cable be Four Pair, Twisted 24 AWG solid copper, unshielded twisted cable meeting TIA/EIA-568-B Category 6. The maximum cable length for each run shall be limited to 90 meters. Cable to have grey sheath.

4. All cables shall be permanently identified with indelible marker, or permanent labels. The label shall be located within .05 meters of both ends of the installed cable. The labelling shall conform to the requirements as defined in CAN/CSA-T528-93 Section 6 (Wiring System Administration).

2.3. DATA JACKS

1. Data cable workstation data jacks shall be T568A Wire Map configuration, 8 pin modular jacks (RJ45) approved to TIA/EIA-568-B, Category 6 standard.

2. The jack modules must accept RJ45 computer plugs without causing any damage or degradation to the connectors.

2.4. WORK AREA WIRING

1. All cables shall be terminated in an eight position 8-MOD. T568A MDVO module at the Voice/Data outlet. This shall be wired in a T568A configuration.

2. Each workstation module shall be a separate colour to identify its function Voice or Data. Colour of jacks to be coordinated with the Technical Authority.

3. Where the Voice/Data outlet is located within a private office, the contractor will supply a minimum of one wall mounted 4-port outlet faceplate/box' unless otherwise specified by the Technical Authority.

4. Where the Voice/Data outlet is located in the modular furniture, the contractor will supply and install one 4-port Modular Furniture Adapter or a 3-port Decora Adapter.

5. Contractor shall supply one(1)7ft, and one(1)4ft Cat 6 Modular Patch Cords, for each Data circuit terminating at each Patch Panel / Voice/Data Outlet.

6. These patch cords will be used to patch network hardware to the Patch Panels in TC and Voice/Data outlet box to the customer supplied workstation equipment.

7. Contractor shall install wiring to modular workstation in such a manner to ensure the EMI/RFI separation distances are maintained.

8. Surface mounted electrical raceways and connectivity products must match where required.

2.5. COMMUNICATIONS ROOM WIRING

1. The existing communications racks will serve as the termination for all horizontal Data cables.

2. Contractor will supply and install an adequate number of 48-port patch panels, in conjunction with the scope of work, to terminate all horizontal Data designated cables from the respective Voice/Data outlets. All 48-port patch panels must have an integrated rear cable management bar and front labeling space to facilitate port identification. All patch panels must be installed with an accompanying 2U wire management channel, for all Data patch cables. All connectors shall be wired in a T568A configuration.

3. Contractor will supply and install an adequate number of termination mounts and connectors, in a cross connect configuration, to terminate all horizontal Voice designated cables from the respective Voice/Data outlets.

2.6. STANDARD OF ACCEPTANCE

1. Belden
2. Hubbell
3. Panduit

PART 3 - EXECUTION

3.1. PREPARATION

1. Horizontal pathways (conduit, cable tray, raceway, etc.) shall be fully deployed from the main telecommunication room to each voice/data outlet location according to applicable codes and standards.
2. Metallic horizontal cable pathways shall be bonded to an approved ground according to ANSI-J-STD-607.

3.2. INSTALLATION

1. Pull cable into conduits, or place into raceway or cable tray as specified. Do not exceed 25 Lb pull force per cable. Use appropriate lubricants as required to reduce pulling friction.
2. All exposed wiring shall be installed in surface raceway.
3. All wiring above ceilings or below access floors shall be installed in cable tray or open-top cable hangers. Where cable tray is not provided, J Hook supporting system is to be provided.
4. Cable slack and service loops shall be stored properly above the ceiling or under the access floor. A “figure-eight” service loop is recommended for Category 6 cabling to reduce EMI coupling.
5. Pathway fill ratio in conduit, tray, raceway, etc. shall not exceed 40% of pathway cross-sectional area.
6. Installed cable bend radius shall be greater than 4X cable diameter. Avoid kinking or twisting the cable during installation.
7. Do not over-tighten cable ties, and do not use staples or clamps to anchor cables. Velcro straps to be used for large bundles.
8. Spacing of cable supports above the ceiling shall be maximum 48”.
9. Maintain the following clearances from EMI sources:
    1. Power cable: 6 in.
    2. Fluorescent lights: 12 in.

3. Transformers and electrical service enclosures: 36 in.

10. Communications cabling that must cross power cables or conduit shall cross at a 90-degree angle, and shall not make physical contact.

11. Length of each horizontal cable run from the main telecommunication room to the wall outlet shall not exceed 90 meters.

12. Leave sufficient slack for 90 degree sweeps at all vertical drops.

13. Do not install cable in wet areas, or in proximity to hot water pipes or boilers.

14. Cable ends for termination shall be clean and free from crush marks, cuts, or kinks left from pulling operations.

15. Installed cable jackets shall have no abrasions with exposed conductor insulation or bare copper ‘shiners”. The installer is responsible to replace damaged cables.

16. Horizontal cables extending from mounted jacks or panels shall maintain a minimum bend radius of at least 4 times the cable diameter.

17. Firestop all cable penetrations through fire-rated barriers per local codes.

3.3. WORK SCHEDULE

1. Prior to work commencing a schedule will be provided by Contractor to Technical Authority. Schedule will show anticipated progress stages and final completion of work. Interim reviews of work progress based on schedule will be conducted as decided by the Technical Authority. The schedule may be updated by Contractor in conjunction with and with the approval of the Technical Authority.

3.4. WORK AREA LABELLING

1. Contractor will clearly label all outlet boxes for both. The labels shall be machine printed adhesive labels. Hand labeling is not permitted.

2. The labeling will conform to CAN/CSA-T528-93, “Design Guideline for Administration of Telecommunications Infrastructure in Commercial Buildings”.

3. Workstation labeling will identify unique No. (001-999), and use (V=VOIP, D=Data, P=Phone).

3.5. COMMUNICATIONS ROOM LABELLING

1. Contractor will clearly label all wiring blocks at the IT Cabinets. The labels shall be machine printed adhesive labels. Hand labeling is not permitted / only mechanical printed labels will be accepted.

2. IT cabinets labelling will identify unique No. (001-999), and use (V=VOIP, D=Data, P=Phone).

3. Supply “As Built Drawings” for completed project.

3.6. CABLE AUDIT

1. A random visual inspection by the Technical Authority, prior to the commencement of Installer with Channel Performance and Functional testing will be required. The installation will be validated for compliance with the industry standards with particular attention given to the following criteria:

    1. Cable jacket removal and connector termination

    2. Routing and pathway supports

    3. Cable bend radius and cable tie slack

    4. Neatness, clamping, and harnessing of cabling and wiring.

    5. Wire and cable identification and labelling.

    6. Nameplates, identification, plates, and markings

3.7. TESTING

1. After all terminations are complete, the Contractor shall be responsible to test each UTP cable installed. All testing shall be in accordance with the ANSI/TIA/EIA 568.2-D standards (including most recent additions and addendum), and the testing Specifications herein. The horizontal UTP cable shall be tested as described below.

2. All test equipment must meet current industry standardsincluding most recent additions and addendums. Test equipment must meet ANSI/TIA-1152-A Level III or above for Category 6, Level IIIe for Category 6a and Level IV for Category 7. All testing shall be performed using a Level III or above tester.

3. For any given project, the Contractor must use the same test equipment manufacturer and model for all UTP cable tests. Mixing of different manufacturer’s test equipment is not permitted.

4. The Contractor shall provide documentation verifying the test equipment’s last calibration. (Calibration date must be within Twelve months of the date the tests are to be performed. If calibration is required, it shall be at the Contractors expense.)

5. At the time testing begins, all test equipment must be operating under the latest version of software as provided by the respective manufacturer. All costs associated with test equipment software upgrades are the responsibility of the Contractor.

6. Prior to testing, the Contractor shall perform the following test equipment setup procedures.

    1. The Contractor shall ensure that all relevant project data (e.g., Technician/Operator Name, Date of Test, Project Name, Building, Floor, TO/Jack position number, etc.,) is entered into the test equipment.

2. The Contractor shall ensure that the appropriate cable manufacturer, manufacturer's model number and electrical parameters (e.g., NVP - Nominal Velocity of Propagation, FEXT, NEXT, etc.) are loaded into the test equipment.

3. The Contractor shall ensure that the scanner is properly calibrated to the injector.

7. All UTP cable tests shall be performed by connecting an injector to the respective jack and the scanner to the respective Bix /110-wiring block or patch panel. The Contractor shall ensure that the appropriate TO number is loaded into the test equipment. A Permanent Link test, as described in the ANSI/TIA/EIA 568-B standards (including most recent additions and addendum) is required for all UTP testing. At a minimum, each UTP cable must be tested for the following parameters, but not limited to:

   1. Pair-to-Pair NEXT (Near End Cross Talk)

   2. Power Sum NEXT

   3. Pair-to-Pair ELFEXT (Equal Level Far End Cross Talk)

   4. Power Sum ELFEXT

   5. Attenuation (Insertion Loss)

   6. Return Loss

   7. Propagation/Delay Skew

   8. Cable length

   9. Wire map

8. As part of the test procedure, the Contractor shall verify that the TO number matches the number on the patch panel.

9. The Contractor shall test each cable installed by the Contractor under this procurement.

10. The Contractor shall troubleshoot and correct, repair or replace each cable that does not meet specification.

11. A test result marked with an "*" (or Marginal Result) will not be accepted.

12. A test summary and each individual UTP cable test shall be included as part of the Contractor's as-built documentation submittal. Only the Test Summary Sheet shall be printed, and submitted in hardcopy format. The individual UTP cable tests shall be submitted in electronic format only. The Test Summary Sheet for each Telecommunications Room shall be signed and dated by the Contractor's Project Manager. The Contractor shall submit the original signed Test Summary Sheets as part of the final as-built submittal. In addition, the Contractor shall submit all cable test results in electronic form via electronic media. The electronic test results must be submitted in the original software format of the respective test equipment manufacturer. Text files or files that have been imported into a word processor will not be accepted.

3.8. CABLING SYSTEM CHANNEL APPLICATION WARRANTY

1. All cabling products and workmanship must include coverage as follows:

    1. All Data channel cabling components in the scope of work of this document must be included in the 25 year parts & labour warranty document.

    2. Product is warranted free of defects in material or workmanship.

    3. Product is warranted to perform the intended function within design limits.

3.9. APPROVED CONTRACTORS

1. TC-Tel

    Adam Chretien
    Telephone: (705) 499-5529

2. Northern Voice & Data Cabling Services Inc.

    Dave Lammi
    Telephone: (705) 673-6207

3. Helix IT

    Rob Loxton
    Telephone: (705) 345-5956

4. DC Communications

    Marc Cloutier
    Telephone: (705) 707-DATA (3282)

5. Sunwire

    Alex Levesque
    Telephone: (705) 521-6777 x 7004

END OF SECTION 16124

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings and product data for cabinets in accordance with Division 1.
2. Separate and recycle waste materials in accordance with Division 1.
3. Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Division 1.
4. Fold up metal banding, flatten and place in designated area for recycling.

PART 2- PRODUCTS

2.1. JUNCTION AND PULL BOXES

1. Welded steel construction with screw-on flat covers for surface mounting.
2. Covers with 25 mm (1") minimum extension all around, for flush-mounted pull and junction boxes.

PART 3- EXECUTION

3.1. JUNCTION AND PULL BOXES INSTALLATION

1. Install pull boxes in inconspicuous but accessible location.
2. Only main junction and pull boxes are indicated. Install pull boxes so as not to exceed 30 m (100'-0") of conduit run between pull boxes.

3.2. IDENTIFICATION

1. Provide equipment identification in accordance with Section 16010 Electrical General Provisions.
2. Install size 2 identification labels indicating system name, voltage and phase.

END OF SECTION 16131

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. CSA C22.1-12 Canadian Electrical Code, Part 1.

1.3. WASTE MANAGEMENT AND DISPOSAL

1. Separate and recycle waste materials in accordance with Division 1, and with the Waste Reduction Workplan.

2. Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Division 1.

PART 2- PRODUCTS

2.1. OUTLET AND CONDUIT BOXES - GENERAL

1. Size boxes in accordance with CSA C22.1.

2. 102 mm (4") square or larger outlet boxes as required for special devices.

3. Gang boxes where wiring devices are grouped.

4. Blank cover plates for boxes without wiring devices.

5. Combination boxes with barriers where outlets for more than one system are grouped.

2.2. SHEET STEEL OUTLET BOXES

1. Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 x 50 x 38 mm or as indicated. 102 mm (4") square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

2. Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 48 mm

3. 102 mm (4") square or octagonal outlet boxes for lighting fixture outlets.

4. 102 mm (4") square outlet boxes with extension and plaster rings for flush mounting devices in finished tile walls.

2.3. MASONRY BOXES

1. Electro-galvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.

2.4. CONCRETE BOXES

1. Electro-galvanized sheet steel concrete type boxes for flush mount in concrete with matching extension and plaster rings as required.

2.5. CONDUIT BOXES

1. Cast FS or FD feraloy boxes with factory-threaded hubs and mounting feet for surface wiring of switches and receptacle.

2. Electro-galvanized utility tape for indoor surface wiring.

2.6. FITTINGS - GENERAL

1. Bushing and connectors with nylon insulated throats.

2. Knock-out fillers to prevent entry of debris.

3. Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.

4. Double locknuts and insulated bushings on sheet metal boxes.

PART 3- EXECUTION

3.1. INSTALLATION

1. Support boxes independently of connecting conduits.

2. Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

3. For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

4. Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Reducing washers are not allowed.

5. Provide a suitable outlet box for each light, switch, receptacle or other outlet, approved for the particular area in which it is to be installed.

6. Locate outlet boxes, mounted in hung ceiling space, so they do not obstruct or interfere with the removal of lay-in ceiling tiles.

7. Offset outlet boxes, shown back to back in partitions, horizontally to minimize noise transmission between adjacent rooms.

8. Use tile wall covers where 4" square outlet boxes are installed in exposed concrete or cinder block in finished areas.

9. Seal electrical switch and outlet boxes that penetrate vapour barrier with moulded box vapour barrier wrap boxes with film sheet providing minimum 300 mm perimeter lap flange.

10. Provide T-bar grid support brackets for installations on T-bar ceiling.

END OF SECTION 16132

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings and product data in accordance with Division 1.
2. Occupancy Sensor shop drawings to be complete with a floor plan layout drawing from the manufacturer indicated proper layout requirements, as well as all wiring details and diagrams to provide lighting control as indicated on drawings.
3. Identify the sensor type on the top of the page of the shop drawing. (For Example: Type 23)

PART 2 - PRODUCTS

2.1. SWITCHES

1. 20A, 120V single pole, three-way, or four-way specification grade, as indicated.
2. Manually-operated general purpose ac switches with following features:
    1. Terminal holes approved for No. 10 AWG wire.
    2. Silver alloy contacts.
    3. Urea or melamine moulding for parts subject to carbon tracking.
    4. Suitable for back and side wiring.
    5. White toggle.
3. Toggle operated fully rated for tungsten filament and fluorescent lamps, and up to 80% of rated capacity of motor loads.
4. Provide motor rated switches, where indicated. To be complete with pilot light.
5. Switches of one manufacturer throughout project.
6. Acceptable materials: Hubbell, Bryant, Leviton, Pass & Seymour.

2.2. WIRED DIMMERS

1. Wall box dimmer, 120V connected & low voltage dimming controlled, white in colour to match switches and outlets.

2. Manually operated wallpod.

3. Solid-state, 0-10V control to match connected fixtures.

4. Mechanical air-gap switch to disconnect load power.

5. Power failure memory.

6. RFI suppression.

7. Electrostatic discharge tested.

8. Dimmers controlling LED fixtures to be rated for such loads and shall meet all light fixture and lamp manufacturer's requirements.

9. Acceptable materials: Acuity Sensorswitch sPODMRA series.

2.3. RECEPTACLES

1. Duplex receptacles, CSA NEMA configuration 5-15R, 125V, 15A, U ground, with following features:

    1. White urea moulded housing.

    2. Suitable for No. 10 AWG for back and side wiring.

    3. Break-off links for use as split receptacles.

    4. Eight back wired entrances, four side wiring screws.

    5. Triple wipe contacts and riveted grounding contacts.

2. Housekeeping receptacles duplex CSA NEMA configuration 5-20R, 125V, 20A, U ground with following features:

    1. White urea moulded housing.

    2. External nickel-plated brass back wire clamps with #10 brass terminal screws.

    3. Ground terminal back wire clamp.

    4. 0.04" thick nickel-plated brass, triple-wiped power contacts.

    5. Nickel-plated one-piece mounting strap with integral ground and two screw anchor strap to back body.

3. 20A Specification Grade Self-Test GFCI Duplex Receptacle CSA NEMA configuration 5-20R, 125V, 20A, U ground with following features:

1. White urea moulded housing.

2. External nickel-plated brass back wire clamps with #10 brass terminal screws.

3. Ground terminal back wire clamp.

4. 0.04” thick nickel-plated brass, triple-wiped power contacts.

5. Nickel-plated one-piece mounting strap with integral ground and two screw anchor strap to back body.

6. Test/Reset push buttons.

7. Performs an automatic test every three seconds to insure that ground fault protection is active.

8. Indicator lights.

9. Rated as a 1-1/2 HP motor control switch.

4. 15A Specification Grade Self-Test GFCI Duplex Receptacle CSA NEMA configuration 5-15R, 125V, 15A, U ground with following features:

1. White urea moulded housing.

2. External nickel-plated brass back wire clamps with #10 brass terminal screws.

3. Ground terminal back wire clamp.

4. 0.04” thick nickel-plated brass, triple-wiped power contacts.

5. Nickel-plated one-piece mounting strap with integral ground and two screw anchor strap to back body.

6. Test/Reset push buttons.

7. Performs an automatic test every three seconds to ensure that ground fault protection is active.

8. Indicator lights.

5. Other receptacles with ampacity, voltage and NEMA configuration as indicated.

6. Receptacles of one manufacturer throughout project. Minimum of specification grade.

7. Acceptable materials: Hubbell, Bryant, Leviton, Legrand, Pass & Seymour.

2.4. OCCUPANCY SENSORS

1. Wall Mount, Line Voltage

Type 10

Wall mounted, line-voltage occupancy sensor to be passive infrared detection, c/w separate ON/OFF button. Detects small motion (hand movements) up to 20' radial coverage and large motion (walking) up to 36' radial coverage. Equal to the Sensorswitch WSX, c/w accessories to control loads as indicated on drawings.

2. Acuity Sensorswitch, shall be standard of acceptance.

3. Confirm all light / switch voltages on site to ensure proper voltage rating is provided for all new devices.

4. Confirm number of circuits being controlled on site. Individual power pack to be provided for each circuit which is to be controlled by a low-voltage occupancy sensor.

2.5. SPECIAL WIRING DEVICES

1. Pilot lights as indicated, with neon type 0.04W, 125V lamp and red plastic jewel flush type.

2.6. COVER PLATES

1. Cover plates for wiring devices, complete with clear adhesive label with black lettering indicating source panel and circuit number.

2. Cover plates from one manufacturer throughout project.

3. Stainless steel, vertically brushed, 1 mm (1/16") thick cover plates for all wiring devices mounted in flush-mounted outlet box (including voice / data outlets).

4. Sheet metal cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes, or utility boxes.

5. Weatherproof gasketted, lockable decorative rain-tight while-in-use cover, expandable, suitable for GFCI outlet, shall be Hubbell TayMac ML500 series or Hubbell TayMac MX4280 series. Colour By Architect. Submit in shop drawing package for Engineers Approval.

PART 3- EXECUTION

3.1. INSTALLATION

1. Switches:

    1. Install single throw switches with handle in "UP" position when switch closed.

    2. Install switches in gang type outlet box when more than one switch is required in one location.

    3. Mount toggle switches at height specified in Section 16010 - Electrical General Requirements or as indicated.

4. Where lighting controls are grouped, each control shall be labelled to indicate the area controlled.

2. Dimmers:

1. Provide separate box for each dimmer, spaced to maintain full rating.

3. Receptacles:

1. Install receptacles in gang type outlet box when more than one receptacle is required in one location.

2. Mount receptacles at height specified in Section 16010 - Electrical General Requirements or as indicated.

4. Cover plates:

1. Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

2. Install suitable common cover plates where wiring devices are grouped.

3. Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

5. Occupancy Sensors:

1. Install sensors and ancillary devices at location(s) shown on drawings, following sensor manufacturer's recommended installation methods.

2. Perform necessary field adjustments and settings of sensors as required for proper operation.

3. Time delay for all sensors to be set at 10 minutes.

4. Passive infrared setting to be set at minimum.

5. Some occupancy sensors require the use of a neutral. Ensure a neutral is present for each lighting circuit being controlled by a sensor. Run additional wiring as required, coordinate all requirements on site.

6. Where one or more occupancy sensor controls one or more switching circuits within a room, activation of any sensor within that room to turn on all lights. Provide power packs and slave packs as required. All wiring to be as per manufacturer's recommendation.

6. Occupancy Sensor Commissioning:

1. Manufacturer's representative to provide on-site commissioning and set-up of system and provide letter confirming:

1. Installation is as per manufacturer's recommendations.

2. Settings and time delay are as per specification.

3. Confirm devices are operating properly for installation, and provide minor field modifications as required.

4. Identify which devices were adjusted in the field.

7. Grounding:

1. Ground all wiring devices and respective outlet boxes in accordance with applicable sections of Ontario Electrical Safety Code.

END OF SECTION 16141

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. CSA C22.2 No. 65-13 Wire Connectors.
2. EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

PART 2 - PRODUCTS

2.1. MATERIALS

1. Pressure type wire connectors: with current carrying parts of copper sized to fit copper conductors as required.
2. Fixture type splicing connectors: with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
3. Bushing stud connectors: to EEMAC 1Y-2 to consist of:
    1. Connector body and stud clamp for stranded copper conductors.
    2. Clamp for stranded copper conductors
    3. Stud clamp bolts.
    4. Bolts for copper conductors
    5. Sized for conductors as indicated.
4. Clamps or connectors for armoured cable, flexible conduit, as required.

PART 3 - EXECUTION

3.1. INSTALLATION

1. Remove insulation carefully from ends of conductors and:
    1. Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.

2. Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.

3. Install fixture type connectors and tighten. Replace insulating cap.

4. Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION 16151

PART 1 - GENERAL

1.1. RELATED WORK

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

2. Fastenings and supports: Section 01600 Material and Equipment.

PART 2 - PRODUCTS

2.1. SUPPORT CHANNELS

1. U shape, size 41 x 41 x 2.5 mm thick, surface mounted or suspended.

2. Smaller sections subject to Consultant's approval.

PART 3 - EXECUTION

3.1. INSTALLATION

1. Secure equipment to tile and plaster surfaces with nylon anchors, with independent grip protrusions.

2. Secure equipment to poured concrete with expandable inserts.

3. Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

4. Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.

5. Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

6. Fasten exposed conduit or cables to building construction or support system using straps.

    1. One-hole steel straps to secure surface conduits and cables 50 mm and smaller.

    2. Two-hole steel straps for conduits and cables larger than 50 mm.

    3. Beam clamps to secure conduit to exposed steel work.

7. Suspended support systems.

1. Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.

2. Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.

8. For surface mounting of two or more conduits use channels at 3 m oc spacing.

9. Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

10. Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

11. Do not use wire lashing or perforated strap to support or secure raceways or cables.

12. Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Consultant.

13. Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

14. Provide minimum 2400 mm support channel on each suspended fixture in open areas, with rigid stem supports from structure to channel, and fixture secured to channel.

15. All fastenings and supports to be hot dipped galvanized. All cut ends exposing base material to be completely sealed with field applied coating to give equivalent protection prior to installation. Following complete installation, all damage to protective layer to be carefully and completely touched up with same field applied coating.

END OF SECTION 16191

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. PRODUCT DATA

1. Submit product data in accordance with Division 1.

PART 2- PRODUCTS

2.1. DISCONNECT SWITCHES

1. Fusible and non-fusible disconnect switch in CSA Enclosure size as indicated.
2. Provision for padlocking in on-off switch position by three locks.
3. Mechanically interlocked door to prevent opening when handle in ON position.
4. Fuses: size as indicated, to Section 16478 - Fuses - Low Voltage.
5. Quick-make, quick-break action.
6. ON-OFF switch position indication on switch enclosure cover.

2.2. EQUIPMENT IDENTIFICATION

1. Provide equipment identification in accordance with Section 16010 - Electrical General Requirements.
2. Indicate name of load controlled on size 4 nameplate.

2.3. ACCEPTABLE MATERIALS

1. Siemens
2. Square D
3. Cutler-Hammer
4. Alternate materials as approved by addendum in accordance with General Instructions.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install disconnect switches complete with fuses, if applicable.

2. For all disconnects where fuse and wire sizes have a lower rating then the disconnect, a lamacoid label is to be applied indicating “MAX FUSE SIZE TO BE ____ AMPS”. To be filled in with the value of the specific fuse size.

END OF SECTION 16440

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. SHOP DRAWINGS

1. Submit shop drawings in accordance with Division 1.

2. Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

1.3. PLANT ASSEMBLY

1. Install circuit breakers in panelboards before shipment.

2. In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

PART 2- PRODUCTS

2.1. PANELBOARDS

1. Panelboards: product of one manufacturer.

2. Bus and breaker rated for the following symmetrical interrupting capacity, unless otherwise indicated.

    1. 120 / 208 V Panelboards – 22 kA I.C.

        Refer to singleline diagram for other values.

3. Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

4. Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.

5. Each panelboard to be equipped with integral lock and be complete with two keys. All panelboards to be keyed alike.

6. Aluminum bus with neutral of same ampere rating as mains.

7. Mains: suitable for bolt-on breakers.

8. Trim and door finish: baked grey enamel

9. Surface mounted panelboards not located in electrical or storage rooms shall be supplied with floor to ceiling enclosures to maximum height of 3.6 m to conceal conduit.

10. NEMA 1 enclosure.

2.2. BREAKERS

1. Breakers: to Section 16477 - Moulded Case Circuit Breakers.

2. Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

3. Main breaker: separately mounted on top or bottom to suit cable entry. When mounted vertically, down position should open breaker.

4. Lock-on devices for computer outlets, fire alarm, clock outlet, emergency, door supervisory, intercom, stairway, exit and night light circuits.

2.3. EQUIPMENT IDENTIFICATION

1. Provide equipment identification in accordance with Section 16010 - Electrical General Requirements.

2. Nameplate for each panelboard size 4 engraved, as indicated

3. Nameplate for each circuit in distribution panelboards size 2 engraved, as indicated.

4. Complete circuit directory with typewritten legend showing location and load of each circuit.

2.4. ACCEPTABLE MATERIALS

1. Eaton

2. Schneider

3. Siemens

4. Alternate materials as approved by addendum in accordance with general instructions.

PART 3- EXECUTION

3.1. INSTALLATION

1. Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

2. Mount panelboards to height specified in Section 16010 - Electrical General Requirements or as indicated.

3. Provide 100mm concrete housekeeping pad under floor mounted equipment.

4. Connect loads to circuits.

5. Connect neutral conductors to common neutral bus with respective neutral identified.

3.2. PANELBOARD LAYOUTS

1. Follow panelboard details attached or on drawings, for layout of circuit and breaker sizes wherever possible.

2. Record all changes to panelboard details, and submit as part of As-Built drawing set for review at completion of the project. Insert copies in each maintenance manual.

END OF SECTION 16471

PANELBOARD SCHEDULE -- DP-202

WIRE & COND	SERVICE	BRKR	Load kW	CCT. No.		CCT. No.	Load kW	BRKR	SERVICE	WIRE & COND
2#12-16mmC	IT Receptacle - Electrical 107	20A	0.3	1		2	0.1	20A	Emergency Lighting EBP#1 - Electrical 107	2#12-16mmC
2#12-16mmC	IT Receptacle - Electrical 107	20A	0.3	3		4	0.6	20A	Lighting - First Floor East Side	2#12-16mmC
2#12-16mmC	Receptacle Office - RM 105/106	15A	0.3	5		6	0.4	20A	Lighting - First Floor West Side	2#12-16mmC
2#12-16mmC	Receptacle Office - RM 105/104	15A	0.3	7		8	0.1	15A	Exterior Lighting Timer	2#12-16mmC
2#12-16mmC	Door Operator - Entrance & Reception 104	15A	0.1	9		10	0.3	15A	Receptacle Office - RM 109	2#12-16mmC
2#12-16mmC	Printer Receptacle Office - RM 110	20A	0.3	11		12	0.3	15A	Receptacle Office - RM 108	2#12-16mmC
2#12-16mmC	Receptacle Office - RM 111	15A	0.3	13		14	0.3	15A	Receptacle Office - RM 110/108	2#12-16mmC
2#12-16mmC	Receptacles - WR 112/114	15A	0.3	15		16	0.3	15A	Fridge - Coffee RM 113	2#12-16mmC
2#12-16mmC	Receptacle - Meeting RM 103	15A	0.3	17		18	0.3	20A	Microwave - Coffee RM 113	2#12-16mmC
2#12-16mmC	Receptacle - Meeting RM 103	15A	0.3	19		20	0.3	20A	Counter Receptacles - Coffee 113	2#12-16mmC
2#12-16mmC	Printer Receptacle - Entry Hallway 101	20A	0.3	21		22	3.5	30A	RC#5 - Hall 102	2#10-16mmC
2#12-16mmC	Baseboards - Entry Hallway 101/ Meeting RM 103	20A	3.0	23		24				
				25		26	1.5	15A	Baseboards - Elec RM 107, WR 112/114	2#12-16mmC
2#12-16mmC	RC#1, RC#2 / Entry Hallway 101, Office RM 111	30A	4.0	27		28				
				29		30	0.5	15A	EF#1 - Electrical 107	2#12-16mmC
2#12-16mmC	ERV#2 - Hall 102	15A	0.1	31		32	0.1	15A	ERV#1 - Hall 102	2#12-16mmC
2#12-16mmC	CP#1 - Office RM 105	15A	0.2	33		34	0.1	15A	AC#1 - Meeting 103	2#12-16mmC
2#10-16mmC	DHWH#1 - Coffee 113	25A	2.0	35		36				
2#10-16mmC	DHWH#2 - Electrical 107	25A	2.0	37		38	0.5	20A	Exterior Service Receptacle - Heat Pumps	2#12-16mmC
2#8-21mmC	HP#1 - Exterior	40A	6.2	39		40	6.2	40A	HP#2 - Exterior	2#8-21mmC
				41		42				
2#12-16mmC	RC#3, RC#4 - Office 108, Office 105	20A	3.0	43		44	0.3	15A	FCU#1, FCU#2, FCU#3, FCU#4 - First Floor	2#12-16mmC
				45		46				
2#12-16mmC	Motorized Dampers - WR 102	15A	0.1	47		48	0.5	20A	HK Receptacles - RM 101,105, 107, 111	2#12-16mmC
---	SPARE	20A	---	49		50	---	15A	SPARE	---
---	SPARE	15A	---	51		52	---	15A	SPARE	---
---	SPARE	60A	---	53		54	---	15A	SPARE	---
				55		56	---	20A	SPARE	---
---	SPARE	100A	---	57		58	---	20A	SPARE	---
				59		60	---	20A	SPARE	---

NOTE: 120V Wire & Conduit sizes noted in this panel schedule are for branch circuit reference information only. Group wiring and derate wiring depending on wire length as per specification sections 16111 and 16122.

CONNECTED LOAD: 39.9 kW

MAX. CURRENT: 110.9 Amps

PANEL DESCRIPTION: Panel DP-202

PANEL RATING: 225A, 120/208V, 3P 4W - 60 CCT

PANELBOARD SCHEDULE -- DP203

WIRE & COND	SERVICE	BRKR	Load kW	CCT. No.		CCT. No.	Load kW	BRKR	SERVICE	WIRE & COND
2#12-16mmC	HK Receptacles - RM 202,209, 218	20A	0.5	1		2	0.1	20A	Emergency Lighting EBP#2 - Nook 209	2#12-16mmC
2#12-16mmC	Receptacle - Office RM 218 / 219	15A	0.3	3		4	0.5	20A	Lighting - Second Floor East Side	2#12-16mmC
2#12-16mmC	Receptacle - Office RM 216 / 217	15A	0.3	5		6	0.5	20A	Lighting - Second Floor West Side	2#12-16mmC
2#12-16mmC	Receptacle - Office RM 214 / 215	15A	0.3	7		8	0.1	15A	Motorized Dampers - Nook 209	2#12-16mmC
2#12-16mmC	Receptacle - Office RM 213	15A	0.3	9		10	0.3	15A	Receptacle - Office RM 210	2#12-16mmC
2#12-16mmC	Receptacle - Nook RM 209	15A	0.3	11		12	0.3	15A	Receptacle - Office RM 210 / 211	2#12-16mmC
2#12-16mmC	Printer Receptacle - Nook 210	20A	0.5	13		14	0.3	15A	Receptacle - Office RM 211 / 212	2#12-16mmC
2#12-16mmC	Receptacles - WR 207 / 208	15A	0.3	15		16	0.3	15A	Receptacle - Office RM 212	2#12-16mmC
2#12-16mmC	Receptacle Office - RM 205 / 206	15A	0.3	17		18	0.3	15A	Receptacle - Office RM 203	2#12-16mmC
2#12-16mmC	Fridge - Coffee RM 202	15A	0.3	19		20	0.3	15A	Receptacle - Meeting RM 204	2#12-16mmC
2#12-16mmC	Microwave - Coffee RM 202	20A	1.3	21		22	0.3	20A	Counter Receptacle - Coffee 202	2#12-16mmC
---	SPARE	20A	---	23		24	---	20A	SPARE	---
2#12-16mmC	Baseboards - RM 204 / 207 / 208 / 209 / 214	20A	3.0	25		26	4.5	30A	Baseboards - RM 210 / 211 / 212 / 218	2#10-16mmC
				27		28				
2#10-16mmC	RC#6 - Office 210	30A	3.5	29		30	2.0	15A	Baseboard - Office RM 203 / 205 / 206	2#12-16mmC
				31		32				
---	SPARE	15A	---	33		34	1.0	15A	AC#2, AC#3, AC#4, AC#5, AC#6, AC#7 - Second Floor	2#12-16mmC
---	SPARE	15A	---	35		36				
---	SPARE	15A	---	37		38	---	20A	SPARE	---
---	SPARE	15A	---	39		40	---	20A	SPARE	---
---	SPARE	15A	---	41		42	---	20A	SPARE	---

****C/W 100A/3P Main Breaker**

NOTE: 120V Wire & Conduit sizes noted in this panel schedule are for branch circuit reference information only. Group wiring and derate wiring depending on wire length as per specification sections 16111 and 16122.

CONNECTED LOAD: 22.0 kW

MAX. CURRENT: 61.1 Amps

PANEL DESCRIPTION: Panel DP203

PANEL RATING: 100A, 120/208 V, 3P 4W - 42 CCT

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. PRODUCT DATA

1. Submit product data in accordance with Division 1.

2. Include time-current characteristic curves for breakers with ampacity of 400A and over or with interrupting capacity of 22,000A symmetrical (rms) and over at system voltage.

PART 2- PRODUCTS

2.1. BREAKERS - GENERAL

1. Bolt-on moulded case circuit breaker: quick-make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.

2. Common-trip breakers: with single handle for multi-pole applications.

3. Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting. Trip settings on breakers with adjustable trips to range from 3-10 times current rating.

4. For any distribution panel which feeds a branch panel, the main breaker of the distribution panel shall be equipped with an adjustable instantaneous trip unit.

5. Circuit breakers with interchangeable trips on main service entrance breaker, and as indicated.

2.2. THERMAL MAGNETIC BREAKERS

1. Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

2.3. GROUND FAULT PROTECTION

1. GFI breaker to be provided for connection to all electric heating cable sets or heating panel sets.

2.4. OPTIONAL FEATURES

1. Include:

    1. on-off locking device.

    2. handle mechanism.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install circuit breakers as indicated.

END OF SECTION 16477

PART 1 - GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. Illuminating Engineering Society (IES)
    1. IES LM-79, Electrical and Photometric Measurements of Solid State Lighting Products.
    2. IES LM-80, Measuring Lumen Maintenance of LED Light Sources.
2. American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE).
    1. ANSI/IEEE C62.41-2002, Surge Voltages in Low-Voltage AC Power Circuits.
3. American Society for Testing and Materials (ASTM)
    1. ASTM F 1137-11e1, Specification for Phosphate/Oil and Phosphate/Organic Corrosion Protective Coatings for Fasteners.
4. United States of America, Federal Communications Commission (FCC)
    1. FCC (CFR47) EM and RF Interference Suppression.

1.3. SHOP DRAWINGS AND PRODUCT DATA

1. Submit shop drawings in accordance with Division 1.
2. Submit complete data prepared by independent testing laboratory for all luminaires, for review by Consultant.
3. Photometric data to include: total input watts, candle power summary, Polar Plot candela distribution zonal lumen summary, luminaire efficiency, CIE type, coefficient of utilization, lamp type and lumen rating in accordance with IESNA testing procedures, lens and louver type and finish.
4. Indicate fixture manufacturer and model number.
5. Submit shop drawings for all luminaire types.

1.4. WASTE MANAGEMENT AND DISPOSAL

1. Separate and recycle waste materials in accordance with Division 1, and with the Waste Reduction Work Plan.

2. Place materials defined as hazardous or toxic waste in designated containers.

3. Ensure emptied containers are sealed and stored safely for disposal away from children.

4. Be responsible for the storage of all obsolete fluorescent lamps and ballasts in approved containers.

5. Include for the co-ordination and disposal with the lamp and ballast disposal company for removal of spent lamps and ballasts.

PART 2- PRODUCTS

2.1. LED Lights

1. All LED lighting fixtures to be energy star or DLC rated.

2.2. CONTROLS

1. Ensure all lighting controls are fully compatible with the specific light fixtures and drivers being controlled.

2. Dimmers controlling LED fixtures to be rated for such loads and shall meet all light fixture manufacturer's requirements.

2.3. FINISHES

1. Baked enamel finish:

    1. Conditioning of metal before painting:

        1. For corrosion resistance conversion coating to ASTM F 1137.

        2. For paint base, conversion coating to ASTM F 1137.

    2. Metal surfaces of luminaire housing and reflectors finished with high gloss baked enamel to give smooth, uniform appearance, free from pinholes or defects.

    3. Reflector and other inside surfaces finished as follows:

        1. White, minimum reflection factor 85%.

        2. Colour fastness: yellowness factor not above 0.02 and after 250h exposure in Atlas fade-ometer not to exceed 0.05.

        3. Film thickness, not less than 0.03 mm average and in no areas less than

0.025 mm.

4. Gloss not less than 80units as measured with Gardner 60° gloss meter.

5. Flexibility: withstand bending over [12] mm mandrel without showing signs of cracking or flaking under 10 times magnification.

6. Adhesion: 24mm square lattice made of 3mm squares cut through film to metal with sharp razor blade. Adhesive cellulose tape applied over lattice and pulled. Adhesion satisfactory if no coating removed.

2. Alzak finish:

1. Aluminium sheet fabricated from special aluminum alloys and chemically brightened, subsequently anodically treated to specifications established by Alcoa, to produce:

1. Finish for mild commercial service, minimum density of coating 7.8 g/m ², minimum reflectivity 83% for specular, 80.5% for semi-specular and 75% for diffuse.

2. Finish for regular industrial service, minimum density of coating 14.8 g/m ², minimum reflectivity 82% for specular and 73% for diffuse.

3. Finish for heavy duty service, minimum density of coating 21.8 g/m ², minimum reflectivity 85% for specular, 65% for diffuse.

2.4. LUMINAIRE SCHEDULE

See lighting schedule on electrical drawings.

PART 3- EXECUTION

3.1. INSTALLATION

1. Locate and install luminaires as indicated.

2. For all luminaires with reflective surfaces, contractor is to use clean gloves during installation and clean off all fingerprints, dirt and dust at completion of project.

3. Where new luminaires are specified, the Contractor shall include for all required assembly and mounting. Provide all wiring, connections, inter-fixture wiring harnesses, fittings, hangers, safety chains, aligners, box covers and accessories which may be required to ensure a complete, safe and fully operational system.

4. All lighting fixtures shall be independently supported to the structure by providing two chains installed at each opposite corner. Coordinate exact requirements on site.

5. Thoroughly review all ceiling types, construction details and mounting arrangements prior to

placing orders for new luminaires.

6. Locate hangers on tile centres or intersections. Mount recessed pot lights, lay-in and surface mounted luminaires in or on full tiles.

7. Standard octagonal boxes may be supplied where conduits feeding luminaires in finished areas are exposed on ceiling if hanger canopies entirely cover outlet boxes and are neatly notched for conduit. Otherwise, provide cast conduit outlet boxes with a diameter larger than canopies.

8. Do not mount luminaires above pipes, ducts or equipment. In event of unavoidably tight locations, provide hangers to clear obstruction. Luminaires in any room shall hang at one height. Obtain approval before any changes are made to layouts shown.

3.2. WIRING

1. Connect all luminaires to lighting circuits as indicated via centralized junction boxes.

3.3. LUMINAIRE SUPPORTS

1. For suspended ceiling installations provide independent slack chain suspension on each fixture to keep fixture approximately level.

2. Chains shall be No. 4 Tensile, bright zinc coated, with a strength of 400 lbs. where luminaires are indicated to be chain hung. Attachments shall be made using a No. 105 "S" hook. Caddy fasteners to be used where applicable.

3. Support luminaires mounted in continuous rows at each end of each fixture.

3.4. LUMINAIRE ALIGNMENT

1. Align luminaires mounted in continuous rows to form straight uninterrupted line.

2. Align luminaires mounted individually parallel or perpendicular to building grid lines.

3. Install luminaires accurately, in line and level, complete with mounting appurtenances and hardwares, free from undue interferences.

3.5. TESTS

1. Perform tests in accordance with Section 16010.

2. Clean and check luminaries and replace defective luminaires or drivers just prior to turnover to owner.

END OF SECTION 16505

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. REFERENCES

1. Atomic Energy Control Board Regulations.
2. Canadian Code for Preferred Packaging.
3. Canadian Standards Association (CSA)
    1. CSA C22.2 No. 141-10, Unit Equipment for Emergency Lighting.
    2. CSA C860-11, Performance of Internally-Lighted Exit Signs.
4. Natural Resources Canada (NRCan)
    1. NRCan C860 Registered.
5. National Fire Protection Association (NFPA) requirements.
6. Ontario Building Code OBC

1.3. PRODUCT DATA

1. Submit product data in accordance with Division 1. Include product characteristics, performance criteria, physical size, limitations and finish.

1.4. WASTE MANAGEMENT AND DISPOSAL

1. Separate and recycle waste materials in accordance with Division 1, and with Waste Reduction Workplan.
2. Place materials defined as hazardous or toxic waste in designated containers.
3. Ensure emptied containers are sealed and stored safely for disposal away from children.
4. Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.
5. Fold up metal banding, flatten and place in designated area for recycling.

PART 2- PRODUCTS

2.1. PICTOGRAM EXIT LIGHTS - GENERAL

1. Pictogram Exit lights: to CSA C22.2 No. 141 and CSA C860.
2. Housing: one piece extruded aluminum, baked white enamel finish.
3. Face and back plates: extruded aluminum, baked white enamel finish.
4. Lamps: LED, non-protruding type, maximum 2 watts per face, to operate from 120V or 347 V emergency lighting circuit.
5. Designed for 25 year life of continuous operation without relamping.
6. Interchangeable Pictogram Face Plate.
7. Face plate to remain captive for relamping.
8. CSA C860-11 listed and certified model with five year warranty.
9. NRCan Registered.

2.2. DESIGN

1. Universal type for wall, end to wall, or ceiling mounted as required.
2. Number of faces as per drawings.
3. Three faceplates to be provided with each Pictogram Exit, with final faceplate selection based on drawings and site conditions.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install pictogram exit lights as indicated, in accordance with OBC.
2. Connect fixtures to exit light circuits as indicated.
3. Connect emergency circuit to universal DC backup power source as per installation instructions.
4. Ensure that exit light circuit breaker is locked in on position.
5. Provide T-bar grid support brackets for installations on T-bar ceiling.

END OF SECTION 16519

PART 1- GENERAL

1.1. GENERAL

1. Division 1, General Requirements is part of this Section and shall apply as if repeated here.

1.2. PRODUCT DATA

1. Submit product data in accordance with Division 1, including:
    1. Electrical data of components, including input and output voltages, operating time, phase, AC and DC ampere ratings.
    2. Mounting methods, dimensional outline and accessories.
    3. Lamp heads type, watt/ampere, lumen output, horizontal and vertical adjustments.
    4. Data for battery, charger and auxiliary instruments and devices.

1.3. DELIVERY

1. Deliver batteries in dry state, unless hermetically sealed.
2. Provide electrolyte in hazard-proof container.

1.4. WARRANTY

1. For batteries, the 12 months warranty period prescribed in subsection GC 32.1 of General Conditions “C” is extended to 120 months, with a no-charge replacement during the first 5 years and a pro-rate charge on the second 5 years.
2. Provide written copy of terms of battery guarantee in maintenance manual, and note date of acceptance for start of guarantee period.

PART 2- PRODUCTS

2.1. EQUIPMENT

1. Unit equipment for emergency lighting: to CSA C22.2 No. 141.
2. Supply voltage: Universal Voltage 120 V or 347 V AC.
3. Output voltage: 12 V DC.
4. Battery: sealed, maintenance free, sized to 30 min. operation plus 20% spare capacity.

Battery capacity to be 360 W, unless otherwise noted.

5. Charger: solid state, multi-rate, voltage/current regulated, inverse temperature compensated, short circuit protected with regulated output of plus or minus 0.01V for plus or minus 10% input variation.

6. Solid state transfer circuit.

7. Low voltage disconnect: solid state, modular, operates at 80% battery output voltage.

8. Signal lights: solid state, life expectancy 100,000 h minimum, for 'AC Power ON' and 'High Charge'.

9. Cabinet: suitable for direct or shelf mounting to wall and c/w knockouts for conduit. Removable or hinged front panel for easy access to batteries.

10. Finish: white baked enamel.

11. Auxiliary equipment:

    1. Lamp disconnect switch.

    2. Momentary test switch.

    3. Time delay relay.

    4. Battery disconnect device.

    5. Shelf.

    6. Cord and plug connection for ac.

    7. Self-diagnostics (auto-test).

2.2. WIRING OF REMOTE HEADS

1. Conduit: type EMT, to Section 16111.

2. Conductors: RW90 type to Section 16122, sized to limit voltage drop to 5%.

PART 3- EXECUTION

3.1. INSTALLATION

1. Install unit equipment for emergency lighting in accordance with CSA C22.1-12.

2. Install unit equipment and remote mounted fixtures as indicated.

3. Unit equipment shall be mounted with the bottom of the enclosure not less than 2 meters above the floor.

4. Receptacles to which unit equipment is to be connected shall be not less than 2.5 meters above the floor.

5. Connect exit lights to unit equipment as indicated.

6. Clean all heads and direct as indicated by Consultant at type of acceptance.

7. Test each unit and verify operation of all remote heads.

8. Unit equipment shall be installed in such a manner that it will be automatically actuated upon failure of the power supply to the normal lighting in the area covered by that unit equipment.

9. For all battery units that are equipped with self-diagnostics (auto-test), ensure that the system is connected as per manufacturer's instructions. Note that some battery packs with self-diagnostics have two circuits and the circuits should be balanced as close as possible for the system to work properly. Also, the DC side of the system must be connected first before the AC is initiated to prevent damage to the circuit board electronics.

10. Provide complete instruction for the operation and maintenance of the unit equipment for emergency lighting as per the OBC and the manufacturer's recommendations. Instructions to include testing unit equipment at least once a month to ensure proper operation. Installation instructions to be posted on the premises in a frame under glass.

END OF SECTION 16536

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-3
ISSUE FOR TENDER DRAWINGS

Refer to the Issue for Tender Drawings, which are attached to this Schedule 3-A-3.

Drawing No.	Description	Date
Bertrand Wheeler Architecture		
2508	Cover Sheet & Key Site Plan	August 19, 2025
A1.0	CBC Matrix, Assembly Schedules, Door and Frame Schedule, Door and Frame Elevations, Room Finish Schedule and Window Schedule	
A1.1	General Notes & Specifications	
A1.2	Demolition & Proposed Site Plan	
A2.0	Existing Demolition Floor Plans Main & Second Level	
A2.1	Proposed Floor Plans Main & Second Level	
A3.0	Existing Demolition Reflected Ceiling Plan Main & Second Level	
A3.1	Proposed Reflected Ceiling Plan Main & Second Level	
A4.0	Existing Demolition Elevations & Proposed Elevation North-east & North-west Elevations	
A4.1	Existing Demolition Elevations & Proposed Elevations South-West & South-East Elevations	
A5.0	Building Sections Existing & Proposed	
A5.1	Sections Details Existing & Proposed	
A6.0	Interior Elevations and Casework Sections Details	
Northshore Engineering & Drafting Services		
S1.0	General Notes	August 19, 2025
S2.0	Main Floor Plan	
S2.1	2nd Floor Framing Plan	
S2.2	Roof Framing Plan - Roof Truss Modifications	
S3.0	Sections / Details	
S3.1	Sections / Details	
S3.2	Sections / Details	

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-3 *cont'd*
ISSUE FOR TENDER DRAWINGS

Refer to the Issue for Tender Drawings, which are attached to this Schedule 3-A-3.

Drawing No.	Description	Date
Piotrowski Consultants Limited		
M101	Mechanical Plumbing Proposed Floor Plans, Legend, Details, and Notes	August 19, 2025
M102	Mechanical Plumbing Removals Floor Plan, Details, and Schedules	
M103	Mechanical Refrigeration Proposed Floor Plans, Details and Schedule	
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ONTC OFFICE CONVERSION

Ontario Northland Transportation Commission
435 Whitson Street, North Bay, ON

ISSUED FOR PERMIT & TENDER

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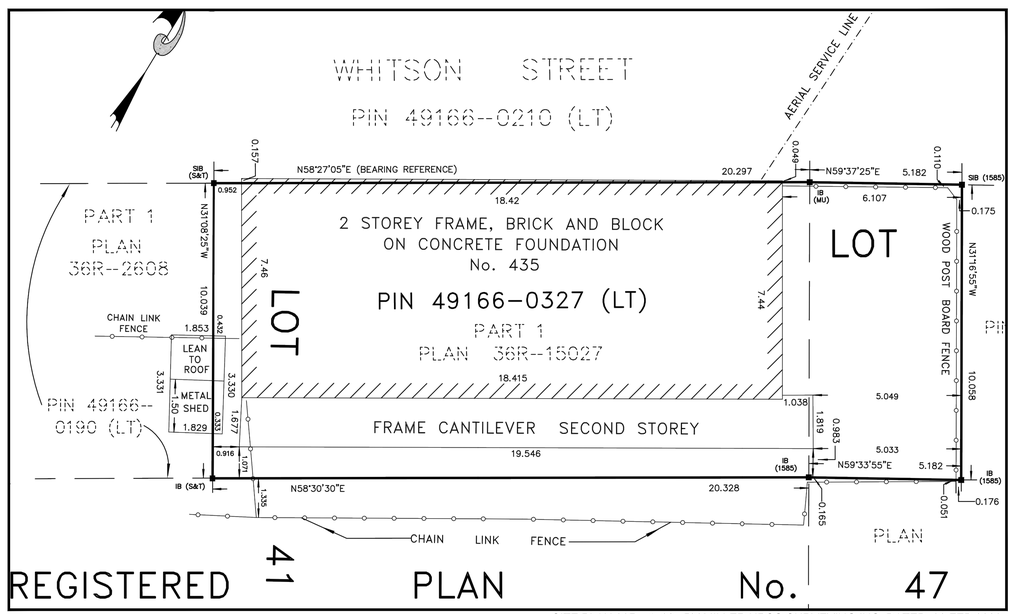
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ELECTRICAL

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Bertrand Wheeler architecture inc.
528 Cassells Street, North Bay, ON P1B 4S5
tel: 705-472-0988 fax: 705-472-2486
www.bertrandwheeler.ca



SITE PLAN 36R - 15027 BY MILLER URSO SURVEYING INC. DATED 06 FEB 2023

2 / A0.0 SITE PLAN - DEMOLITION
SCALE 1/16"=1'=0"

Bertrand Wheeler architecture inc.
528 Cassells Street, North Bay, ON P1B 3Z7 tel: 705-472-0988 fax: 705-472-2486

project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
435 Whitson, North Bay, ON

title: COVER SHEET & KEY SITE PLAN

revision date: 26/06/2025
ISSUED FOR Progress Review

project number: 2508

dwg no: A0.0

Name of Practice:
Bertrand Wheeler Architecture Inc.
528 Cassells Street
North Bay, ON P1B 3Z7

Name of Project:
Ontario Northland Transportation Commission (ONTC)
Office Renovations
Arch. Project No. 2508

Location:
435 Whitson Avenue
North Bay, ON

Date:
April 2025

2024 Ontario Building Code Data Matrix Part 11 – Renovation

			Building Code Reference [1]
11.00	Building Code Version:	O. Reg. 163/24 Last Amendment O. Reg. 447/24	
11.01	Project Type:	☐ Addition ☒ Renovation ☐ Addition and renovation ☐ Change of use Description: Upgrades to existing retail/personal service shop/office building.	[A] 1.3.3.3B.
11.02	Major Occupancy Classification:	Occupancy: D Use: Group D, Personal & Business Services (Offices)	3.1.2.1.(1), 2.1.4.1.(1), and 11.2.1.
11.03	Superimposed Major Occupancies:	☒ No ☐ Yes Description:	11.2 , 3.2.2.5. to 3.2.2.8., and 2.2.1.
11.04	Building Area (m^2)	Description: Existing / New / Total Main Floor (OBC Area): 139m2 / 0m2 / 120m2 Upper Floor (OBC Area): 139m2 / 0m2 / 120m2 Gross Total: 278m2 / 0m2 / 240m2	[A] 1.4.1.2., 11.2., and 11.3.
11.05	Building Height	2 Storeys above grade +/- 6 (m) Above grade 0 Storeys below grade	[A] 1.4.1.2., 3.2.1.1., 2.2.2.2., and 11.3.
11.06	Number of Streets/ Firefighter Access	1 street(s)	3.2.2.10., 3.2.5., 2.2.4.1., and 11.3.
11.07	Building Size	☒ Small ☐ Medium ☐ Large ☐ > Large	11.2.1.1., and T.11.2.1.1.B-N.
11.08	Existing Building Classification:	Change in Major Occupancy: ☐ Yes ☒ Not Applicable (no change of major occupancy) Construction Index: 3 Hazard Index: 3 Importance Category : ☐ Low ☒ Normal ☐ High ☐ Post-disaster	10.1.1.2., 11.2.1.1., T 11.2.1.1.A T 11.2.1.1.B to N 4.1.2.1.(3), 2.3.1., and 5.2.2.1.(2)
11.09	Renovation Type:	☐ Basic Renovation ☒ Extensive Renovation	11.3.3.1., and 11.3.3.2.
11.10	Occupant Load	Floor Level/Area: Main Floor; Occupancy Type: Offices; Based On: Design; Occupant Load (Persons): 30 max	3.1.17., 2.1.2.2., and 11.4.2.2.
11.11 a	Plumbing Fixture Requirements	Ratio: M:F = 50:50 Except as otherwise noted Main Floor: Occupant Load 30; OBC Reference 3.7.4.3; WCs Required 4; WCs Provided 4	3.7.4., 11.3.4., 11.3.5., 11.4.2.4., and 11.4.2.5. See note below.
11.12	Barrier-free Design:	☐ Yes ☒ No Not required to be upgraded as per OBC 11.3.3.2 (2)	11.3.1.2., 11.3.2., 11.3.3.2.
	Barrier-free Entrances:	Number ____ Explanation	
11.13	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 buildings of combustible construction: ☒ No ☐ Yes *See structural dwgs	11.4.2.1. 11.4.2.2. 11.4.2.3. 11.4.2.4. 11.4.2.5. 11.4.2.6.
11.14	Compensating Construction:	☒ No ☐ Yes Structural: ☒ No ☐ Yes See structural letter & design Increase in occupant load: ☒ No ☐ Yes Change of major occupancy: ☒ No ☐ Yes Plumbing: ☐ No ☒ Yes See mechanical design	11.4.3.1. 11.4.3.2. 11.4.3.3. 11.4.3.4. 11.4.3.5.
11.15	Compliance Alternatives Proposed:	☒ No ☐ Yes none	11.5.1.
11.17	Notes:	Washroom count: Universal washroom is applied to the fixture requirements for both genders as per OBC 3.7.4.2 (8) OBC Classification: Building would be classified as Group D Occupancy, Two Storeys, as per OBC 9.10.2.1. Combustible construction allowed. 9.10.8.1 Floors and loadbearing elements supporting the floor shall have a FRR of 45min. Existing 30 min rating acceptable by compliance alternative DE 125 of Part 11. Stair & Exit: Single Exit is an existing condition & deemed acceptable as per OBC 9.9.8.2(2) & 9.9.7.4 Occupancy does not exceed 60 persons. Travel distance is less then 25M Barrier Free upgrades limited to main floor only. OBC does not require accessibility upgrades as per OBC 11.3.3.2(2)	

1 *All references are to Division B of the OBC, unless preceded by [A] for Division A and [C] for Division C.*

PARTITION/FURRING TYPE SCHEDULE:

NOTES:
1. GRAPHIC SECTIONS INDICATED BELOW ARE IN PLAN.
2. UNLESS OTHERWISE NOTED, CONSTRUCT ALL PARTITIONS TO RUN FROM FLOOR TO U/S OF STRUCTURE ABOVE.

F1 — 15"

INTERIOR BASEMENT WALL FURRING
- EXISTING CONCRETE BLOCK WALL
- PROVIDE 25mm (1") AIR SPACE
- 89mm (3 1/2") WOOD STUDS @ 406mm (16") O.C.
- FILL W/ BATT INSULATION
- 6mil POLY VAPOUR BARRIER
- 13mm (1/2") MOISTURE RESISTANT GWB

F2 — 4"

INTERIOR WALL FURRING
- EXISTING WALL OR PARTITION
- 89mm (3 1/2") WOOD STUDS @ 406mm (16") O.C.
- FILL W/ BATT INSULATION
- 13mm (1/2") GWB TYPE

P1 — 4 1/2"

TYPICAL INTERIOR INSULATED PARTITION
- 13mm (1/2") GWB EACH SIDE
- 89mm (3 1/2") WOOD STUDS @ 406mm (16") O.C.
- FILL COMPLETELY WITH SOUND ISOLATION BATT.
- SEAL AROUND PERIMETER

P2 — 6 1/2"

TYPICAL INTERIOR PLUMBING PARTITION (SOUND RATED)
- 13mm (1/2") GWB EACH SIDE
- 140mm (5 1/2") WOOD STUDS @ 406mm (16") O.C.
- FILL COMPLETELY WITH SOUND ISOLATION BATT.
- SEAL AROUND PERIMETER

P3 — 4 1/2"

TYPICAL INTERIOR PARTITION
- 13mm (1/2") GWB EACH SIDE
- 89mm (3 1/2") WOOD STUDS @ 406mm (16") O.C.

P4 — 6 1/2"

TYPICAL INTERIOR PLUMBING/LOAD-BEARING PARTITION
- 13mm (1/2") GWB EACH SIDE
- 140mm (5 1/2") WOOD STUDS @ 406mm (16") O.C.

P5 — 4 3/4"

INTERIOR PARTITION (3/4 - 1 HR. FIRE SEPARATION), TO ULC W301.
- 16mm (5/8") GWB EACH SIDE
- 89m (3 1/2") WOOD STUDS @ 406mm (16") O.C.
- FILL COMPLETELY WITH SOUND ISOLATION BATT.
- SEAL AROUND PERIMETER

P6 — 6 3/4"

LOAD-BEARING PARTITION 1 HR. FIRE SEPARATION TO ULC W301.
- 16MM (5/8") TYPE 'X' GWB EACH SIDE
- 2x6 LOADBEARING STUDS @ 16" O.C.
- FILL W/ ROXUL INSULATION

EXTERIOR WALL SCHEDULE:

NOTES:
1. GRAPHIC SECTIONS INDICATED BELOW ARE IN PLAN.
2. UNLESS OTHERWISE NOTED, CONSTRUCT ALL PARTITIONS TO RUN FROM FLOOR TO U/S OF STRUCTURE ABOVE.

W1 — 4"

TYPICAL EXTERIOR INSULATED WALL
- CLADDING (SEE ELEVATIONS).
- 25MM (1") STRAPPING AT 406MM (16") O.C.
- NEW 38MM (1.5") RIGID INSULATION
- NEW AIR VAPOUR BARRIER
- EXISTING WOOD STUD WALL W/ SHEATHING

W2 — 4"

TYPICAL EXTERIOR MAIN FLOOR WALL
- CLADDING (SEE ELEVATIONS).
- 25MM (1") STRAPPING AT 406MM (16") O.C.
- NEW 38MM (1.5") RIGID INSULATION
- NEW AIR VAPOUR BARRIER
- EXISTING CONCRETE BLOCK WALL.

FLOOR AND ROOF TYPE SCHEDULE:

NOTE: GRAPHIC SECTIONS INDICATED BELOW ARE IN SECTION.

R1

INSULATED TRUSSES ROOF AND ATTIC;
- EXISTING SHINGLES
- EXISTING SHEATHING
- TRUSSES PRESUMED TO BE ±610mm (24") O.C.
- EXISTING INSULATION (PRESUMED 6")
- ADD 6" OF BATT ATOP EXISTING INSULATION.
- PATCH & REPAIR EXIST. 15MM GWB & REPAINT

C1

SECOND LEVEL FLOOR ASSEMBLY;
45MIN. FIRE RATED ULC M500 (CERTAINTEED) OR EQUAL.
- FLOORING AS INDICATED
- NEW 1/4" SUBFLOOR FOR RELEVEL
- EXISTING SUBFLOORING
- EXISTING WOOD FRAMED JOISTS PRESUMED SPACED AT 16" O.C.
- NEW 100mm OF BATT SOUND ISOLATION IN CAVITY.
- NEW WOOD STRAPPING AT 406mm OC.
- NEW 16mm RATED TYPE-X GWB W/ PAINT FINISH
- SEAL AT ALL JOINTS.

SG1

SLAB ON GRADE (MAIN) FLOOR;
- EXISTING (PRESUMED) 127MM (5") POURED REINFORCED CONCRETE SLAB
- 6mil POLY VAPOUR BARRIER

PATCH USING CONCRETE TO MATCH DEPTH W/ 6"X6" WWM REINFORCING. PROVIDE VAPOUR BARRIER & COMPACT SOILS TO MATCH

DOOR AND FRAME SCHEDULE

REFERENCE NO.		DOOR					FRAME/SCREEN					ULC	HOWE	REMARKS
NO.	ROOM	TYPE	MAT	FIN	WIDTH	HT	TYPE	MAT	FIN	WIDTH	HT	LABEL		
APARTMENT A														
D101A	MAIN ENTRY	A	HM/TG	PT	36"	82"	2	HMI	PT	62"	84"	--	LOCKSET WITH LEVER	CLOSURE, PDO, TEMPERED GLASS - SEALED
D101B	CLOSET	C	HM	PT	2 x 30"	82"	1	HM	PT	64"	84"	--	CLOSET HANDLES	
D101C	ENTRY HALLWAY	B	HM/TG	PT	36"	82"	2	HM	PT	54"	84"	45 MIN	LOCKSET WITH LEVER	CLOSURE, PDO, TEMPERED GLASS - SEALED
D102A	HALL	B	HM	PT	36"	82"	1	HM	PT	40"	84"	--	LOCKSET WITH LEVER	CLOSURE
D102B	ENTRY HALLWAY	B	HM	PT	36"	82"	1	HM	PT	40"	84"	45 MIN	LOCKSET WITH LEVER	CLOSURE
D103A	MEETING ROOM	B	HM	PT	36"	82"	1	HM	PT	40"	84"	45 MIN	LOCKSET WITH LEVER	CLOSURE
D103B	MEETING ROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	
D107	ELECTRICAL ROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	45 MIN	LOCKSET WITH LEVER	
D108	OFFICE C	B	HM	PT	36"	82"	1	HM	PT	40"	84"	--	LOCKSET WITH LEVER	
D109	OFFICE D	B	HM	PT	36"	82"	1	HM	PT	40"	84"	--	LOCKSET WITH LEVER	
D112	BF WASHROOM	B	HM	PT	36"	82"	1	HM	PT	40"	84"	--	LOCKSET WITH LEVER	DOOR TO HAVE A 7/8" UNDERCUT, PDO
D113	COFFEE STATION	C	HM	PT	20"	82"	1	HM	PT	24"	84"	--	CLOSET HANDLES	BI-FOLD CLOSET DOORS
D114	WASHROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	DOOR TO HAVE A 7/8" UNDERCUT.
D201	STAIRWAY	A	HM/TG	PT	32"	82"	1	HM	PT	36"	84"	45 MIN	PASSAGE SET WITH LEVER	TOP GLAZING ONLY. NO BOTTOM GLAZING IN DOOR
D202	COFFEE/ MEETING ROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	
D207	WASHROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	PRIVACY SET WITH LEVER	DOOR TO HAVE A 7/8" UNDERCUT.
D208	WASHROOM	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	PRIVACY SET WITH LEVER	DOOR TO HAVE A 7/8" UNDERCUT.
D210	OFFICE	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	
D211	OFFICE	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	
D212	OFFICE	B	HM	PT	32"	82"	1	HM	PT	36"	84"	--	LOCKSET WITH LEVER	

ABBREVIATIONS							
AL	ALUMINUM	HM	HOLLOW METAL	WD	WOOD	CL	CLOSER
TBAL	THERMALLY BROKEN ALUMINUM	HMI	HOLLOW METAL INSULATED	EX	EXISTING	ES	ELECTRONIC SECURE ACCESS (KEY FOB OR SIMILAR)
CA	CLEAR ANODIZED	PT	PAINT	ST	STAINLESS STEEL	PDO	POWER DOOR OPERATOR
BA	BRONZE ANODIZED	GWG	GEORGIAN WIRE GLASS	TG	TEMPERED GLASS - SEALED	TBD	TO BE DETERMINED (ON SITE)

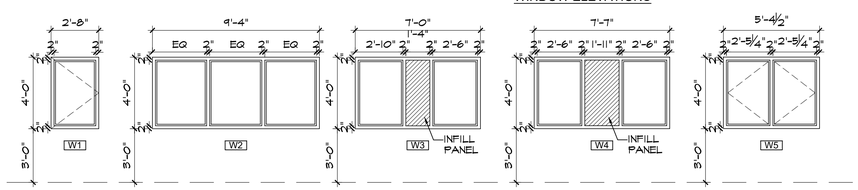
ROOM FINISH SCHEDULE

ROOM		FLOOR		WALL								GWB BLKHD		CEILING			REMARKS
				NORTH		SOUTH		EAST		WEST							
NO.	NAME	MAT'L	BASE	MAT'L	FIN	MAT'L	FIN	MAT'L	FIN	MAT'L	FIN	MAT'L	FIN	MAT'L	FIN	HT	
101	ENTRY HALLWAY	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
102	HALL	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	VARIOUS	GWB TO U/S OF STRUCTURE
103	MEETING ROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
104	RECEPTION / OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	N/A	N/A	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
105	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
106	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
107	ELECTRICAL ROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	9'-9"	GWB TO U/S OF STRUCTURE
108	OFFICE C	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
109	OFFICE D	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
110	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	ACT	N/A	7'-0"	GWB TO U/S OF STRUCTURE
111	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	GWB	PT	ACT	N/A	7'-0"	GWB TO U/S OF STRUCTURE
112	B.F. WASHROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
113	COFFEE STATION	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
114	WASHROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	ACT	N/A	8'-6"	GWB TO U/S OF STRUCTURE
201	STAIRWAY	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	8'-0"	
202	COFFEE STATION	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
203	OFFICE	SVF	RB	GWB	PT	N/A	N/A	N/A	N/A	GWB	PT	GWB	PT	GWB	PT	8'-0"	
204	HALLWAY	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
205	OFFICE	SVF	RB	N/A	N/A	GWB	PT	N/A	N/A	GWB	PT	GWB	PT	GWB	PT	8'-0"	
206	OFFICE	SVF	RB	N/A	N/A	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	GWB	PT	8'-0"	
207	WASHROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
208	WASHROOM	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
209	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
210	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
211	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
212	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	GWB	PT	8'-0"	
213	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
214	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
215	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
216	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
217	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
218	OFFICE	SVF	RB	GWB	PT	GWB	PT	N/A	N/A	N/A	N/A	N/A	N/A	GWB	PT	8'-0"	
219	OFFICE	SVF	RB	GWB	PT	GWB	PT	GWB	PT	N/A	N/A	GWB	PT	GWB	PT	8'-0"	

ABBREVIATIONS					
ACSW	ABOVE CASEWORK	GWB	GYPSUM WALLBOARD	SC	SEALED CONCRETE
ACT	ACOUSTICAL CEILING TILE	PLY	PLYWOOD	SVF	SHEET VINYL FLOORING
BLKHD	BULKHEAD	PT	PAINT	VCT	VINYL COMPOSITE TILE
CT	PORCELAIN / CERAMIC TILE	RB	RUBBER BASE	PF	PAINTED FLOOR
EXIST	EXISTING	RCP	REFLECTED CEILING PLAN	CPT	CARPET
WD	WOOD	PREF	MANUFACTURED FINISH	CW	CURTAIN WALL
EXP	EXPOSED STRUCTURE	SC	SCREEN	SP	SEE SPECIFICATIONS

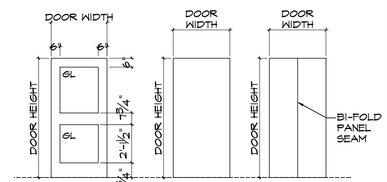
NOTE: SEE RCP FOR BULKHEAD LOCATIONS.
CEILING HEIGHTS ON THIS SCHEDULE GOVERN.

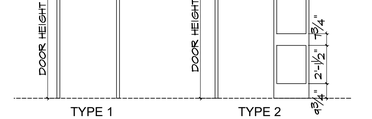
WINDOW ELEVATIONS



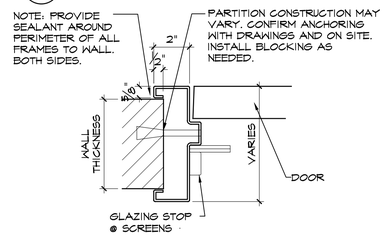
4 A1.0 WINDOW SCHEDULE
SCALE 1/4"=1'=0"

DOOR AND FRAME ELEVATIONS

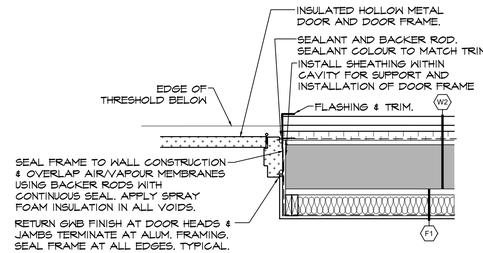




1 A1.0 DOOR SCHEDULE
SCALE 1/4"=1'=0"



2 A1.0 INTERIOR DOOR JAMB DETAIL
SCALE N.T.S



3 A1.0 EXTERIOR DOOR JAMB DETAIL
SCALE 1"=1'=0"

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project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
435 Whitson, North Bay, ON

title: OBC MATRIX, ASSEMBLY SCHEDULES, DOOR AND FRAME SCHEDULE, DOOR AND FRAME ELEVATIONS, ROOM FINISH SCHEDULE AND WINDOW SCHEDULE

drawn by:	checked by:
KD + AL	MW
scale: AS NOTED	project no: 2508
date plotted:	
revision date: ----	

dwg no: **A1.0**

GENERAL NOTES:

1. DO NOT SCALE FROM THE DRAWINGS.
2. READ ALL DRAWINGS IN CONJUNCTION WITH ALL SPECIFICATIONS, DRAWINGS AND DOCUMENTS FROM ALL CONSULTANTS. PROMPTLY NOTIFY THE CONSULTANT OF ANY CONCERNS OR QUESTIONS REGARDING CONFLICTS.
3. PROMPTLY REPORT ALL DRAWING DISCREPANCIES TO THE CONSULTANT.

SCOPE OF WORK:

THE FOLLOWING IS A BRIEF SUMMARY FOR OVERALL DESCRIPTIONS ONLY. REFER TO DOCUMENTS FOR FULL SCOPE.

- EXTERIOR DEMOLTION. NEW EXTERIOR CLADDING & INSULATION, & SIGNAGE
- INTERIOR DEMOLTION FOR LOWER & UPPER FLOORS TO SUIT WORK FOR PROPOSED PLANS, MECHANICAL, ELECTRICAL, PLUMBING & STRUCTURAL SITE CLEARING, EXCAVATION & GRADING. FOR SITE REQUIREMENTS. MODIFICATIONS TO FENCES BOTH WOOD & METAL. PROVIDE NEW ENTRY INTO EXIST. NEIGHBORING PARKING LOT. ASPHALT TO BE MODIFIED, PATCHED AND REPAIRED FOR REQUIRED SITE MODIFICATIONS.
- ARCHITECTURAL - OBC REVIEW INCLUDING FIRE EXITS AND ACCESSIBILITY, BUILDING FLOOR PLAN INCLUDING DESK LAYOUT. CUBICLES ARE 6 FT X 6 FT
- GROUND FLOOR SLAB REMOVAL & REPLACEMENT. INCLUDES PROPOSED STRUCTURAL FOOTING.
- INTERIOR STAIRCASE CONSTRUCTION. INCLUDES FLOOR MODIFICATIONS & BULKHEAD
- STRUCTURAL REPAIRS AS REQUIRED. REFER TO STRUCTURAL AS PER NORTHSHORE ENGINEERING.
- INSTALL NEW LOADBEARING PARTITION ON GROUND FLOOR. PROVIDE TEMPORARY BRACING
- NEW ELECTRICAL PANELS THAT USE 1 HYDRO METER. REMOVE SECOND HYDRO METER AS REQUIRED. REMOVE OR RERUN ELECTRICAL.
- NEW PROPOSED ELECTRICAL & MECHANICAL INSTALLATION
- ALL PLUMBING TO BE REMOVED AND REPLACED. REFER TO PLUMBING AS PER PITROWSKIS DRAWINGS
- REPLACE & MODIFY WINDOWS AS PER DRAWINGS. REFER TO STRUCTURAL FOR LINTELS.
- PAINT ALL WALLS AND CEILINGS.
- NEW VINYL FLOORING IN ALL AREAS
- UN-HEATED OVERHANG TO BE REMOVED, ROOF OVERHANG TO REMAIN. FINISH OVERHANG WITH SOFFIT AND FASCIA.
- FURNITURE INCLUDING DESKS AND CHAIRS. SOUND DAMPING DIVIDERS FOR CUBICLES. BY OWNER
- IT INTERNET DROPS TO EACH WORKSTATION AND MEETING ROOM.
- NEW ELECTRICAL OUTLETS. DEDICATED DUPLEX OUTLET FOR EACH WORKSTATION, PRINTERS, MEETING ROOM, AND FRIDGES.
- BARRIER-FREE POWER OPERATED DOORS, & FOB ACCESS AT FRONT ENTRY.
- ASPHALT TO BE MODIFIED, PATCHED AND REPAIRED FOR REQUIRED SITE MODIFICATIONS.

OWNER OCCUPANCY AND USE DURING CONSTRUCTION

1. THE BUILDING IS INTENDED TO BE EMPTY DURING ENTIRE CONSTRUCTION.
2. THE LOCALIZED AREA WILL BE EVACUATED DURING THE CONSTRUCTION AND DEMOLITION ACTIVITY. SCHEDULE TIMES WITH OWNER.
3. MAINTAIN SITE SERVICES, ELECTRICAL AND WATERTIGHT STRUCTURE DURING CONSTRUCTION

CONTRACTING NOTES:

1. THE CONTRACTOR SHALL APPLY, ARRANGE AND PAY FOR THE BUILDING PERMIT.
2. SUBMIT COPY OF BUILDING PERMIT(S) TO OWNER AND CONSULTANT PRIOR TO COMMENCING WORK ON SITE.
3. COORDINATE SITE INSPECTIONS AND REVIEWS FOR THE BUILDING OFFICIAL AND CONSULTANT AS REQUIRED. FORWARD ALL REPORTS TO THE OWNER AND CONSULTANT .
4. SITE REVIEW FOR THE FOLLOWING COMPONENTS SHALL BE COORDINATED WITH THE CONSULTANT PRIOR TO CONCEALMENT. ALLOW 48 HOURS NOTIFICATION.
   - 4.1. UNDERSLAB VAPOUR BARRIERS
   - 4.2. FRAMING AND SHEATHING OF PARTITIONS, WALLS AND ROOFS
   - 4.3. REVIEW OF BLOCKING FOR WASHROOM AND SAFETY ACCESSORIES
   - 4.4. TYPICAL EXTERIOR WINDOW AND DOOR INSTALLATIONS
   - 4.5. ALL MEMBRANES, AIR BARRIERS, VAPOUR BARRIERS AND INSULATION
   - 4.6. FIRE RATED ASSEMBLIES
   - 4.7. FIRESTOPPING
   - 4.8. FINAL REVIEW FOR OCCUPANCY AND COMPLETION
5. COORDINATE ALL WORK, INCLUDING THE WORK OF ALL SUBTRADES AND SUBCONTRACTORS. COORDINATE ALL WORK SCHEDULES WITH OWNER PRIOR TO START.
6. CHECK, VERIFY, LOCATE, PROVIDE AND REINFORCE AS NECESSARY ALL OPENINGS FOR MECHANICAL AND ELECTRICAL REQUIREMENTS.
7. PERFORM ALL WORK AND INSTALL ALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. MAKE GOOD ALL EXISTING AREAS DISTURBED BY NEW WORK TO MATCH EXISTING MATERIALS AND FINISHES UNLESS OTHERWISE NOTED.
9. CAULK ALL JOINTS / GAPS BETWEEN DISSIMILAR MATERIALS AND FINISHES.
10. LEVEL AND PREPARE FLOORS FOR NEW FINISHES, AS REQUIRED, AND TO ENSURE SMOOTH TRANSITIONS AT ALL FLOOR SURFACES PRIOR TO INSTALLING FLOOR FINISHES.
11. UNLESS OTHERWISE NOTED FOR SALVAGE, DISPOSAL OF ALL DEMOLITION AND CONSTRUCTION RELATED DEBRIS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO BURNING SHALL BE PERMITTED ON SITE.
12. REMOVE, RELOCATE AND STORE (ON SITE) ALL ITEMS NOTED FOR SALVAGE AS SITE DIRECTED BY THE OWNER.
13. ALL ITEMS NOTED AS 'NIC' SHALL BE OWNER SUPPLIED ITEM, EQUIPMENT OR FIXTURE. SUPPLY AND INSTALLATION SHALL NOT BE INCLUDED IN THE SCOPE OF WORK BUT ALL RELATED WORK SHALL BE FULLY COORDINATED WITH THE CONSULTANT PRIOR TO FABRICATION OR INSTALLATION TO ENSURE PROPER FIT.
14. SUBMIT PRODUCT SAMPLE AND SHOP DRAWING INFORMATION FOR REVIEW.
15. PERFORM WORK CONTINUOUSLY TO COMPLETION. NO PERIOD OF INACTIVITY WILL BE ACCEPTED WITHOUT PRIOR COORDINATION AND APPROVAL.
16. PERFORM DAILY AND FINAL CLEANING.

17. THE FOLLOWING FACILITIES WILL BE MADE AVAILABLE BY THE OWNER TO THE CONTRACTOR, WITHIN REASONABLE USE, FOR THE CONSTRUCTION PROJECT.
   - 17.1. WATER
   - 17.2. ELECTRIC POWER
   - 17.3. SANITARY FACILITIES SHALL BE LIMITED TO SINGLE WASHROOM AS COORDINATED WITH OWNER.

18. THE CONTRACTOR SHALL SUPPLY THE FOLLOWING FACILITIES AND UTILITIES:
   - 18.1. MOBILE TELEPHONE AND EMAIL FOR ON SITE CONTACTS
   - 18.2. DISTRIBUTION TOOLS (IE. HOSES, CORDS, HEATERS, ETC) OF ALL UTILITIES AND SERVICES SHALL BE BY CONTRACTOR.
   - 18.3. HOARDING & TEMPORARY STRUCTURES
   - 18.4. WEATHER ENCLOSURES AND DUST SCREENS

HOARDING NOTES:

1. ERECT TEMPORARY ENCLOSURES TO CONTAIN AND SECURE THE WORK AREA.
2. PROVIDE SAFETY SIGNAGE AND BARRICADES AND SECURE WORK AREA TO LIMIT ACCESS.

EXISTING CONDITIONS:

1. EXISTING CONSTRUCTION CONSISTS PRIMARILY OF CONVENTIONAL WOOD FRAMING WITH CONCRETE SLABS AND FOUNDATIONS.
2. CHECK ALL DIMENSIONS PRIOR TO THE START OF WORK AND REPORT ANY DISCREPANCIES TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
3. PROTECT ALL STRUCTURES, ELEMENTS, AND ADJACENT AREAS FROM DAMAGE AND DUST DURING ENTIRE COURSE OF WORK.
4. SAFEGUARD ALL EXISTING STRUCTURES AFFECTED BY THIS CONTRACT.
5. PROVIDE ALL NECESSARY BRACING SYSTEMS OF BUILDING ELEMENTS DURING CONSTRUCTION.

BUILDING CODE & FIRE SAFETY NOTES:

1. ALL WORK SHALL CONFORM TO THE LATEST EDITION OF THE ONTARIO BUILDING CODE, REGULATIONS AND LOCAL AUTHORITIES.
2. OBTAIN THE BUILDING AND OCCUPANCY PERMITS AND ARRANGE ALL INSPECTIONS.
3. REFER TO OBC MATRIX FOR FURTHER INFORMATION.
4. PROPOSED OVERALL BUILDING AREA IS AS INDICATED.
5. OCCUPANCY(S) INCLUDE: GROUP C, RESIDENTIAL (ALCOHOL & DRUG TREATMENT CENTRE).
6. EXISTING BUILDING IS A ONE STOREY, SLAB ON GRADE.
7. ENERGY REQUIREMENTS ARE NOT EXPECTED TO BE IMPACTED BY THE WORK.
8. STRUCTURAL DESIGN IS NOT CONSIDERED TO BE IMPACTED BY THE WORK.
9. ALL PENETRATIONS THRU REQUIRED FIRE SEPARATIONS SHALL BE FIRE STOPPED AND OR FIRE CAULKED AS REQUIRED BY CODE TO MAINTAIN THE FIRE SEPARATIONS AS INDICATED ON DRAWINGS.

HAZARDOUS MATERIALS:

1. HAZARDOUS MATERIALS REPORT IS AVAILABLE FOR THE SITE. REFER TO REPORT. SCOPE OF WORK SHALL INCLUDE THE ABATMENT FOR ALL DESIGNATEDSUBSTANCES DURING PROJECT.

TYPICAL ASSEMBLY AND PARTITION NOTES:

1. REFER TO THE TYPICAL ASSEMBLY SCHEDULE FOR TYPICAL PARTITIONS, WALLS, FLOOR AND ROOF ASSEMBLIES.
2. WALLS DIRECTLY ABOVE AND BELOW DOOR FRAMES AND SCREENS SHALL BE CONSTRUCTED AS PER THE ADJACENT ASSEMBLIES.
3. INSTALL WATER AND MOLD RESISTANT MATERIALS FOR PARTITIONS AND CEILINGS IN AREAS OF HIGH HUMIDITY SUCH AS WASHROOMS, LAUNDRY AND JANITOR CLOSETS.
4. INSTALL CEMENT BOARD FOR ALL AREAS REQUIRING WALL TILE.
5. ALL EXPOSED EDGES OF GWB TO BE FINISHED/ TRIMMED WITH J-MOLD.
6. ALL FIRE RATED AND SOUND RATED PARTITIONS SHALL BE CONSTRUCTED TO THE UNDERSIDE OF THE EXISTING STRUCTURE ABOVE. SEAL ALONG ALL FLOOR & CEILING JOINTS WHERE A FIRE RATING OR SOUND RATING IS INDICATED.
7. FIRE STOPPING. SUBMIT ULC APPROVED MANUFACTURERS DETAILS / SPECIFICATIONS FOR REQUIRED FIRE STOPPING SOLUTIONS. ACCEPTABLE PROVIDER: 'HILTI' OR APPROVED EQUAL.
8. ALL PARTITIONS THAT EXTEND TO UNDERSIDE OF STRUCTURAL ELEMENT / DECKING SHALL HAVE A DEFLECTION TRACK AT TOP OF PARTITION TO U/S OF STRUCTURAL ELEMENT / DECKING.
9. ALL PENETRATIONS THROUGH RATED AND NON-RATED FIRE SEPARATIONS ARE TO BE COMPLETELY SEALED / FIRE STOPPED TO PREVENT THE PASSAGE OF SMOKE OR FLAME. COORDINATE WITH MECHANICAL / ELECTRICAL DRAWINGS.
10. WHERE VARYING PARTITION TYPES OCCUR ALONG A CONTINUOUS FRAMED PARTITION DUE TO FIRE PROTECTION, CONTINUE THE GWB TYPE 'X' ALONG ENTIRE LENGTH OF WALL TO AVOID SURFACE VARIATIONS.
11. PROVIDE SOLID BLOCKING IN WALLS WHERE REQUIRED FOR ALL WALL MOUNTED ACCESSORIES, INCLUDING BUT NOT LIMITED TO EQUIPMENT, HANDRAILS, FIXTURES AND CASEWORK.

REFLECTED CEILING NOTES:

1. ALL CEILING HEIGHTS NOTED ON DRAWINGS ARE FROM TOP OF FLOOR. SEE ROOM FINISH SCHEDULE FOR CEILING HEIGHTS, EXCEPT WHEN INDICATED ON DRAWINGS.
2. COORDINATE WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS OF ALL CEILING FIXTURES UNLESS NOTED AND DIMENSIONED ON REFLECTED CEILING PLAN. REPORT ANY DISCREPANCIES TO THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
3. WHERE DRYWALL CEILINGS OR BULKHEADS ARE INDICATED ADJACENT TO OTHER CEILING TYPES, FINISH THE SIDEWALLS OF THE BULKHEADS WITH GWB TO 150mm ABOVE ADJACENT CEILING FINISH.
4. SEE ROOM FINISH SCHEDULE FOR CEILING FINISHES.
5. IN AREAS OF HIGH HUMIDITY AND MOISTURE, PROVIDE MOISTURE / MILDEW RESISTANT TYPE GYPSUM WALLBOARD.
6. PROVIDE ACCESS PANELS IN GWB CEILINGS AS REQUIRED BY MECHANICAL AND ELECTRICAL TRADES. PROVIDE FIRE RATED ACCESS PANELS WHERE FIRE RATINGS ARE REQUIRED.

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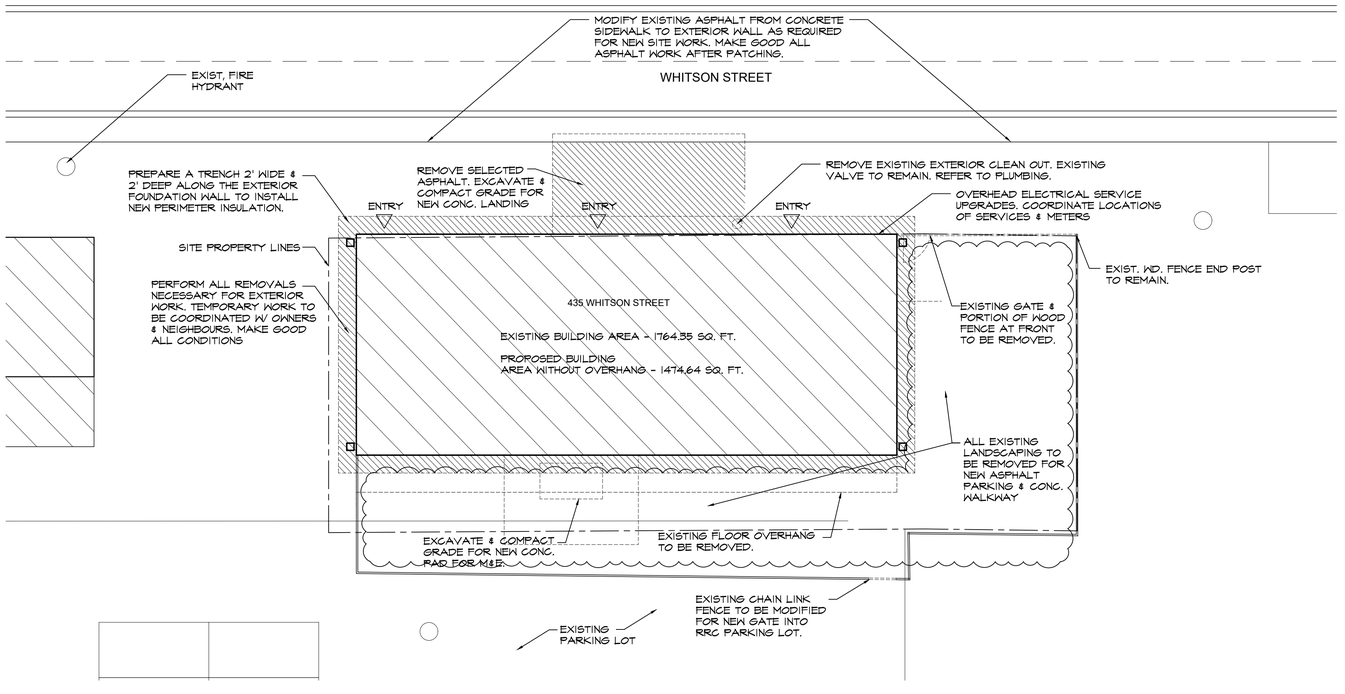
Bertrand Wheeler architecture inc.
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project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
425 Wilson, North Bay, ON

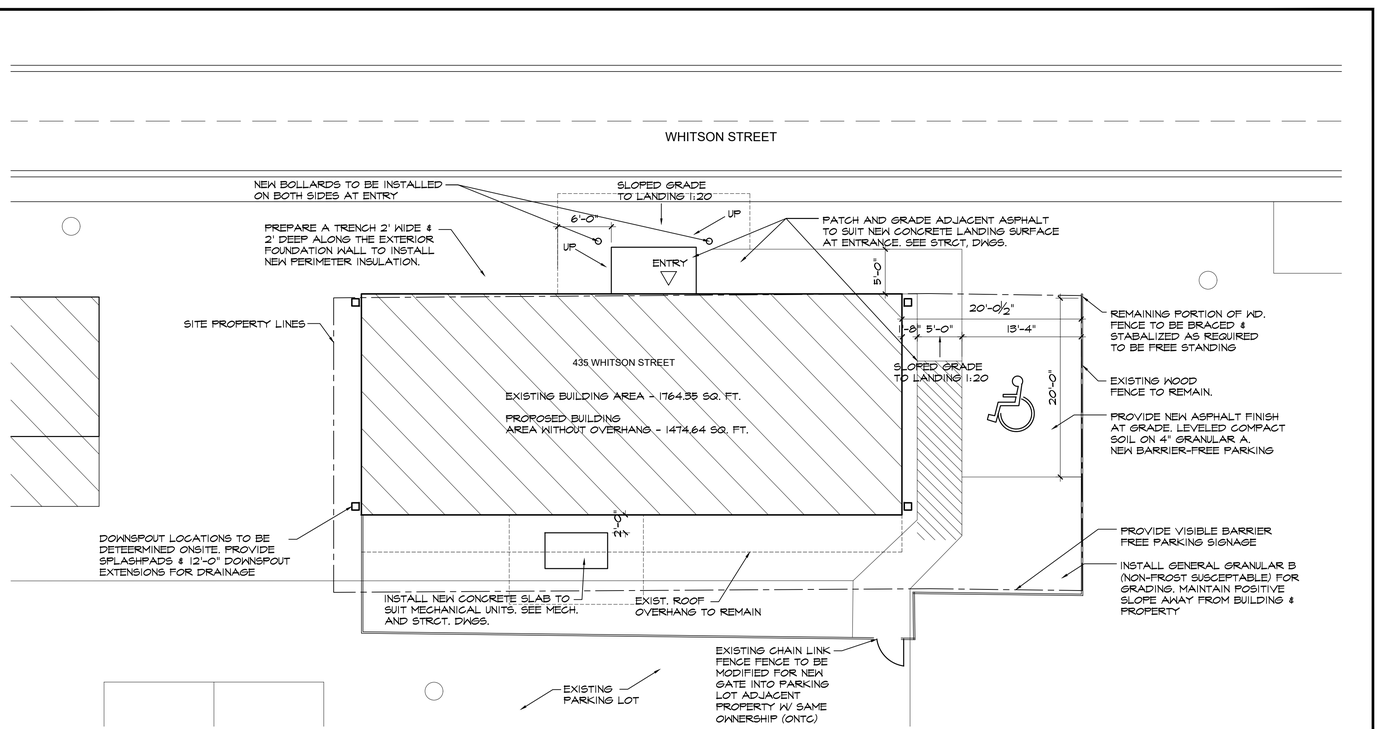
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drawn by: KD + AL	checked by: MW
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date plotted:	
revision date: ----	

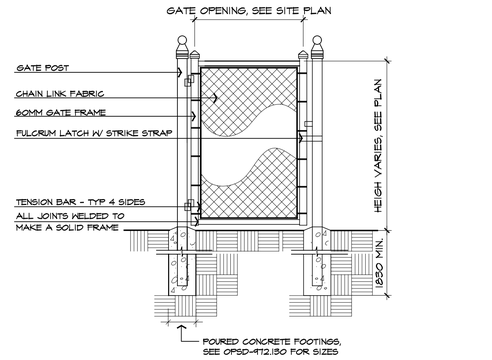
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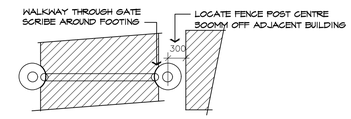
1 A1.2 SITE PLAN - DEMOLITION
SCALE 1/8"=1'=0"



2 A1.2 SITE PLAN - PROPOSED
SCALE 1/8"=1'=0"

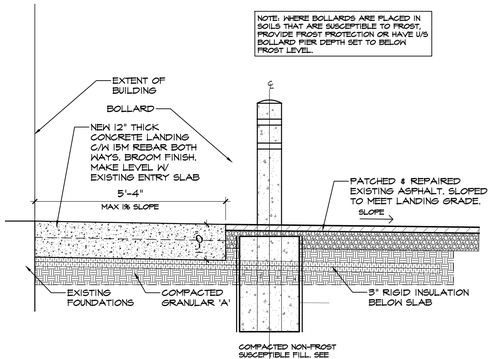


SINGLE GATE

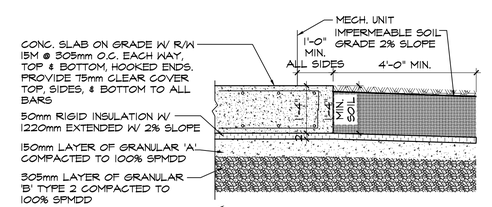


PLAN OF GATE/FENCE AT WALKWAY

3 A1.2 SITE DETAIL - PROPOSED FENCE GATE
SCALE 1/4"=1'=0"



4 A1.2 SITE DETAIL - PROPOSED BOLLARD
SCALE 1/2"=1'=0"



5 A1.2 EXTERIOR HVAC SLAB DETAIL
SCALE 1/2"=1'-0"

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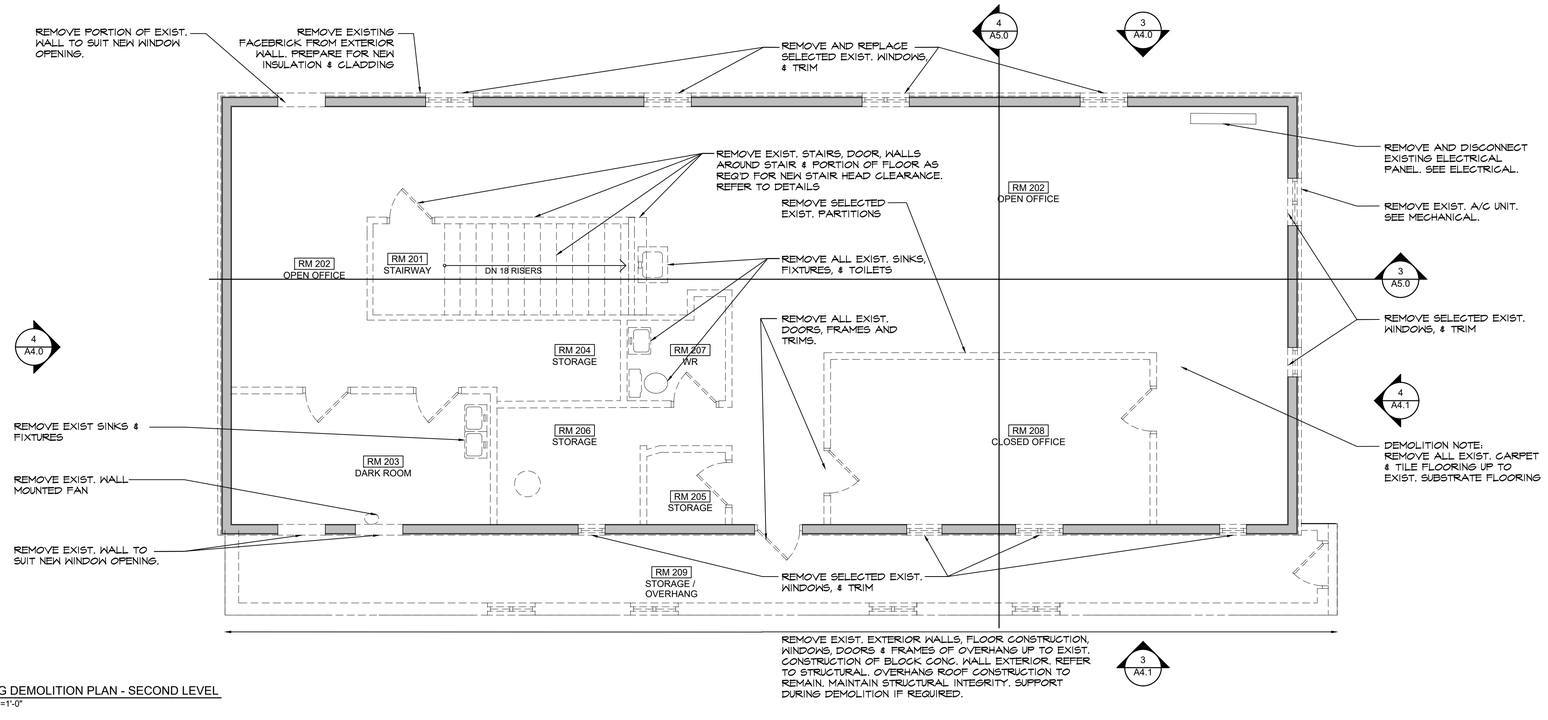
ONTARIO ASSOCIATION OF ARCHITECTS
MARCUS B. WHEELER
LICENCE 5768

project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Commission
435 Whitson, North Bay, ON

title: DEMOLITION & PROPOSED SITE PLAN

drawn by: KD + AL	checked by: MW
scale: AS NOTED	project no: 2508
date plotted:	
revision date: ----	

dwg no: **A1.2**



1 A2.0 EXISTING DEMOLITION PLAN - SECOND LEVEL
SCALE 1/4"=1'-0"

2 A2.0 EXISTING DEMOLITION PLAN - MAIN LEVEL
SCALE 1/4"=1'-0"

DEMOLITION LEGEND:

- EXISTING WALLS, PARTITIONS & BUILDING ELEMENTS TO BE REMOVED.
- EXISTING WALL TO REMAIN OR MODIFY (SHADED HATCH)
- EXISTING DOOR / FRAME TO REMAIN — DOOR NO. (IF INDICATED) (SEE DOOR & FRAME SCHEDULE)
- EXISTING DOOR AND FRAME TO BE REMOVED
- EX. COL. — EXISTING STRUCTURAL COLUMN OR POST

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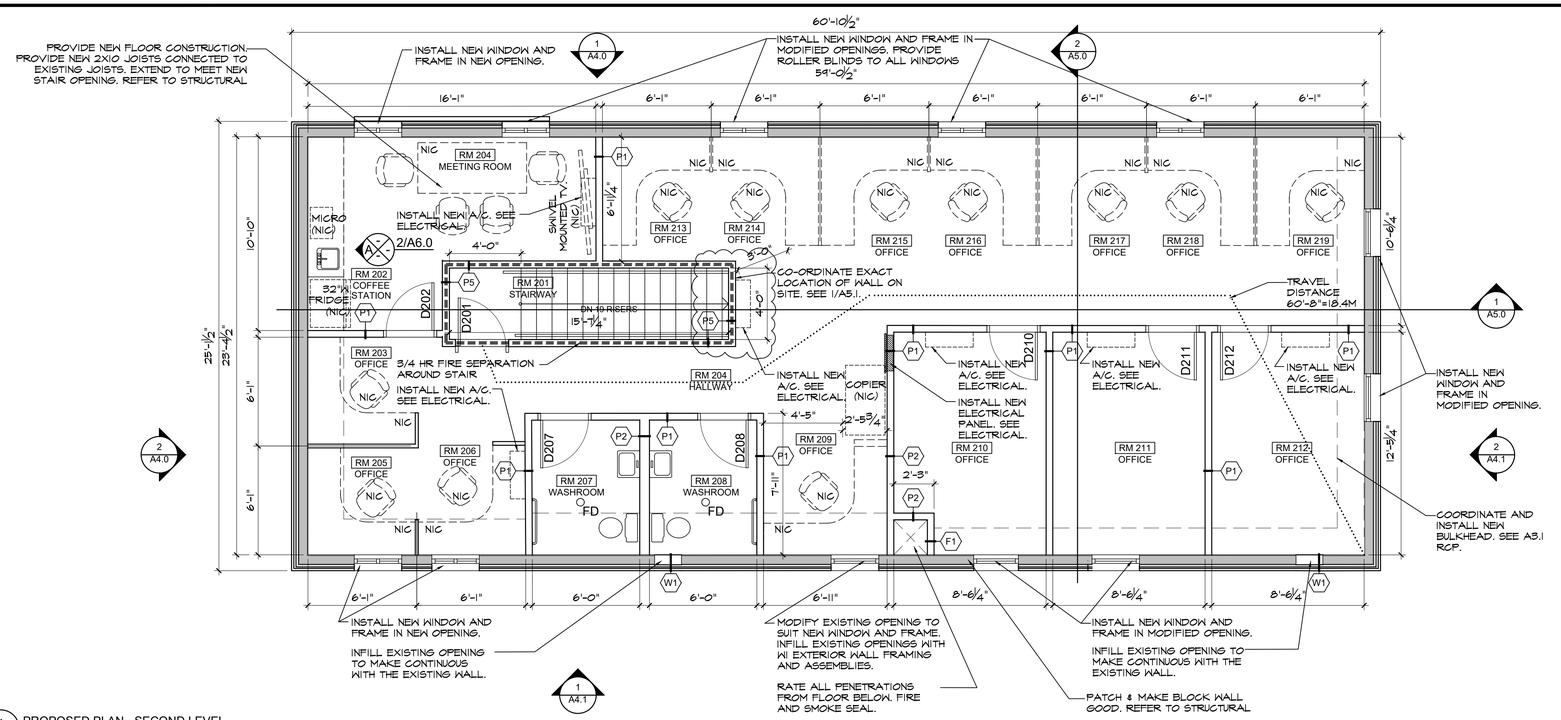
title: EXISTING DEMOLITION FLOOR PLANS
MAIN & SECOND LEVEL

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KD + AL	MW
scale:	project no:
AS NOTED	2508

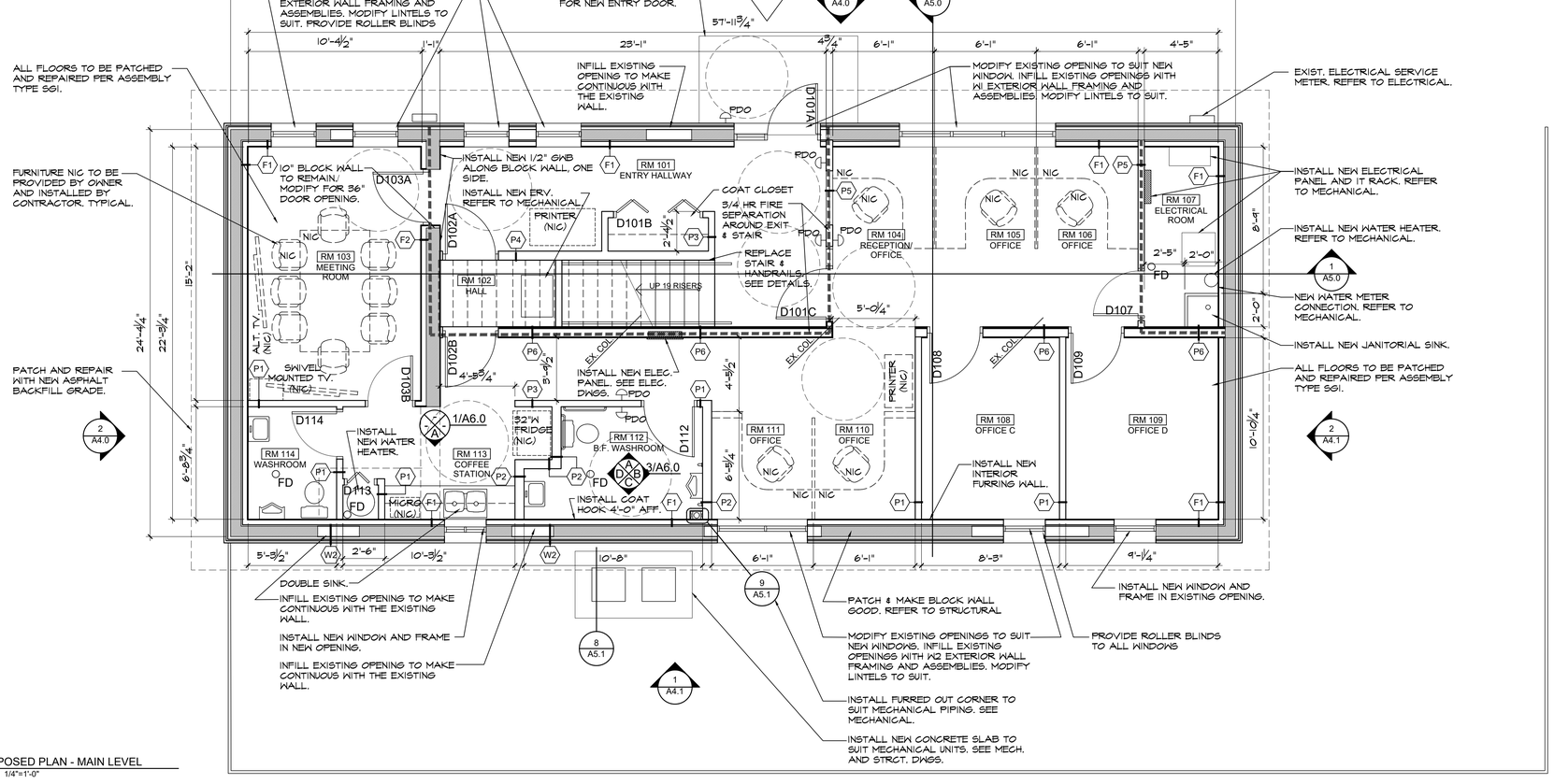
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revision date:
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dwg no:
A2.0



1 / A2.1 PROPOSED PLAN - SECOND LEVEL
SCALE 1/4"=1'-0"



2 / A2.1 PROPOSED PLAN - MAIN LEVEL
SCALE 1/4"=1'-0"

GENERAL LEGEND:

- NEW WALL, PARTITION, FURRING. SEE ASSEMBLY TYPES FOR EXACT CONSTRUCTION.
- NEW INSULATED WALLS, PARTITIONS, FURRINGS FOR ACOUSTICAL AND/OR FIRE RATINGS.
- D000 — NEW DOOR AND FRAME; DOOR NO. (SEE DOOR & FRAME SCHEDULE)
- S000 — NEW FRAME (SCREEN); SCREEN NO. (SEE DOOR & FRAME SCHEDULE)
- COL — STRUCTURAL COLUMN OR POST
- 1 / A0.0 PLAN 1:100 — DETAIL DRAWING NO.; DRAWING TITLE; DRAWING SCALE; SHEET NO.
- 1 / A0.0 — DETAIL DRAWING NO.; SHEET NO.
- 1 / A1.0 — ELEVATION DRAWING #; SHEET NO.
- 1 / A1.0 — SECTION DRAWING NO.; SHEET NO.
- A / B / C — 2/A1.3 — INTERIOR ELEVATION DWG NO.; SHEET NO.; REFERENCE ELEVATION
- W01 / CW2 — WINDOW NO. CURTAIN WALL NO. (SEE TYPICAL WINDOW SCHEDULE.
- P1 — TYPICAL ASSEMBLY NO. (REFER TO ASSEMBLY SCHEDULE:
- 100 ROOM NAME SUBNAME — ROOM NAME & NUMBER (SEE ROOM FINISH SCHEDULE)
- 1 / A0.0 — NOTES AREA OF WORK, REFERENCE OR DETAIL
- 3/4 HOUR FIRE SEPARATION
- 1 HOUR FIRE SEPARATION
- BARRIER-FREE CLEARANCES REQUIRED BY OBC OR CSA (RADIUS MAY VARY)
- NIC — NOT IN CONTRACT
- FD — FLOOR DRAIN. COORDINATE WITH PLUMBING.
- PDO — PUSH BUTTON FOR BARRIER-FREE POWER DOOR OPERATOR

TYP. CONSTRUCTION NOTES:

- REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR A FULL DESCRIPTION OF SCOPE OF MECHANICAL AND ELECTRICAL ITEMS. THESE ITEMS INCLUDE BUT ARE NOT LIMITED TO: WALL AND FLOOR CLEANOUTS, MECHANICAL GRILLES, MECHANICAL DIFFUSERS, MECHANICAL UNITS, PLUMBING FIXTURES, LIGHT FIXTURES, AND ELECTRICAL OUTLETS.
- REFER TO MECHANICAL DRAWINGS FOR NEW EXTERIOR MECHANICAL PENETRATIONS. SEAL AROUND MECHANICAL PENETRATIONS TO ENSURE A CONTINUOUS AIR TIGHT FLASHING.

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435 Whitson, North Bay, ON

title: PROPOSED FLOOR PLANS
MAIN & SECOND LEVEL

drawn by:	checked by:
KD + AL	MW
scale:	project no:
AS NOTED	2508
date plotted:	
revision date:	
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dwg no: **A2.1**

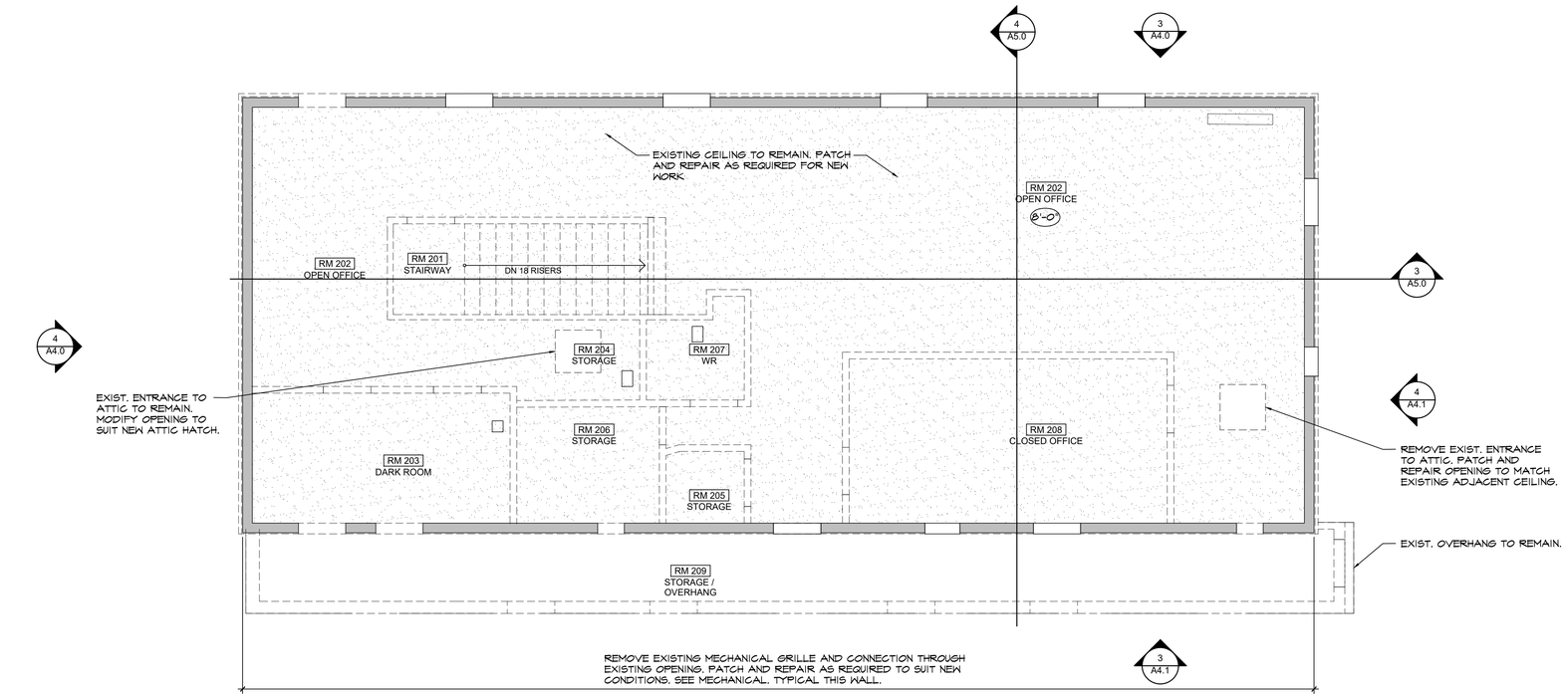
RCP DEMOLITION LEGEND:

EXISTING WALLS, PARTITIONS & BUILDING ELEMENTS TO BE REMOVED.

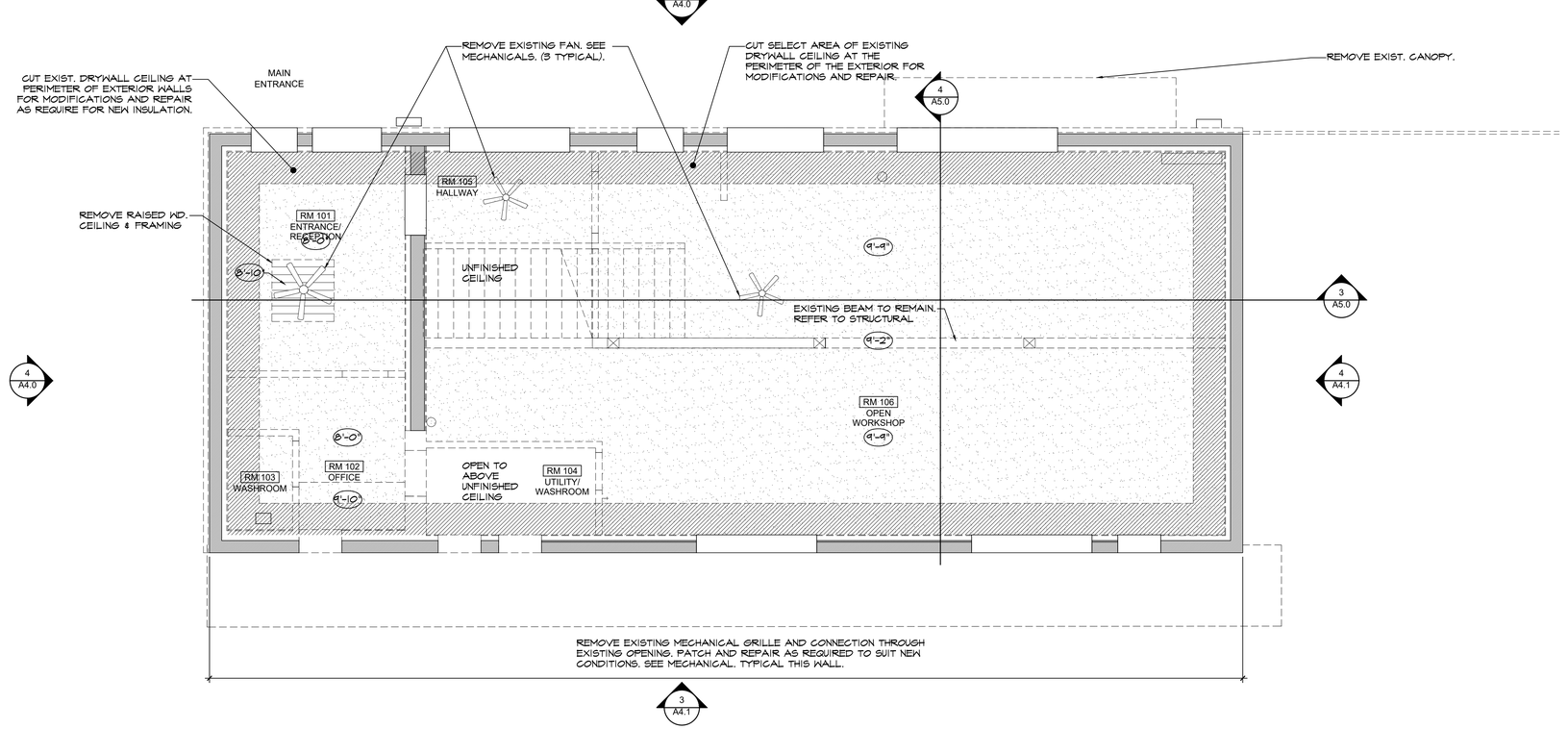
EXIST GWB @ 2800 — GYPSUM CEILING

ACT @ 2800 — DENOTES EXISTING CEILING MATERIAL AND HEIGHT ABOVE FINISHED FLOOR (AFF)

EXISTING CEILING FAN



1 A3.0 EXISTING REFLECTED CEILING PLAN - SECOND LEVEL
SCALE 1/4"=1'-0"



2 A3.0 EXISTING REFLECTED CEILING PLAN - MAIN LEVEL
SCALE 1/4"=1'-0"

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Ontario Northland Transportation Comission
439 Whitson, North Bay, ON

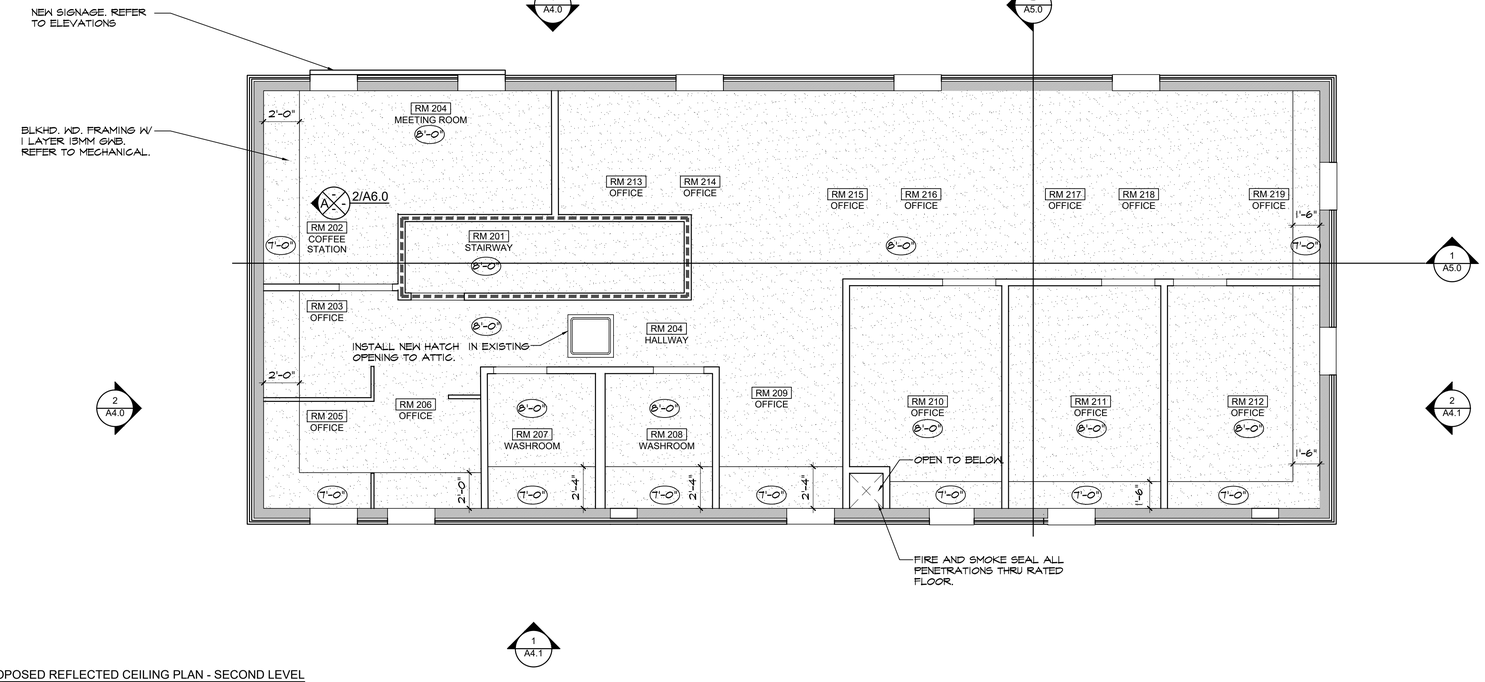
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MAIN & SECOND LEVEL

drawn by:	checked by:
KD + AL	MW
scale:	project no:
AS NOTED	2508

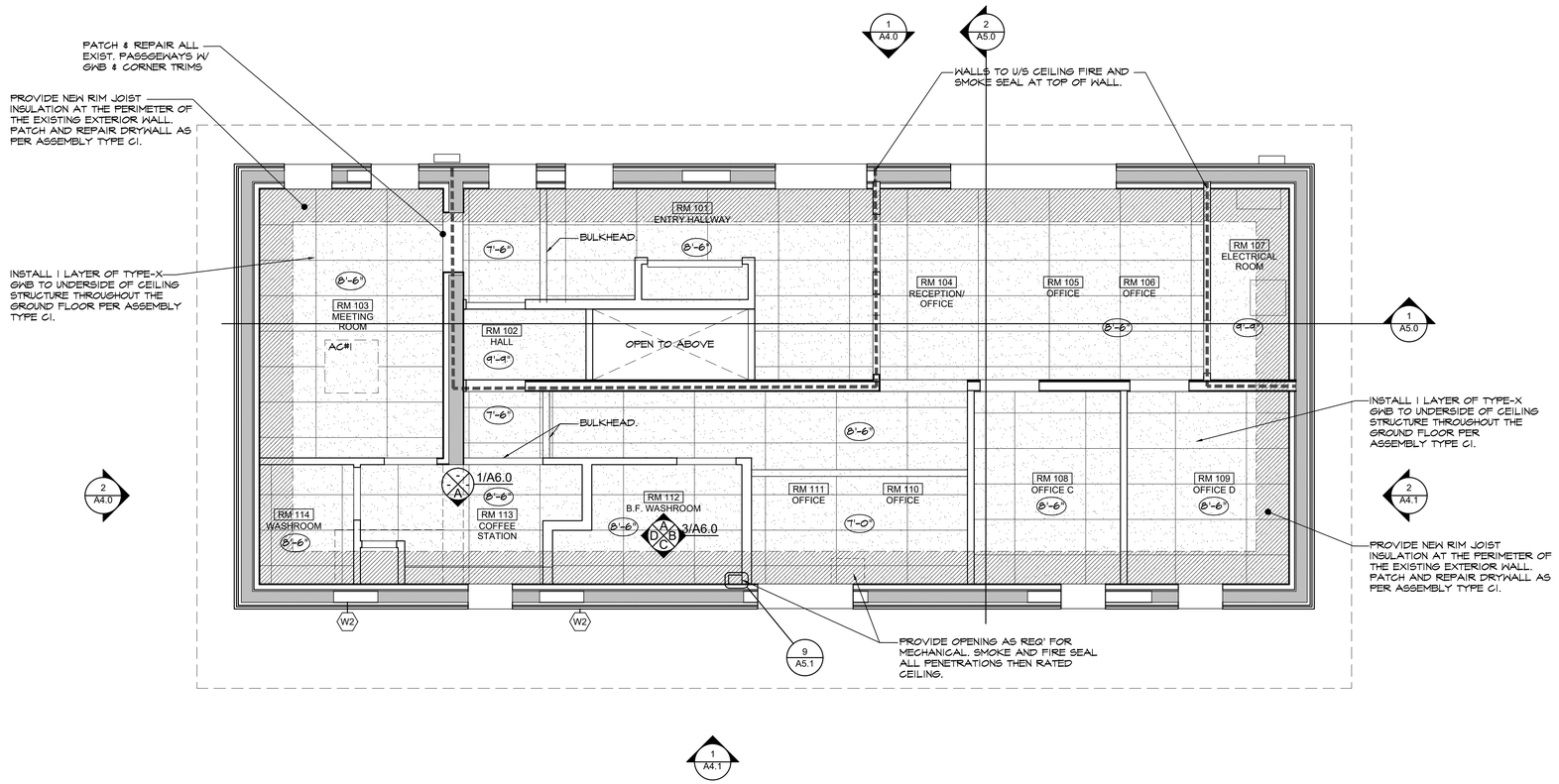
date plotted:

revision date:
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dwg no:
A3.0



1 A3.1 PROPOSED REFLECTED CEILING PLAN - SECOND LEVEL
SCALE 1/4"=1'-0"



2 A3.1 PROPOSED REFLECTED CEILING PLAN - MAIN LEVEL
SCALE 1/4"=1'-0"

REFLECTED CEILING PLAN LEGEND:

ACT @ XX — DENOTES CEILING MATERIAL AND HEIGHT ABOVE FINISHED FLOOR (AFF)

ACT @ XX — HATCHING DENOTES NEW ACOUSTIC CEILING TILE SYSTEM

GWB @ XX — HATCHING DENOTES GYPSUM CEILING. (REFER TO FINISH SCHEDULE). PAINT FINISH UNLESS OTHERWISE NOTED.

TYP. CEILING NOTES:

- ENSURE CONTINUOUS FIRE AND SMOKE SEAL AT THE MAIN FLOOR GWB CEILING.

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LICENCE 5768

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project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Commission
435 Whitson, North Bay, ON

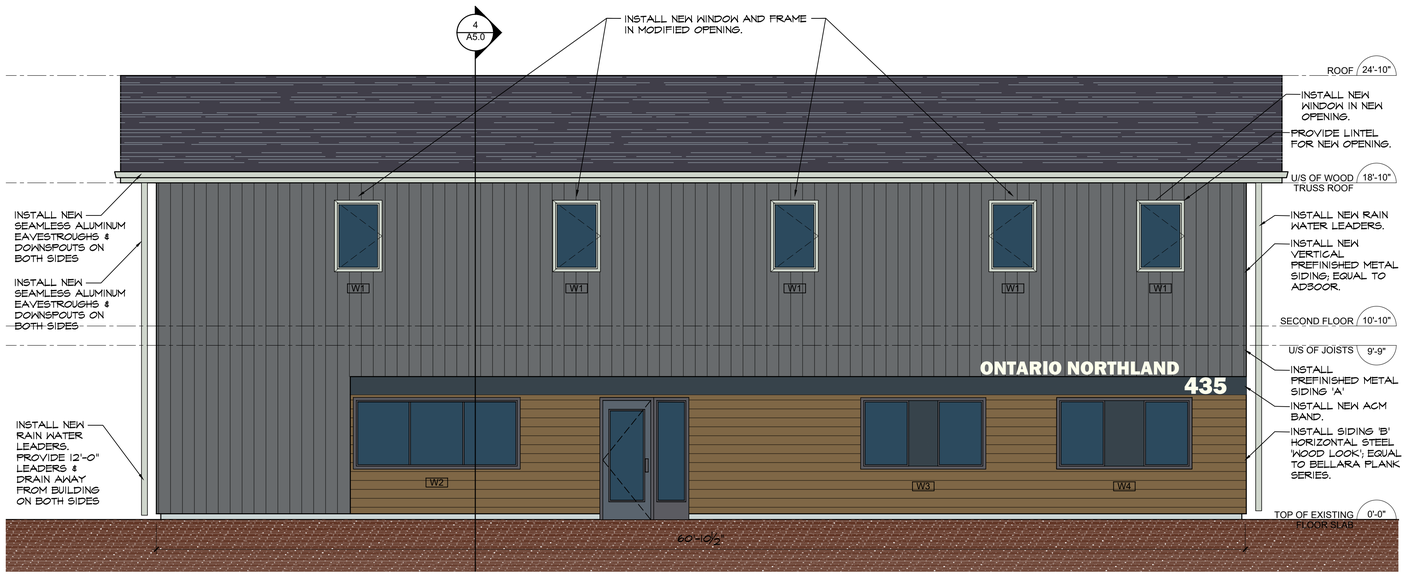
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MAIN & SECOND LEVEL

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AS NOTED	2508

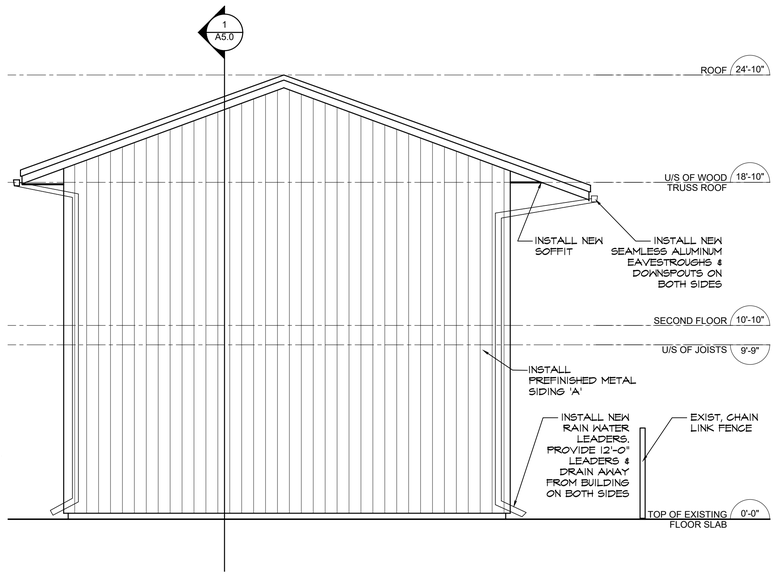
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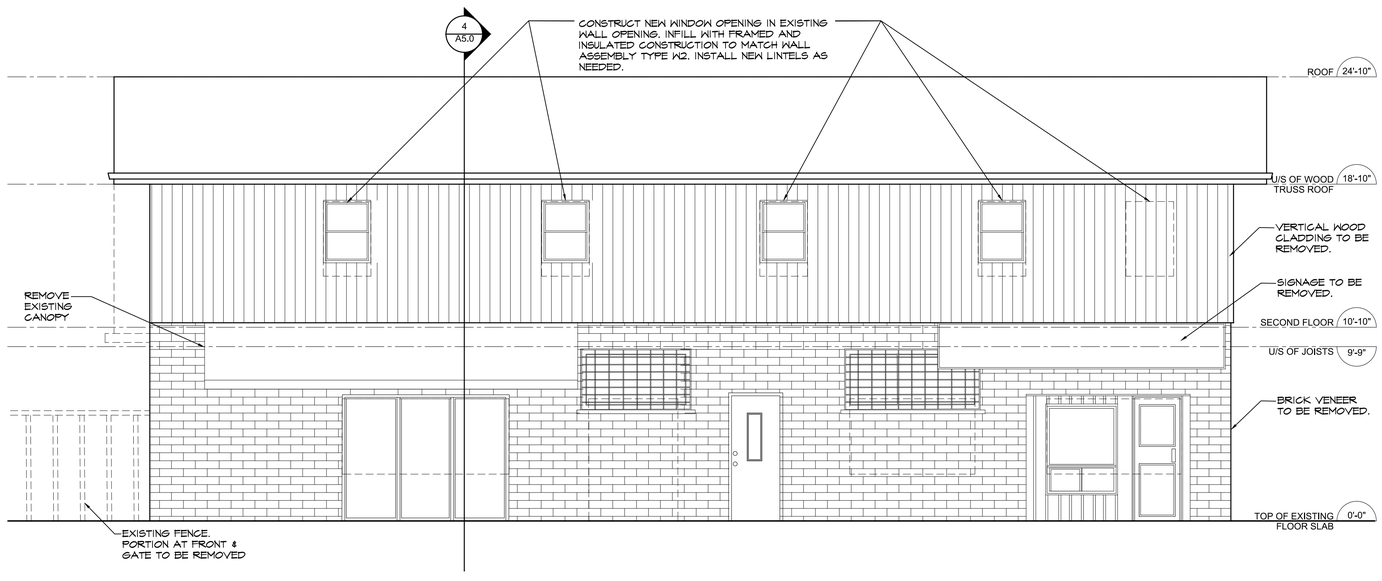
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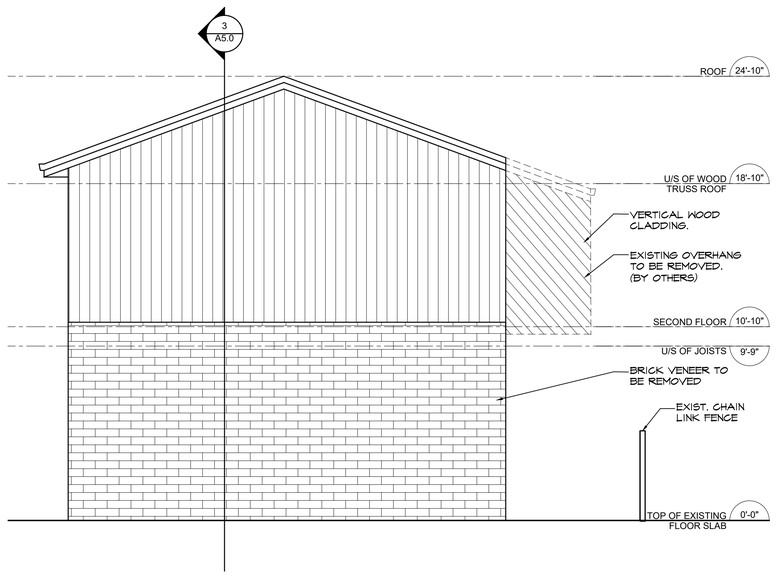
1 A4.0 PROPOSED NORTH WEST ELEVATION
SCALE 1/4"=1'-0"



2 A4.0 PROPOSED NORTH EAST ELEVATION
SCALE 1/4"=1'-0"



3 A4.0 DEMOLITION NORTH WEST ELEVATION
SCALE 1/4"=1'-0"



4 A4.0 DEMOLITION NORTH EAST ELEVATION
SCALE 1/4"=1'-0"

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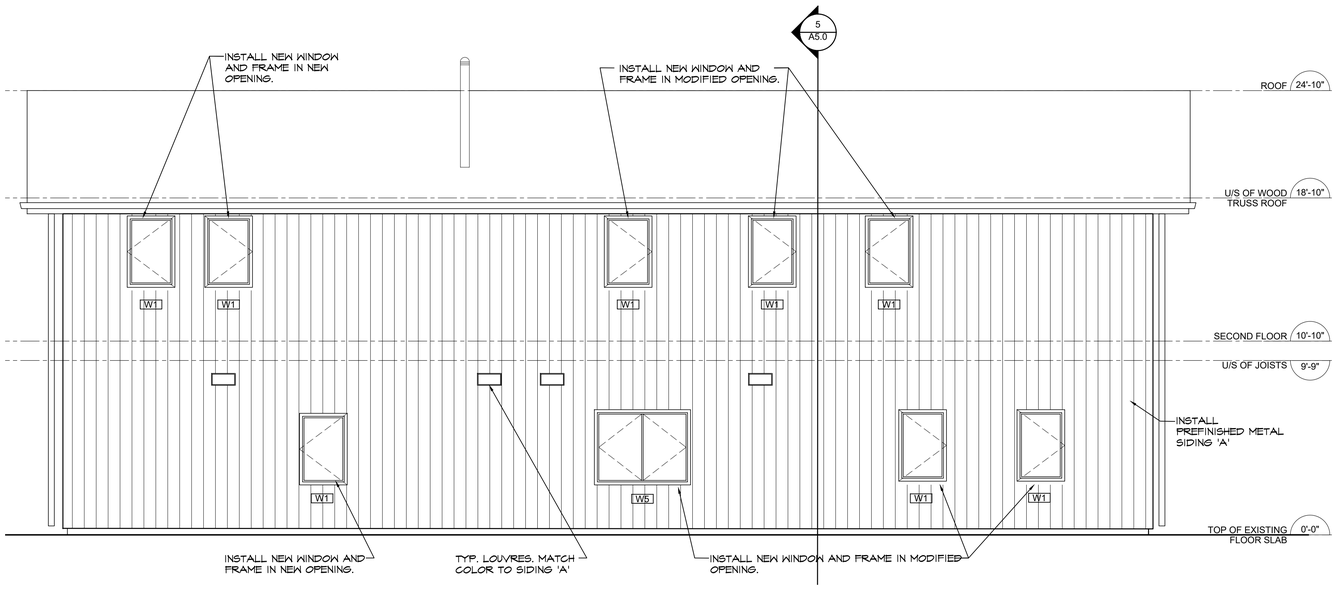
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project:
ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
435 Whitson, North Bay, ON

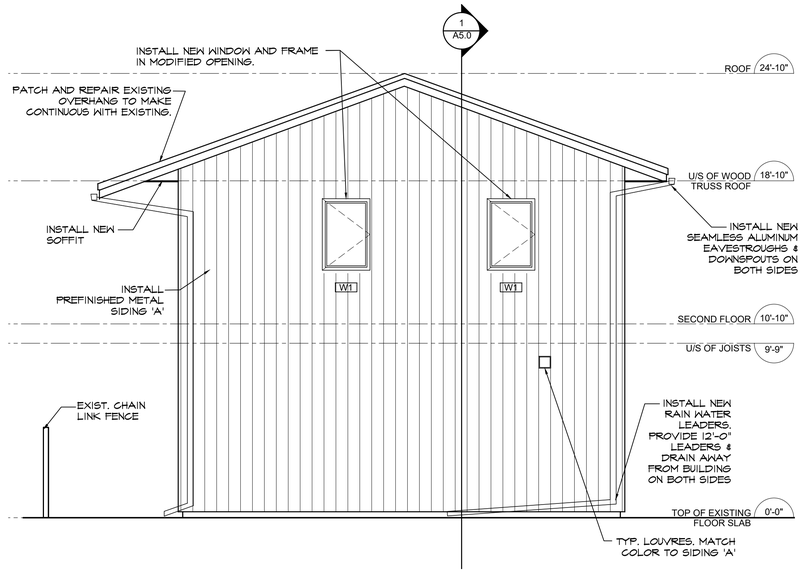
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PROPOSED ELEVATION
NORTH-EAST & NORTH-WEST ELEVATIONS

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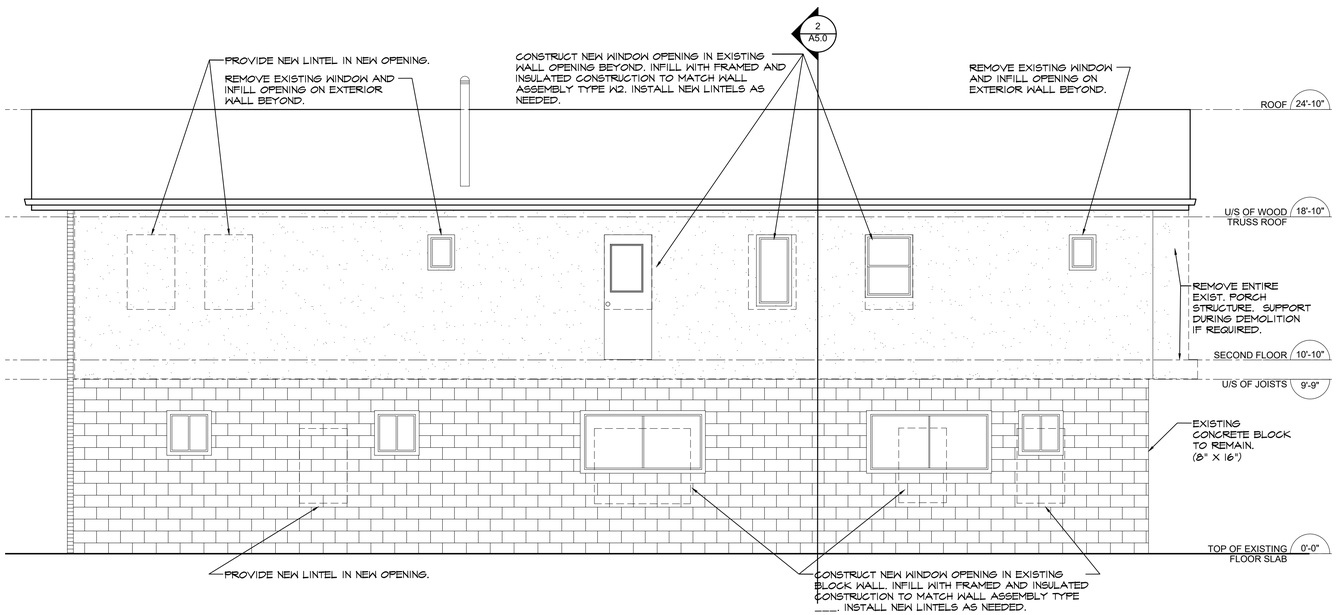
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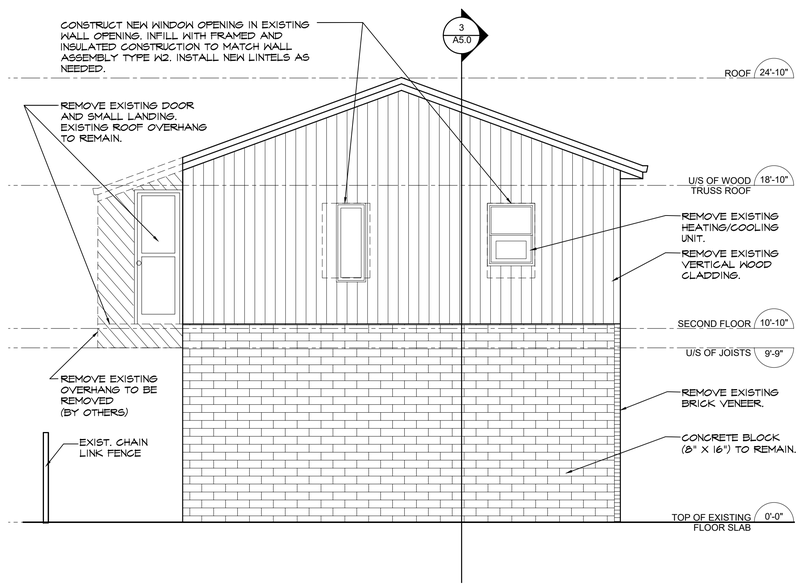
1 A4.1 PROPOSED SOUTH EAST ELEVATION
SCALE 1/4"=1'-0"



2 A4.1 PROPOSED SOUTH WEST ELEVATION
SCALE 1/4"=1'-0"



3 A4.1 DEMOLITON SOUTH EAST ELEVATION
SCALE 1/4"=1'-0"



4 A4.1 DEMOLITION SOUTH WEST ELEVATION
SCALE 1/4"=1'-0"

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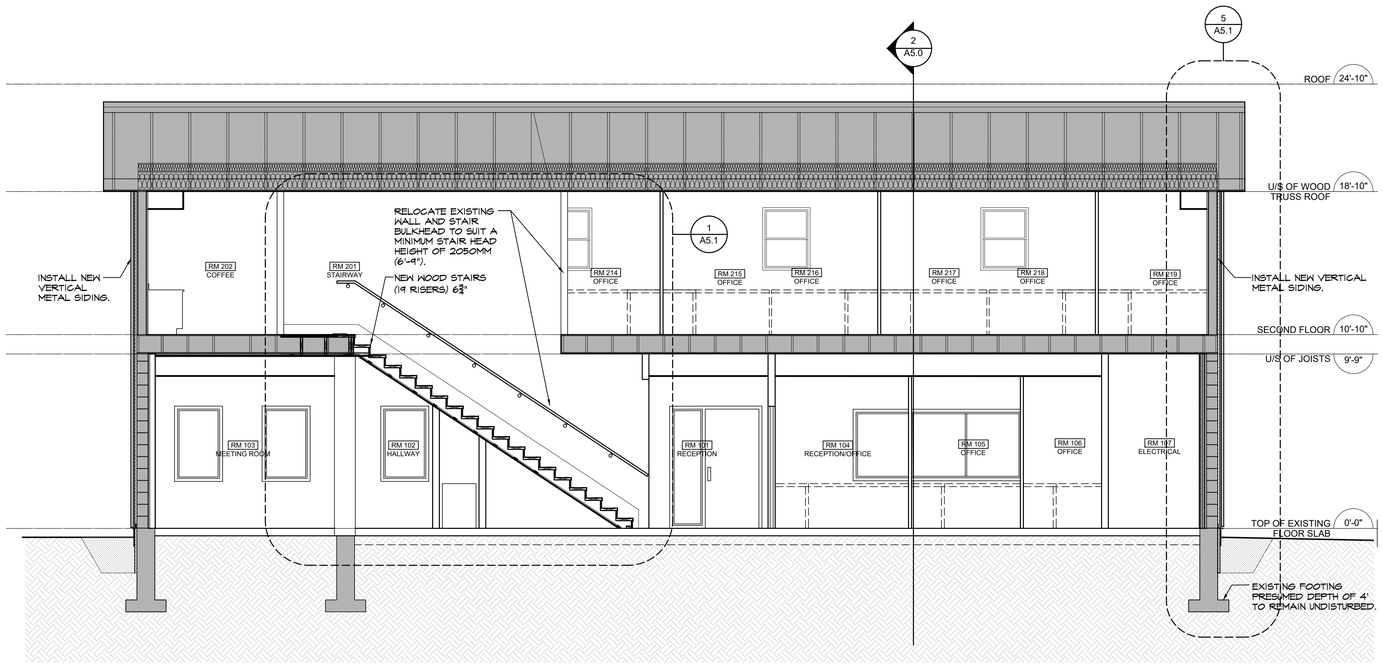
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project:
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Ontario Northland Transportation Comission
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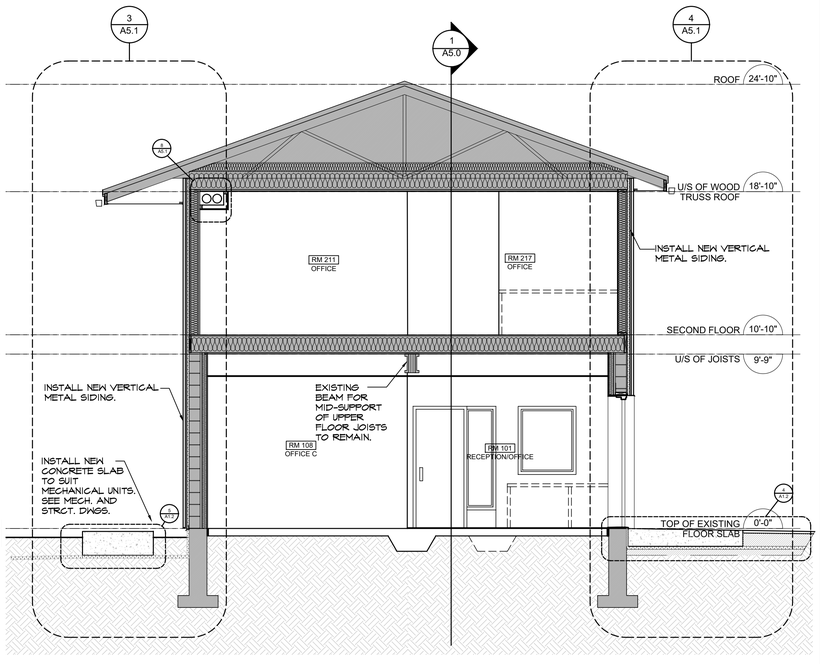
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EXISTING DEMOLITION ELEVATIONS & PROPOSED ELEVATIONS
SOUTH-WEST & SOUTH-EAST ELEVATIONS

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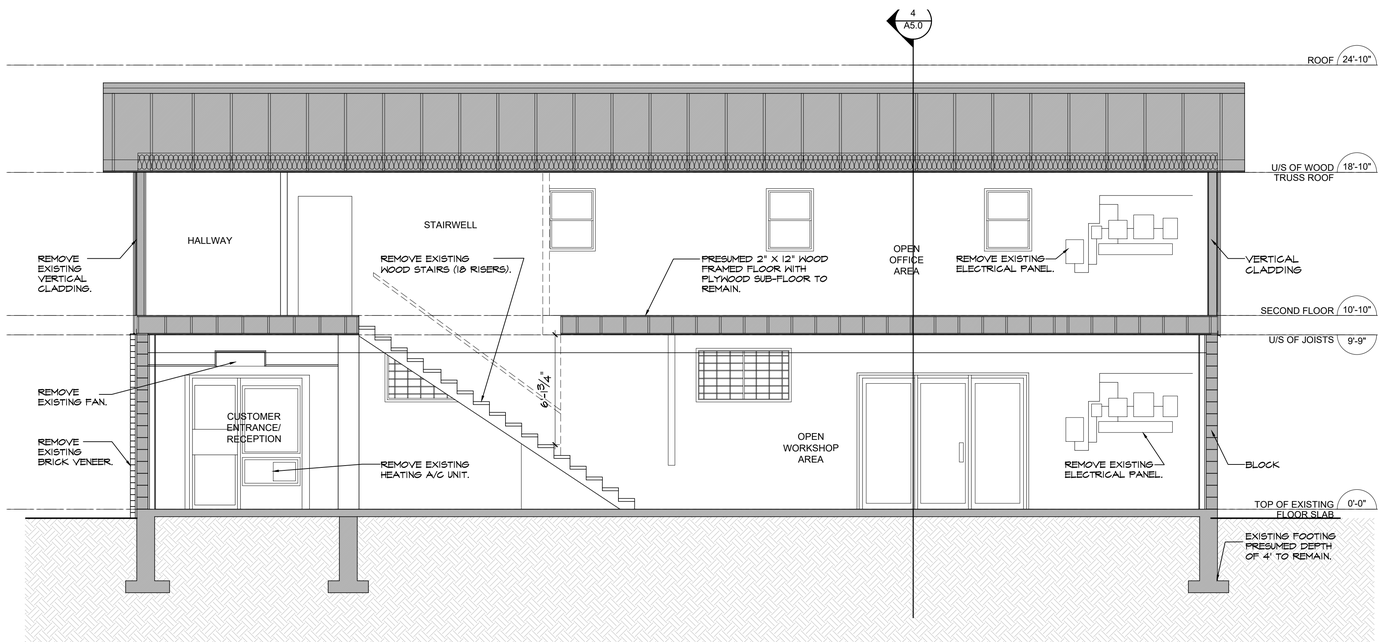
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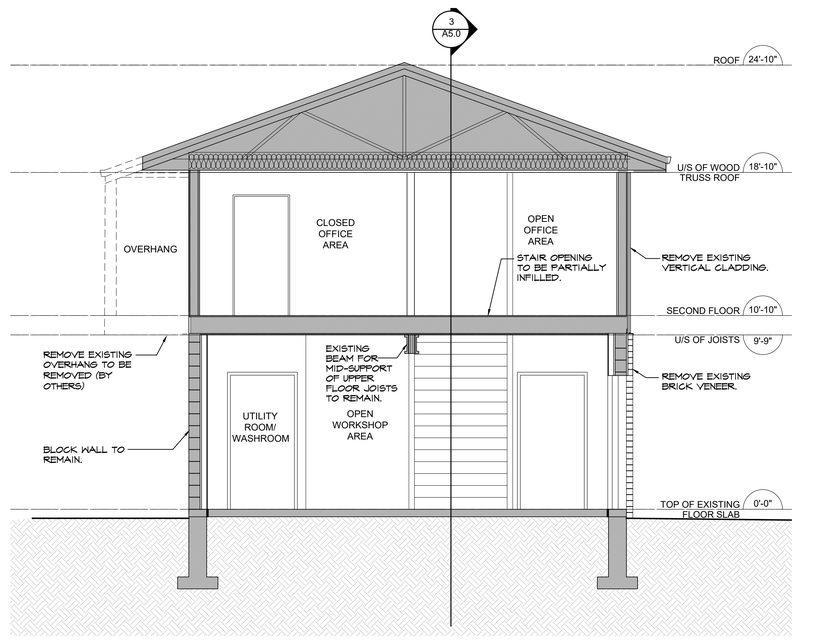
1 A5.0 PROPOSED SECTION
SCALE 1/4"=1'-0"



2 A5.0 PROPOSED SECTION
SCALE 1/4"=1'-0"



3 A5.0 EXISTING SECTION
SCALE 1/4"=1'-0"



4 A5.0 EXISTING SECTION
SCALE 1/4"=1'-0"

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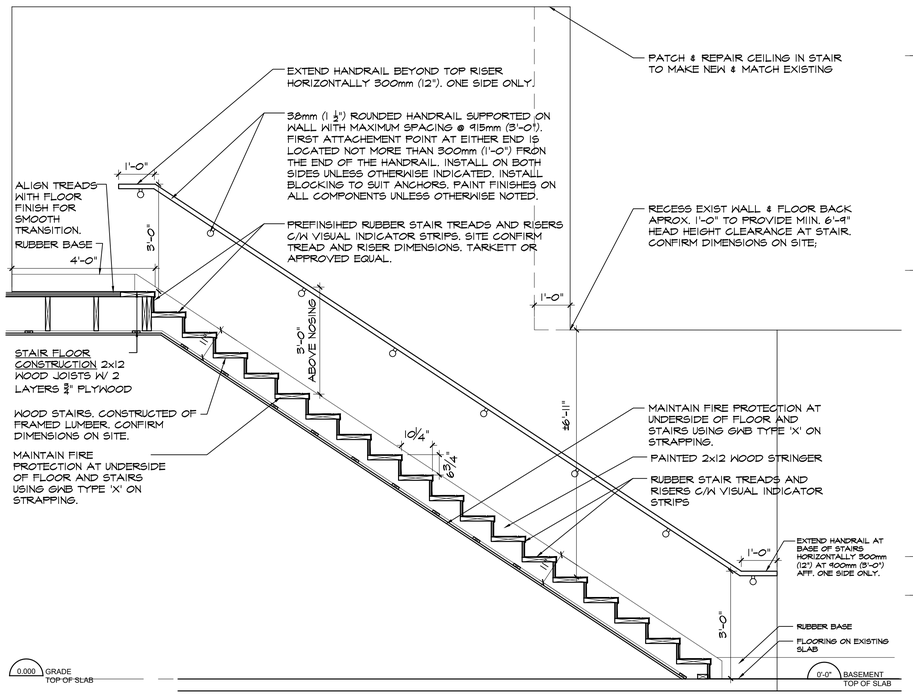
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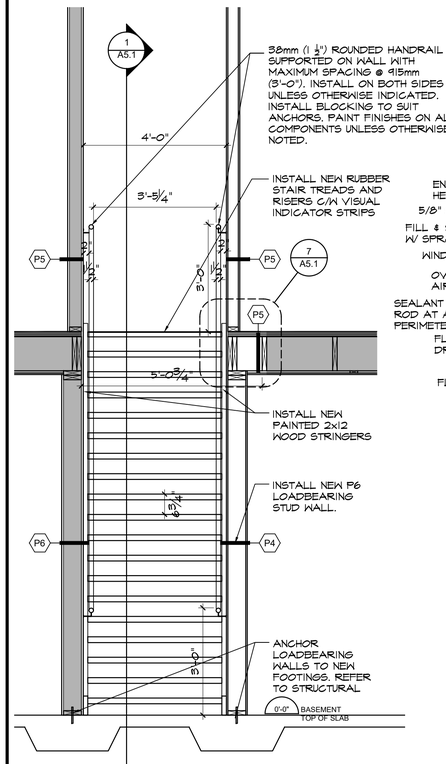
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EXISTING & PROPOSED

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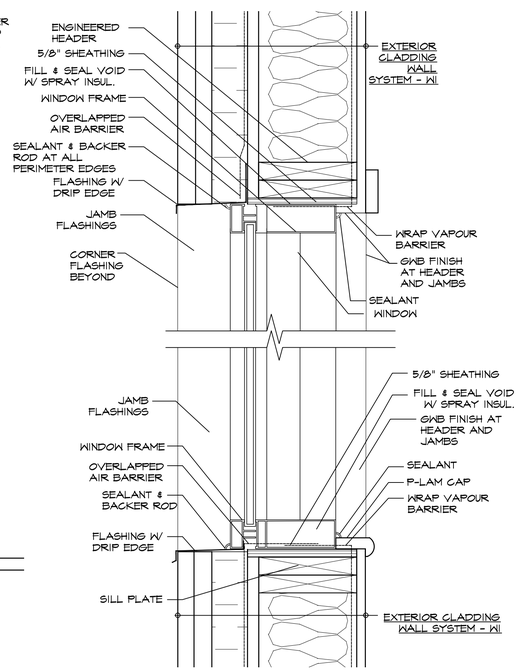
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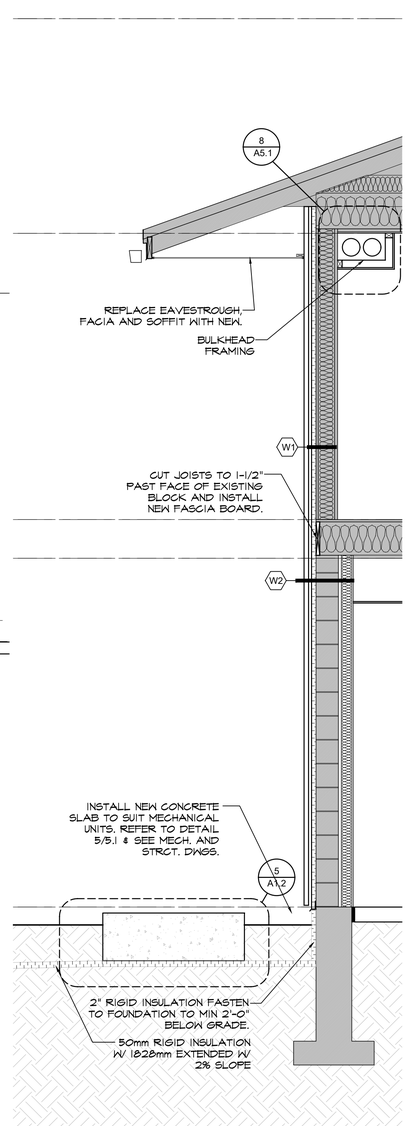
1 A5.1 PROPOSED STAIR SECTION
SCALE 1/2"=1'-0"



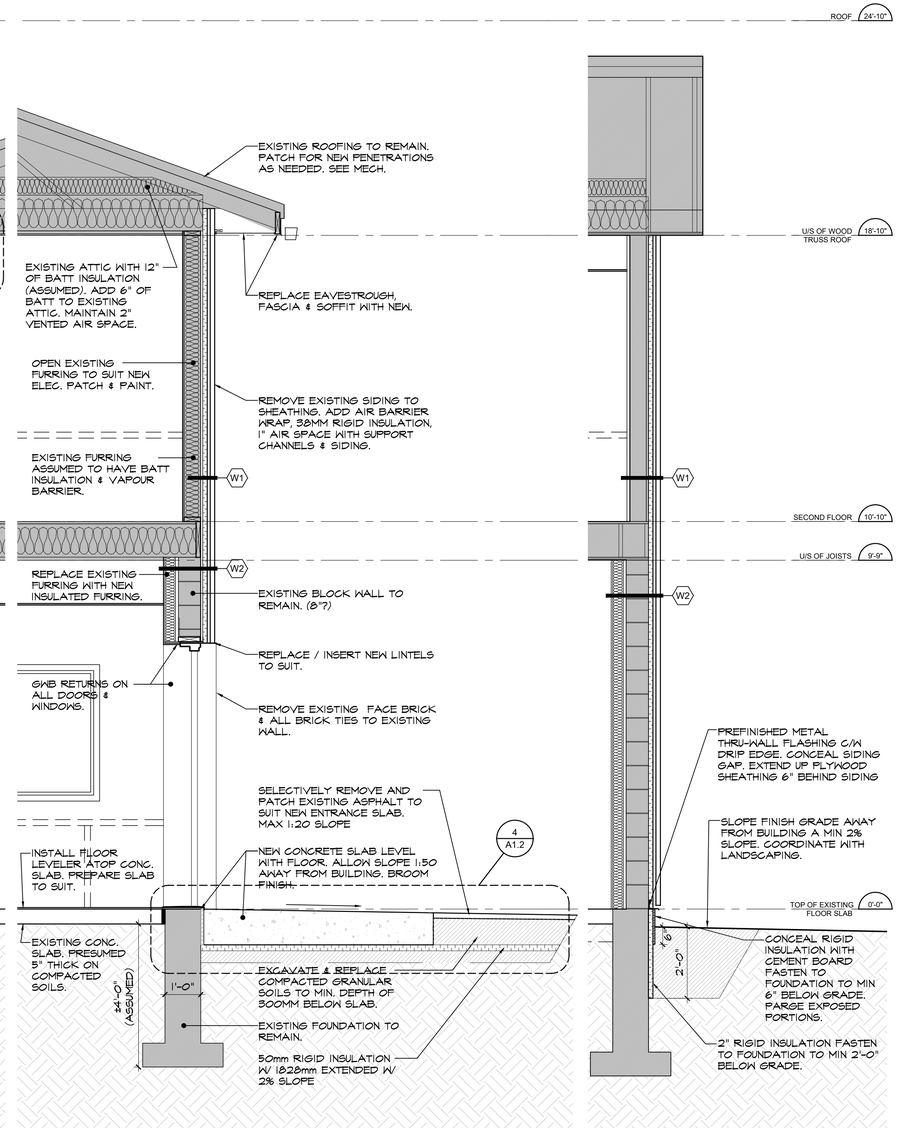
2 A5.1 PROPOSED STAIR SECTION
SCALE 1/2"=1'-0"



6 A5.1 WINDOW HEAD & SILL DETAIL
SCALE 1/2"=1'-0"

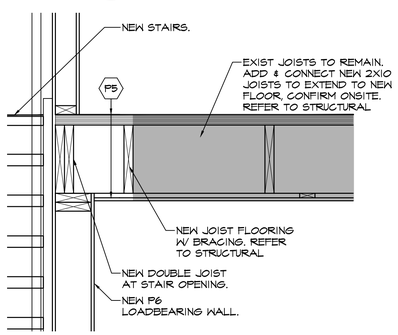


3 A5.1 NEW REAR SECTION
SCALE 1/2"=1'-0"

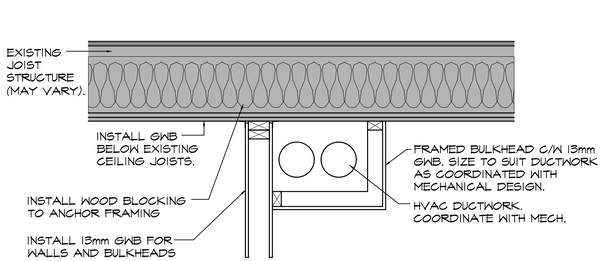


4 A5.1 NEW FRONT SECTION
SCALE 1/2"=1'-0"

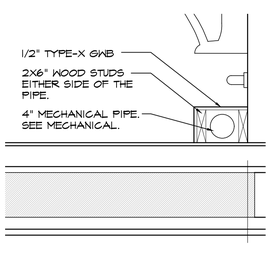
5 A5.1 EXISTING SIDE SECTION
SCALE 1/2"=1'-0"



7 A5.1 INFILL FLOOR AT STAIR
SCALE 1/2"=1'-0"



8 A5.1 INTERIOR BULKHEAD
SCALE 1/2"=1'-0"



9 A5.1 NEW FURRED CORNER WALL DETAIL
SCALE 1"=1'-0"

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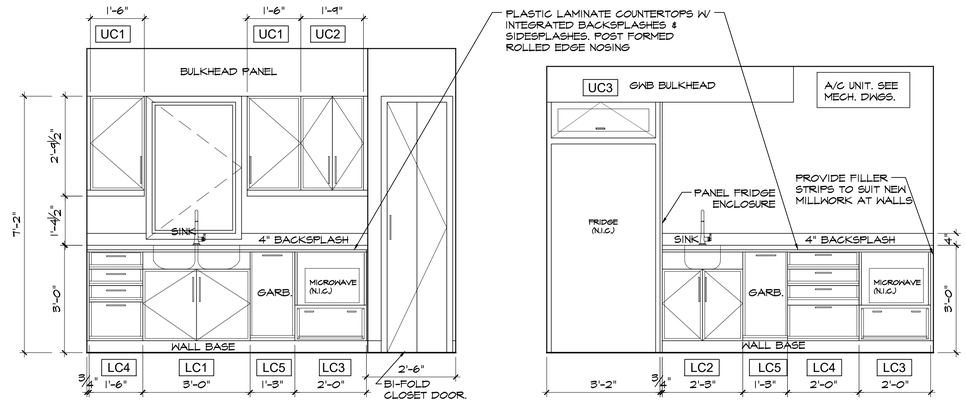
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project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
425 Wilson, North Bay, ON

title: SECTIONS DETAILS
EXISTING & PROPOSED

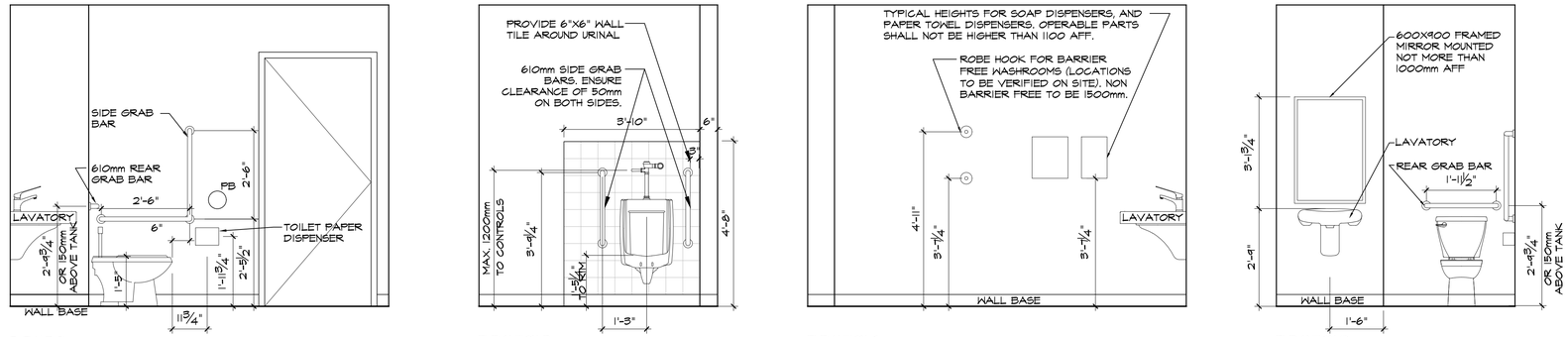
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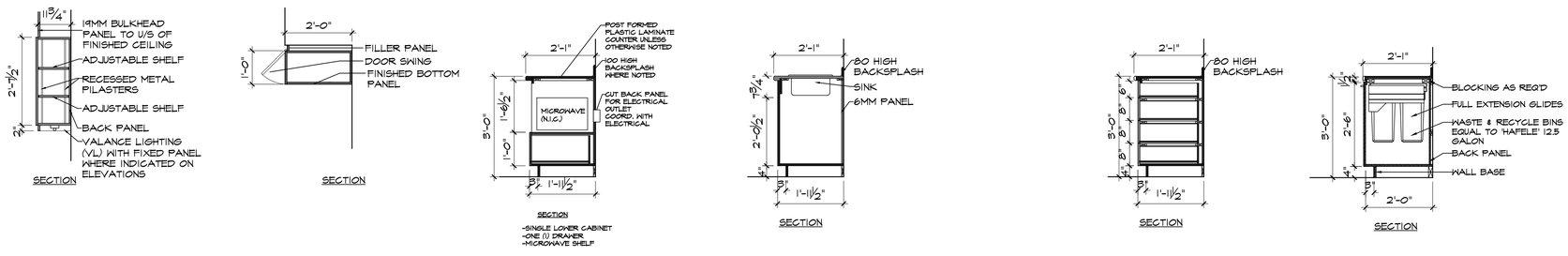


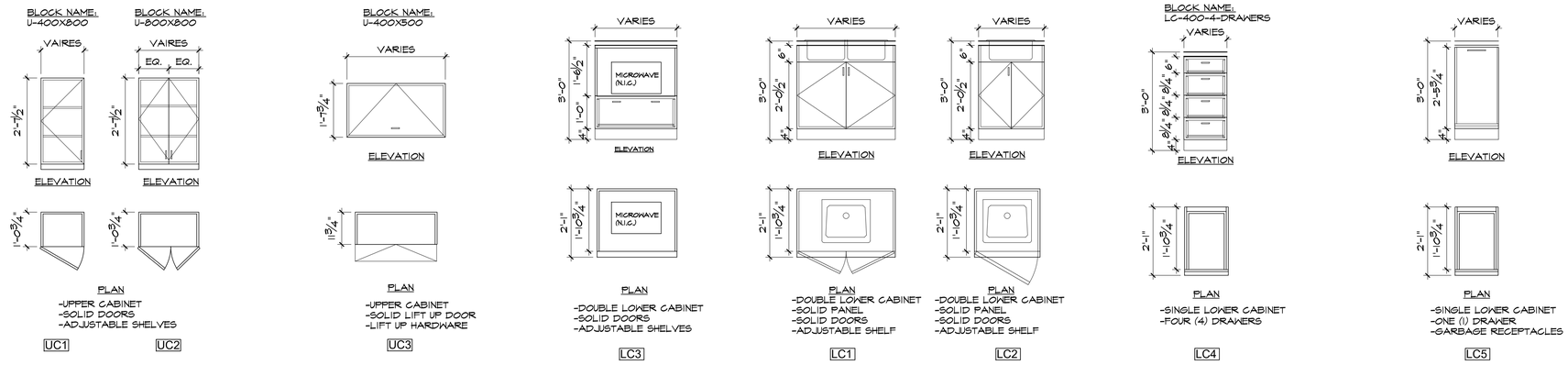
1 A6.0 INTERIOR ELEVATION - 113 COFFEE STATION
SCALE 1/2"=1'-0"

2 A6.0 INTERIOR ELEVATION - 202 COFFEE STATION
SCALE 1/2"=1'-0"



3 A6.0 INTERIOR ELEVATION - 112 B.F. WASHROOM
SCALE 1/2"=1'-0"





4 A6.0 CASEWORK SCHEDULE
SCALE 1/2"=1'-0"

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project: ONTC BUILDING OFFICE CONVERSION
INTERIOR & EXTERIOR RENOVATIONS
Ontario Northland Transportation Comission
425 Whitson, North Bay, ON

title: INTERIOR ELEVATIONS AND CASEWORK SECTIONS DETAILS

drawn by: KD + AL	checked by: MW
scale: AS NOTED	project no: 2508
date plotted:	
revision date: ----	

dwg no: **A6.0**

SEE DRAWINGS FOR ADDITIONAL NOTES

GENERAL NOTES

THIS IS A GENERAL SPECIFICATION. SOME STATED ITEMS MY NOT APPLY.

1.0 GENERAL
1.1 DESIGN AND CONSTRUCTION IS TO CONFORM TO THE 2024 ONTARIO BUILDING CODE. REFER ALSO TO TYPICAL DETAILS, NOTES UNDER PLANS & SCHEDULE ON THE STRUCTURAL DRAWINGS, AND TO THE SPECIFICATION. ALL CODES, MANUALS, STANDARDS AND SPECIFICATIONS REFERRED TO SHALL BE THE LATEST EDITIONS INCLUDING ALL REVISIONS AND ADDENDA. ALL DIMENSIONS, AND DETAILS OTHER THAN PURELY STRUCTURAL DIMENSIONS AND DETAILS SHOWN ON THE STRUCTURAL DRAWINGS MUST BE CHECKED AGAINST THE ARCHITECTURAL DRAWINGS AND ANY INCONSISTENCIES REPORTED TO THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK. STRUCTURAL DRAWINGS MUST NOT BE SCALED.
1.2 REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS AND SIZES OF OPENINGS, TRENCHES, PITS, SUMPS, EQUIPMENT, SLEEVES, DEPRESSIONS, GROOVES AND CHAMFERS NOT INDICATED ON THE STRUCTURAL DRAWINGS. UNLESS SPECIFICALLY NOTED OTHERWISE, THE ABOVE ITEMS WHERE SHOWN ON THE STRUCTURAL DRAWINGS ARE INDICATED ONLY APPROXIMATELY AS TO SIZE AND LOCATION.
1.3 UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISIONS HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. THE CONTRACTOR IS TO PROVIDE ALL NECESSARY BRACINGS AND SHORING REQUIRED FOR STRESSES AND INSTABILITY OCCURRING FROM ANY CAUSE DURING CONSTRUCTION. THE CONTRACTOR SHALL ACCEPT FULL RESPONSIBILITY FOR ALL SUCH MEASURES. IT SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACINGS, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.
1.4 ALL LOADS SHOWN ON THESE DRAWINGS ARE FACTORED LOADS UNLESS OTHERWISE NOTED.

2.0 SHOP DRAWINGS, PLACING DRAWINGS & BAR LISTS: –
2.1 FOR ALL STRUCTURAL COMPONENTS SHOWN ON THE STRUCTURAL DRAWINGS, SUBMIT COPIES OF SHOP DRAWINGS , FOR REVIEW BY THE STRUCTURAL CONSULTANT. SHOP DRAWINGS ARE REQUIRED FOR THE FOLLOWING ITEMS AND REQUIRE AN ENGINEERING SEAL OF AN ENGINEER LICENSED IN ONTARIO & RESPONSIBLE FOR THE WORK. ALL STRUCTURAL STEEL, OWSJ, PRE–ENGINEERED WOOD TRUSS, HEAVY WOOD TIMBER CONNECTIONS, CONCRETE PRECAST CORE SLAB, ,REBAR, METAL ROOF & FLOOR DECK, PRE–ENGINEERED BUILD FRAME. SHOP DRAWINGS TO SHOW COMPLETE INFORMATION FOR THE FABRICATION AND ERECTION OF THE STRUCTURAL COMPONENTS.
2.2 REVIEW BY THE STRUCTURAL CONSULTANT SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR SEEING THAT THE WORK IS COMPLETE, ACCURATE AND IN CONFORMITY WITH THE STRUCTURAL DRAWINGS AND SPECIFICATIONS.
3.0 INSPECTION AND TESTING: – TESTING ITEMS MAY BE DELETED WITH ENGINEER PERMISSION
3.1 A SOILS CONSULTANT AND AN INDEPENDENT INSPECTION AND TESTING COMPANY ARE TO BE ENGAGED TO CARRY OUT THE FOLLOWING SERVICES: –
.1 BEARING SOIL – REFER TO NOTES ON STRUCTURAL DRAWINGS AND ALSO TO THE SOIL REPORT.
.2 FILL UNDER SLABS–ON–GRADE – CONFIRM THAT FILL MATERIAL USED IS SATISFACTORY AND THAT THE REQUIRED DEGREE OF COMPACTION HAS BEEN ATTAINED.
.3 CAST–IN–PLACE & PRECAST CONCRETE – ROUTINE INSPECTION OF MATERIALS, INCLUDING SLUMP CYLINDER AND AIR ENTRAINMENT TESTS & REINFORCING ROD TESTS WHEN REQUIRED AS DIRECTED IN ACCORDANCE WITH CAN/CSA–A23.2–M.
.4 THE PROJECT SUPERINTENDENT IS TO ADVISE THE STRUCTURAL CONSULTANT A MINIMUM OF 24 HOURS IN ADVANCE OF A CONCRETE POURS FOR A REVIEW OF PREPARATIONS.
.5 STRUCTURAL STEEL AND OWSJ – ROUTINE SHOP AND FIELD INSPECTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF CAN/CSA–16.1–M
.6 MASONRY – WHEN REQUIRED OR DIRECTED, CONCRETE BLOCKS SHALL BE TESTED IN ACCORDANCE WITH CAN3–A165–M SERIES; BRICKS IN ACCORDANCE WITH CSA CAN3–A82M; AND MORTAR AND/OR GROUT IN ACCORDANCE WITH CSA A179M.
3.2 ALL INSPECTION AND TESTING SERVICES ARE TO BE PERFORMED BY COMPANIES CERTIFIED BY THE CANADIAN STANDARDS ASSOCIATION AND WELDING, INSPECTORS ARE TO BE CERTIFIED BY THE CANADIAN BUREAU.
4.0 FOUNDATIONS
4.0 REFER TO NOTES UNDER FOUNDATION PLANS. ALL EXTERIOR FOOTINGS OR OTHER FOOTINGS EXPOSED TO FREEZING IN THE FINISHED BUILDING SHALL BE FOUNDED AT A MINIMUM1700mm (5'–6") BELOW FINISHED GRADE, UNLESS OTHERWISE NOTED. ON THE THE DRAWINGS FOOTINGS EXPOSED TO FROST ACTION DURING CONSTRUCTING SHALL BE PROTECTED BY A MINIMUM OF 1200mm (4'–0") OF EARTH OR IT'S EQUIVALENT SUFFICIENT TO PREVENT FREEZING.
4.2 THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTINGS OR ALONG STEPPED FOOTINGS SHALL NOT EXCEED A RISE OF 7 IN A RUN OF 10, MAXIMUM STEP APPROX. 600mm (2'–0").
4.3 CAP DEPTHS AND FOOTING ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE BASED UPON INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THE STRUCTURAL DRAWINGS.
4.4 IF ACTUAL JOB SITE OR SOIL CONDITIONS VARY FROM THOSE STATED IN THE GEOTECHNICAL REPORT BY ENGLOBE OR SHOWN BY STRUCTURAL CONSULTANT IN ITS DRAWINGS. WRITTEN DIRECTIONS MUST BE OBTAINED FROM THE STRUCTURAL CONSULTANT BEFORE PROCEEDING WITH THE WORK.
4.5 KEEP EXCAVATIONS CONTINUOUSLY DRY BEFORE CONCRETE IS PLACED. IF THE SOIL IS SOFTENED BY WATER, THE EXCAVATION SHALL EXTENDED BELOW THE SOFTENED MATERIAL AND THE BOTTOM OF THE FOOTINGS LOWERED TO SUIT.
5.0 BACKFILLING AND COMPACTION: –
5.1 SLABS–ON–GRADE AND ALL STRUCTURAL ELEMENTS FRAMING INTO WALLS WHICH RETAIN EARTH MUST BE IN BEFORE BACKFILLING. BACKFILL & COMPACT EACH SIDE OF WALL SIMULTANEOUSLY.
5.2 AT FOUNDATION WALLS WITH GRADE BOTH SIDES, UNLESS ADEQUATELY SHORED, THE SUB–GRADE. (WHERE SUB–GRADE CONSISTS OF COMPACTED FILL, REFER TO SPECIFIC NOTES ON THE DRAWINGS).
5.3 UNDER SLABS–ON–GRADE, REMOVE SOFT SPOTS, ORGANIC AND FOREIGN MATTER AS REQUIRED, COORDINATE WITH NORTHSHORE ENGINEERING

GENERAL NOTES CONTINUED

5.4 BACKFILL UNDER SLAB–ON–GRADE, IN FOOTING EXCAVATIONS AND IN TRENCHES ONLY WITH APPROVED MATERIAL. UNLESS SPECIFICALLY NOTED OTHERWISE, BACKFILLING SHALL BE CARRIED OUT IN MAXIMUM OF 200mm (8") THICK LIFTS OF LOOSE FILL EACH COMPACTED TO A MINIMUM OF 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.
5.5 UNLESS OTHERWISE NOTED, PROVIDE IMMEDIATELY UNDER SLABS–ON–GRADE A MINIMUM OF 150mm (8") OF COMPACTED GRANULAR "A" MATERIAL. COMPACTION TO ACHIEVE A MINIMUM OF 100% STANDARD PROCTOR MAXIMUM DRY DENSITY.

STRUCTURAL STEEL

1.0 GENERAL
1.1 STRUCTURAL STEEL & CONNECTIONS SHALL CONFORM TO CAN/CSA–S16.1–M & SHALL BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER EXPERIENCED IN THIS TYPE OF WORK.
1.2 REFER ALSO TO GENERAL NOTES, NOTES UNDER PLANS & TO THE SPECIFICATION .
1.3 WELDING SHALL CONFORM TO CSA STANDARD W59 AND BE PERFORMED BY A FABRICATOR CERTIFIED TO CSA W47.1. DIV 1 OF 2.1
1.4 BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM OF 50% OF THE BEAM SHEAR CAPACITY UNLESS OTHERWISE NOTED, & IN NO CASE BE LESS THAN THE LOADS SHOWN ON OR IMPLIED BY THE DRAWINGS. WHEN EVER POSSBLE USE STANDARD DOUBLE HEADED AND TYPE CONNECTIONS. ALL CONNECTION TO BE AT LEAST HALF THE DEPTH OF THE BEAMS. USE SAFE CONNECTIONS AS REQUIRED BY THE MINISTRY OF LABOUR.
2.0 PRODUCTS
2.1 ALL STRUCTURAL STEEL MEMBERS SHALL CONFORM TO CAN/CSA–G40.20/G20.21–M. PLATES, SAG RODS, STRAP ANCHORS & BARS SHALL BE TYPE 300W AND WIDE FLANGE SECTION AND HOLLOW STUCTURAL SECTIONS SHALL BE TYPE 350W, CLASS C FOR SQUARE HSS & CLASS C FOR ROUND HSS.
2.2 BOLTS, NUTS & WASHERS FOR CONNECTIONS TO CONFORM TO ASTM A325 UNLESS NOTED.
2.4 ANCHOR BOLTS, NUTS & WASHERS FOR BASE PLATES, BEARING PLATES & WELD PLATES TO CONFORM TO ASTM A307 UNLESS NOTED.
2.5 SHEAR STUDS WHERE REQUIRED TO CONFORM TO ASTM A108, WELDING TO CONFORM TO CSA W59.
2.6 WELDING MATERIALS TO CONFORM TO CSA W48–M (SERIES).
2.7 POWER TOOL CLEAN ALL STEEL BEFORE PRIMING TO REMOVE ALL LOOSE MILL SCALE.
2.8 PRIMER PAINT TO CONFORM TO CAN/CGSB–1.40–M OR CISC/CPMA 2–75. TOP COAT TO BE INDUSTRIAL GRADE ENAMEL PAINT (AS PER ONTC REQUEST)

3.0 EXECUTION
3.1 FABRICATION, HANDLING & ERECTION TO CONFORM TO CAN/CSA–S16.1–M.
3.2 PROVIDE A MINIMUM OF 2–12mm (1/2") DIAMETER BY 250 (10") LONG WALL ANCHORS FOR ALL BEAM & OWSJ WALL PLATES ON MASONRY, OR AN APPROVED EQUAL, UNLESS OTHERWISE NOTED. BEAMS & JOIST SHOES TO BE WELDED TO BEARING PLATES.
3.3 PROVIDE ADJUSTABLE ANCHORS TO ALL STEEL TO BE BUILT INTO, ABUTTED BY, OR FACED WITH MASONRY (REFER ALSO TO DETAILS IF SHOWN). SPACING OF ANCHORS TO BE
.1 FOR VERTICAL SPACING.....600 (24") MAX. CENTRES
.2 FOR HORIZONTAL SPACING.....5 TIMES WALL THICKNESS* MAX. 1500 (5'–0") CENTRES
(*NOTE, USE BACK–UP WYTHE ONLY FOR CAVITY WALLS).
.3 WHERE STEEL PROVIDES LATERAL BRACING ONLY TO MASONRY (I.E. DOES NOT SUPPORT MASONRY) ANCHORS SHALL PERMIT DIFFERENTIAL VERTICAL MOVEMENT BETWEEN STRUCTURAL MEMBER & MASONRY. MINIMUM CLEARANCE SPAN/180 (MINIMUM 25mm 1")
3.4 CLEAN, PREPARE SURFACES AND SHOP PRIME STRUCTURAL STEEL COAT OF SPECIFIED PRIMER PAINT IN ACCORDANCE WITH CAN/CSA–S16.1–M, EXECPT WHERE MEMBERS ARE TO BE ENCASED IN CONCRETE. FIELD "TOUCH–UP" BOLTS, WELDS, BURNED OR SCRAPED SURFACES AFTER ERECTION..
3.6 PROVIDE ALL NECESSARY TEMPORARY BRACING TO KEEP STRUCTURE SAFE AND PLUMB. BRACING SHOWN ON STRUCTURAL DRAWINGS IS PERMANENT FOR FINISHED BUILDING ONLY.
3.7 CO–ORDINATE WITH MECHANICAL & ELECTRICAL CONSULTANTS & SUB–TRADES WHOSE WORK MAY EFFECT DETAILING, FABRICATION & ERECTION OF THE STEEL STRUCTURE.
3.8 TOLERANCES: VARIATION FROM PLUMB & LEVEL EXTERIOR COLUMNS AT ELEVATOR SHAFTS, & SPANDREL BEAMS INCLUDING ANGLES.....1:1000 MAX. 25mm (1/8" IN 10'–0" MAX.1")
OTHER PIECES.....1:500 (1/4" IN 10'–0")
3.9 NO HOLES OTHER THAN THOSE SHOWN ON REVIEWED SHOP DRAWINGS SHALL BE MADE IN ANY STEEL MEMBER WITHOUT WRITTEN PERMISSION OF THE STRUCTURAL CONSULTANT.
4.0 QUALITY CONTROL
4.1 SEE GENERAL NOTES, NOTES UNDER PLANS, &/OR SPECIFICATION FOR INSPECTION

AND TESTING REQUIREMENT.?PREFABRICATED WOOD TRUSS NOTES

CAST–IN–PLACE CONCRETE NOTES

1.0 GENERAL
1.1 PROVIDE ALL LABOUR MATERIAL, TOOLS AND EQUIPMENT REQUIRED TO CARRY OUT THE WORK.
1.2 REFER ALSO TO GENERAL NOTES, NOTES UNDER PLANS AND SCHEDULES, TYPICAL DETAILS AND SPECIFICATION.
2.0 PRODUCTS
2.1 PORTLAND CEMENT, WATER AND AGGREGATES SHALL CONFORM TO CSA STANDARD A23.1.
2.2 PROVIDE AN APPROVED WATER REDUCING ADDITIVE IN ALL CONCRETE. PROVIDE AN APPROVED AIR ENTRAINING ADDITIVE IN ALL CONCRETE WHICH WILL BE EXPOSED TO A FREEZE/THAW CYCLE AND/OR THE ACTION OF DE–ICING SALT. ADMIXTURES SHALL CONFORM TO CSA STANDARD A23.5.
2.3 FORM WORK SHALL CONFORM TO CSA STANDARD A23.1, CSA STANDARD S269.3 AND FALSE WORK SHALL CONFORM TO CSA S269.1.
2.4 IF SO INSTRUCTED, THE DESIGNS FOR THE FORM WORK SHALL BE SUBMITTED FOR REVIEW BEFORE CONSTRUCTION. FORM WORK DRAWINGS AND DESIGN SHALL BEAR THE STAMP OF A LICENSED PROFESSIONAL ENGINEER.
2.5 UNLESS OTHERWISE NOTED PROVIDE SLAB & BEAM FORMS WITH AN UPWARD CAMBER OF 2mm/1000mm (1/4" PER 10'–0") OF SPAN, AND UPLIFT ENDS OF CANTILEVERED SLAB & BEAM FORMS 3mm/1000mm (1/4" PER 8'–0") OF CANTILEVER LENGTH.
2.6 PROVIDE STANDARD ADJUSTABLE MASONRY ANCHOR SLOTS FOR ALL MASONRY FACING OR ABUTTING CONCRETE FACES.
2.7 PROVIDE AND/OR INSTALL STANDARD ADJUSTABLE INSERTS & ALL OTHER CAST–IN INSERTS AS REQUIRED BY THE ARCHITECTURAL, STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS & SPECIFICATION.
2.8 REINFORCING STEEL UNLESS SPECIFICALLY NOTED, SHALL BE DEFORMED BARS CONFORMING TO CAN/CSA–G30.18–M GRADE 400 (58000 PSI).
2.9 WELDED WIRE FABRIC TO CONFORM TO CSA G30.5–M.
2.10 REINFORCING SHALL BE DETAILED, BENT, PLACED AND SUPPORTED TO CONFORM TO ACI STANDARD 315 AND THE MANUAL OF STANDARD PRACTICE PUBLISHED BY THE REINFORCING STEEL INSTITUTE OF CANADA.
2.11 DRY–PACK GROUT TO BE 1 PART PORTLAND CEMENT TO 11/2 PARTS SAND TO 2 PARTS OF 8mm PEA GRAVEL WITH ONLY SUFFICIENT WATER TO DAMPEN MIXTURE. COMPRESSIVE STRENGTH 50MPa AT 28 DAYS.
2.12 NON–SHRINK GROUT TO BE AN APPROVED PRE–MIXED PROPRIETARY PRODUCT .
2.13 PROVIDE APPROVED EXTRUDED PVC WATER STOPS OF SIZE & STYLES INDICATED, WITH PRE–WELDED CORNERS & INTERSECTIONS. SEE ALSO TYPICAL DETAILS.
2.14 CURING AND SEALING COMPOUNDS WHERE APPROVED FOR USE TO CONFORM TO ASTM STANDARD C309. GENERALLY, ALL CONCRETE SURFACES ARE TO BE SEALED UNLESS NOTED OTHERWISE. COMPOUNDS ARE TO BE COMPATIBLE WITH APPLIED FINISHES.
3.0 EXECUTION
3.1 MINIMUM COMPRESSIVE STRENGTH FOR CONCRETE @ 28 DAYS SHALL BE AS FOLLOWS –25MPa FOR FOOTINGS
–25MPa FOR WALL AND PIERS
–25MPa FLOOR SLAB
3.2 SLUMP AT THE POINT OF DISCHARGE SHALL BE CONSISTENT AT 80mm +/–30mm (3" +/– 11/8") UNLESS NOTED OTHERWISE. GREATER SLUMPS ARE NOT ACCEPTABLE.
3.3 CONCRETE MIXING, TRANSPORTATION, HANDLING AND PLACING SHALL CONFORM TO CSA STANDARD A23.1.
3.4 CONSTRUCTION JOINTS FOR WALLS ARE BASED UPON VERTICAL JOINTS AT A MAXIMUM SPACING OF 10000mm (30'–0").
3.5 CONSTRUCTION JOINTS FOR WALLS, SLABS, AND BEAMS NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL CONSULTANT BEFORE CONSTRUCTION. GENERALLY JOINTS IN SLABS SHALL BE AT RIGHT ANGLES TO THE SPANS, AT MID–SPAN IF POSSIBLE AND BE CLEAR OF SUPPORTS AND POINT LOADS.
3.6 INSERTS, FRAME–OUTS, SLEEVES, BRACKETS, CONDUITS AND FASTENING DEVICES, SHALL BE INSTALLED AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS IN A MANNER THAT SHALL NOT IMPAIR THE STRUCTURAL STRENGTH OF THE SYSTEM, BE SO INSTALLED THAT THEY SHALL NOT REQUIRE THE CUTTING, BENDING, OR DISPLACEMENT OF THE REINFORCING OTHER THAN AS SHOWN ON THE TYPICAL DETAILS.
3.7 ELECTRICAL CONDUIT SHALL NOT PASS THROUGH A COLUMN, SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/3 SLAB THICKNESS OR WALL OR BEAM IN WHICH IT IS EMBEDDED, SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTRE UNLESS APPROVED AND HAVE A MINIMUM CONCRETE COVER OF 25mm (1") AND UNLESS SPECIFICALLY PERMITTED OTHERWISE, SHALL NOT RUN HORIZONTALLY IN A CONCRETE WALL.
3.8 OPENINGS AND DRIVEN FASTENERS REQUIRED IN THE CONCRETE AFTER THE CONCRETE IS PLACED SHALL BE APPROVED BY THE STRUCTURAL CONSULTANT BEFORE PROCEEDING.
3.9 FINISHING, REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIRED FINISH TO EXPOSED CONCRETE. ALL HONEYCOMBING SHALL BE CUT OUT AND FILLED. FLOOR FINISHES SHALL BE AS REQUIRED BY THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS AND SHALL CONFORM TO CSA STANDARD A23.1 (CLASS A CONVENTIONAL SMOOTH CLASSIFICATION).
3.10 TOLERANCES FOR PLACING STRUCTURAL CONCRETE, REINFORCING STEEL, CAST–IN HARDWARE AND FOR FLOOR & ROOF FINISHES SHALL BE AS SPECIFIED IN CSA STANDARD A23.1.
3.11 MINIMUM REINFORCING FOR ANY CONCRETE WALL TO BE AS SHOWN ON TYPICAL DETAIL FOR CONCRETE WALLS.
3.12 MINIMUM REINFORCING FOR ANY SUSPENDED SLAB SHALL BE TEMPERATURE BARS BOTTOM EACH WAY PLUS 10M @ 400 (16") DOWLES 600x600 (2'–0" x 2'–0") TOP AROUND PERIMETER, REFER TO TYPICAL DETAIL OF ONE WAY SLABS.
4.0 QUALITY CONTROL
4.1 FOR INSPECTION AND TESTING, SEE GENERAL NOTES.

STRUCTURAL WOOD

1.0 CONFORM TO CSA 086: 'ENGINEERING DESIGN IN WOOD' (ALL FRAMING NOT SHOWN IS TO BE AS PER O.B.C. PART 9)

1.1 MATERIALS:
.1 LUMBER CONFORMING TO CSA 0141
A: SPRUCE–PINE–FIR (SPF) NO.1/NO.2 MINIMUM. STUD GRADE IS NOT PERMITTED IN STRUCTURAL WORKS.
B: KILN DRIED WITH MAXIMUM MOISTURE CONTENT OF 19%.

.2 LAMINATED VENEER LUMBER (LVL) CONFORMING TO ASTM D 5456.
A: 2600Fb – 2.0E MINIMUM

.3 PARALLEL STRAND LUMBER (PSL) CONFORMING TO ASTM D 5456.
A. BEAM AND LINTELS: 2900Fb – 2.0E MINIMUM

.4 SHEATHING:
A. PLYWOOD TO BE CANADIAN SOFTWOOD PLYWOOD (CSP) CONFORMING TO CSA O151.
B. ORIENTED STRANDBOARD (OSB) TO BE TYPE O–1 MINIMUM CONFORMING TO CSA O437.

.5 NAILS TO BE COMMON ROUND ROUND OR SPIRAL STEEL WIRE CONFORMING TO CSA B111 OR ASTM F1667. DO NOT SUBSTITUTE WITH BOX NAILS.

LENGTH	PENNY WEIGHT	MIN. DIAMETER COMMON WIRE	MIN. DIAMETER COMMON SPIRAL	MIN. DIAMETER PNEUMATIC
51 (2")	6d	2.84 (0.112")	NOT PERMITTED	2.87 (0.113")
60 (2 3/8")	N/A	N/A	N/A	2.87 (0.113")
64 (2 1/2")	8d	3.25 (0.128")	NOT PERMITTED	3.33 (0.131")
76 (3")	10d	3.66 (0.144")	3.10 (0.122")	3.05 (0.120")
82 (3 1/4")	12d	3.66 (0.144")	3.10 (0.122")	3.05 (0.120")
89 (3 1/2")	16d	4.06 (0.160")	NOT PERMITTED	4.11 (0.162")
102 (4")	20d	4.88 (0.192")	NOT PERMITTED	NOT PERMITTED
114 (4 1/2")	30d	5.38 (0.212")	NOT PERMITTED	NOT PERMITTED
127 (5")	40d	5.89 (0.232")	NOT PERMITTED	NOT PERMITTED

.6 LAG SCREWS CONFIRMING TO ASME STANDARD B18.2.1

.7 ALL CONNECTORS BY SIMPSON STRONG–TIE OR EQUIVALENT APPROVED BY THE CONSULTANT PRIOR TO CONSTRUCTION. FASTEN TO STRUCTURE PER THE MANUFACTURERS REQUIREMENTS. DO NOT SUBSTITUTE FASTENERS.

1.2 STORAGE AND HANDLING:
.1 ALL WOOD MEMBERS ARE TO BE STORED ON SITE, RAISED OFF THE GROUND AND UNDER COVER OR LOOSELY–FITTED TARPS.

.2 STACK PROPRIETARY WOOD PRODUCTS WITH WOOD SPACERS UNLESS OTHERWISE NOTED BY THE MANUFACTURER.

.3 MAINTAIN FACTORY APPLIED WRAPPED ON ALL GLULAM AND HEAVY TIMBER ELEMENTS UNTIL INSTALLED AND PROTECTED FROM THE ELEMENTS. PUNCTURE UNDERSIDE OF WRAPPING TO PERMIT DRAINAGE.

.4 HANDLE ALL PROPRIETARY WOOD PRODUCTS AS RECOMMENDED BY THE MANUFACTURER.

1.3 CONNECTION BUILT–UP MEMBERS AS PER THE TYPICAL DETAILS OR AS RECOMMENDED BY THE SUPPLIER (FOR STRUCTURAL COMPOSITE LUMBER) UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS. SPLICES ARE NOT PERMITTED IN BUILT–UP MEMBERS.

1.4 PROVIDE PRESSURE–TREATED WOOD OR FOAM GASKET BETWEEN WOOD IN CONTACT WITH MASONRY OR CONCRETE.

1.5 DO NOT NOTCH STRUCTURAL WOOD MEMBERS WITHOUT THE WRITTEN CONSENT OF THE DESIGNER AN/OR CONSULTANT.

1.6 DO NOT DRILL HOLES IN BEAMS, COLUMNS OR PROPRIETARY WOOD MEMBERS (UNLESS APPROVED IN WRITING BY THE DESIGNER). HOLES DRILLED IN STUDS, TOP/BOTTOM PLATES AND JOIST ARE NOT TO EXCEED 25% OF THE MEMBER DEPTH AND SHALL NOT BE CLOSER THAN 50mm (2") TO ANY EDGE OF THE MEMBER. SPACE ADJACENT HOLES NO CLOSER THAN 4x THE LARGER HOLE DIAMETER.

INSPECTION SCHEDULE

1.0 NOTIFY ENGINEER 24 HOURS PRIOR TO REQUIRED INSPECTIONS

1.1 INSPECTION REQUIRED AT THE FOLLOWING POINTS DURING CONSTRUCTION THE FOLLOWING IS A MINIMUM REQUIREMENT.

–BEFORE START OF PROJECT (PRE–CONSTRUCTION MEETING)
–AFTER REMOVAL EXISTING CLADDING AND SOFFIT (REVIEW OF EXISTING STRUCTURE)
–AFTER INSTALLATION OF GAUGE METAL GIRTS (BEFORE SPRAYING INSULATION)
–AFTER INSTALLATION OF SPRAY FOAM INSULATION
–AFTER INSTALLATION OF NEW METAL SIDING
–AFTER FORMWORK AND REBAR INSTALLED FOR STAIR PADS
–AFTER INSTALLATION OF NEW EXTERIOR STAIR
–AT COMPLETION OF PROJECT

revision		
0	ISSUED FOR PERMIT AND TENDER	AUG 19 25
B	99% PROGRESS SET	AUG 08 25
A	95% PROGRESS SET	JULY 18 25

LICENSED PROFESSIONAL ENGINEER
W.B. MANN
100508514
Aug 20, 2025
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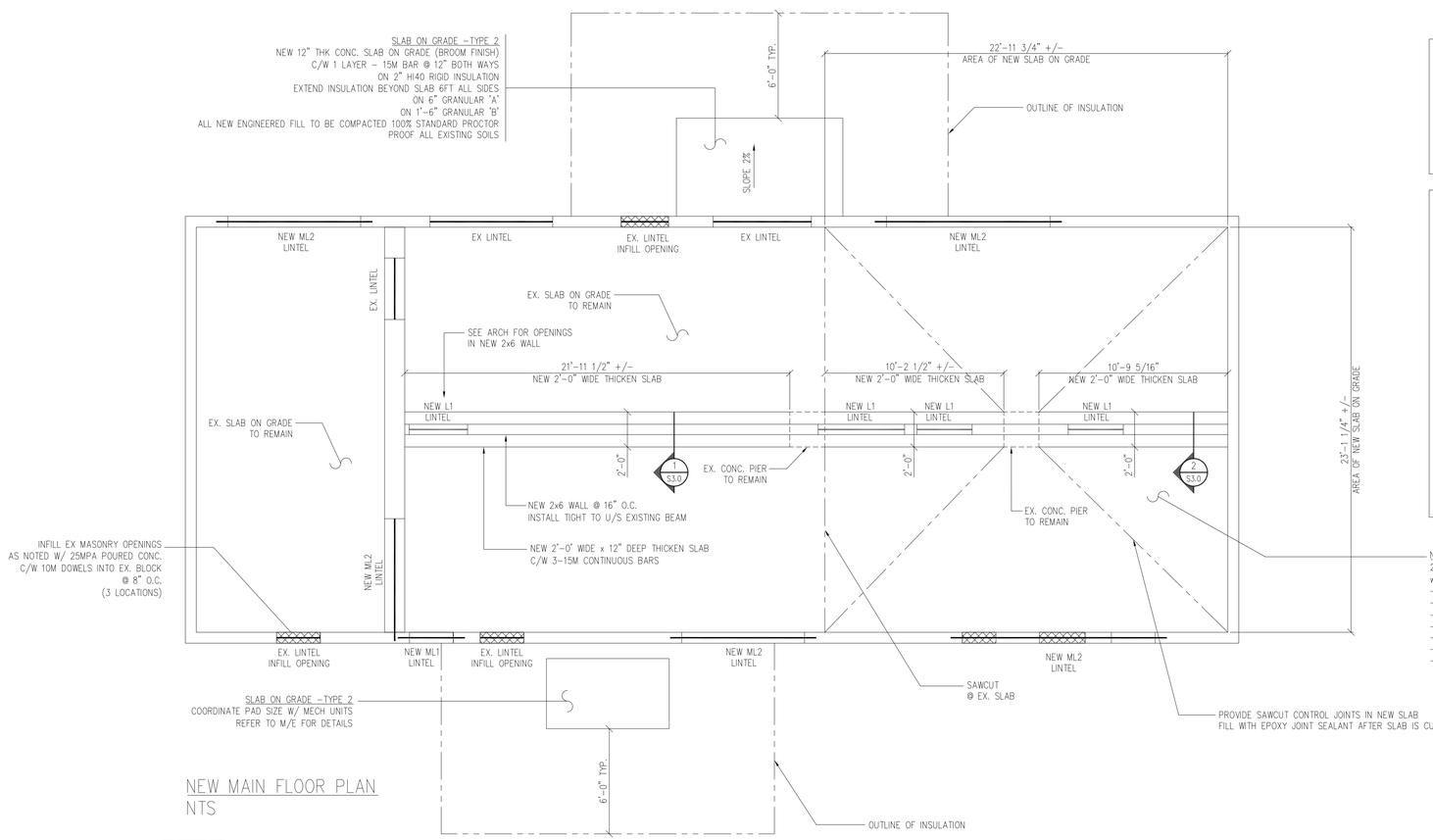
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project: ONTC CODE COMPLIANCE
435 WHITSON STREET
NORTH BAY, ONTARIO

title: GENERAL NOTES

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scale: NTS	project no: 252187
date plotted: AUG 19 2025	
date revised: -	

dwg no: S1.0



NEW MAIN FLOOR PLAN
NTS

= INFILL EXISTING OPENING

GENERAL NOTES

NOTE ALL DIMENSIONS SHOWN FOR REFERENCE ONLY CONFIRM DIMENSIONS WITH ARCHITECTURAL DRAWINGS & EXISTING CONDITIONS
1) SEE GENERAL NOTES
2) CONTRACTOR TO RETAIN GEOTECHNICAL CONSULTANT TO REVIEW AND APPROVE ALL SUBGRADE PREPARATION BEFORE INSTALLATION OF NEW SLABS.
3) ALL EXISTING ORGANIC SOILS TO BE REMOVED, TO BE REVIEWED AND APPROVED BY GEOTECHNICAL CONSULTANT
4) ALL EXPOSED CONCRETE TO BE 32MPa. ALL INTERIOR CONCRETE TO BE 25MPa.
5) ALL CONCRETE EXPOSED TO FREEZE THAW TO HAVE 6% ENTRAINMENT
6) REBAR COVER MINIMUM 3" ON SOIL, REBAR COVER MINIMUM 2" ON FORMWORK
7) ALL FORMWORK TO BE CONSTRUCTED OF CONVENTIONAL LUMBER (SPF #1&2). NO ALTERNATIVES TO BE USED UNLESS APPROVED.
8) SEE PLAN AND SECTION FOR DETAILS

LOADING DATA

GROUND FLOOR LOAD
- 4.8 kPa (100 PSF)

SECOND FLOOR LOAD
- 2.4 kPa (50 PSF)

ROOF LOADS
-SNOW Ss=46 PSF (2.2 kPa)
-SNOW Sr=8.5 PSF (0.4 kPa)
0.5 kPa (10 PSF) FOR ROOFING, INSULATION, & CEILING LOADS AND ANY OTHER DEAD LOADS

WIND LOADS
-MINIMUM DESIGN WIND LOAD 1/50 q= 7.1 PSF (0.34kPa)

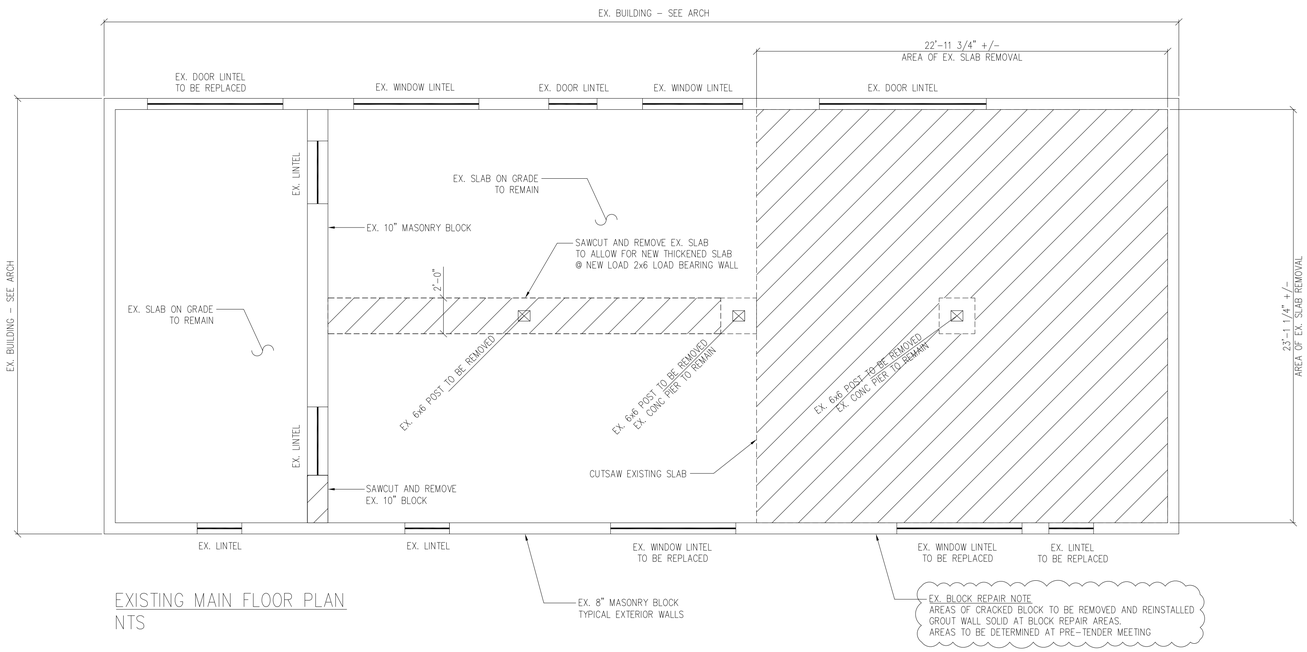
EARTHQUAKE LOADS
-SITE SOIL CLASSIFICATION C
-IMPORTANCE FACTOR 1
SEISMIC DATA
Sa (0.2) = 0.29
Sa (0.5) = 0.150
Sa (1.0) = 0.068
Sa (2.0) = 0.022

BAR	LAP SPLICE	HOOK	BEND RADIUS
10M	1'-4"	5"	2 1/4"
15M	2'-0"	7"	3 1/2"
20M	2'-4"	9"	4 3/4"

WOOD LINTEL SCHEDULE		
	SIZE	
L1	3 PLY 2"x8"	(3) 38x140 JACK POSTS B/S

MASONRY LINTEL SCHEDULE		
	SIZE	LENGTH
ML1	2-L3 1/2"x3 1/2"x5/16"	4'-0" MAX
ML2	W8x18 w/ 8"x6" x 3/8" BRG PL SEE S3.2 FOR DETAILS	12'-0" MAX

-MIN 8" BEARING EACH END
-GROUT SOLID TWO COURSES AT BEARING LOCATIONS FOR ALL ML1 LOCATIONS. SEE DETAIL ON S3.2 FOR ML2 LINTEL INSTALLATIONS



EXISTING MAIN FLOOR PLAN
NTS

SPECIAL NOTE:
1) ALL TEMPORARY SHORING AND SUPPORTS BY CONTRACTOR
2) CONTRACTOR TO NOTIFY NORTHSHORE ENGINEERING WHEN EXISTING LINTELS ARE EXPOSED FOR REVIEW OF EXISTING CONDITIONS

= SLAB REMOVAL/REPLACEMENT AREA

-CONTRACTOR TO SITE FINAL SLAB REMOVAL AREA @ TIME OF CONSTRUCTION.
-CONTRACTOR TO INCLUDE CASH ALLOWANCE TO REPLACE ENTIRE EXISTING SLAB

PROJECT NORTH

revision	date	
0	AUG 19 25	ISSUED FOR PERMIT AND TENDER
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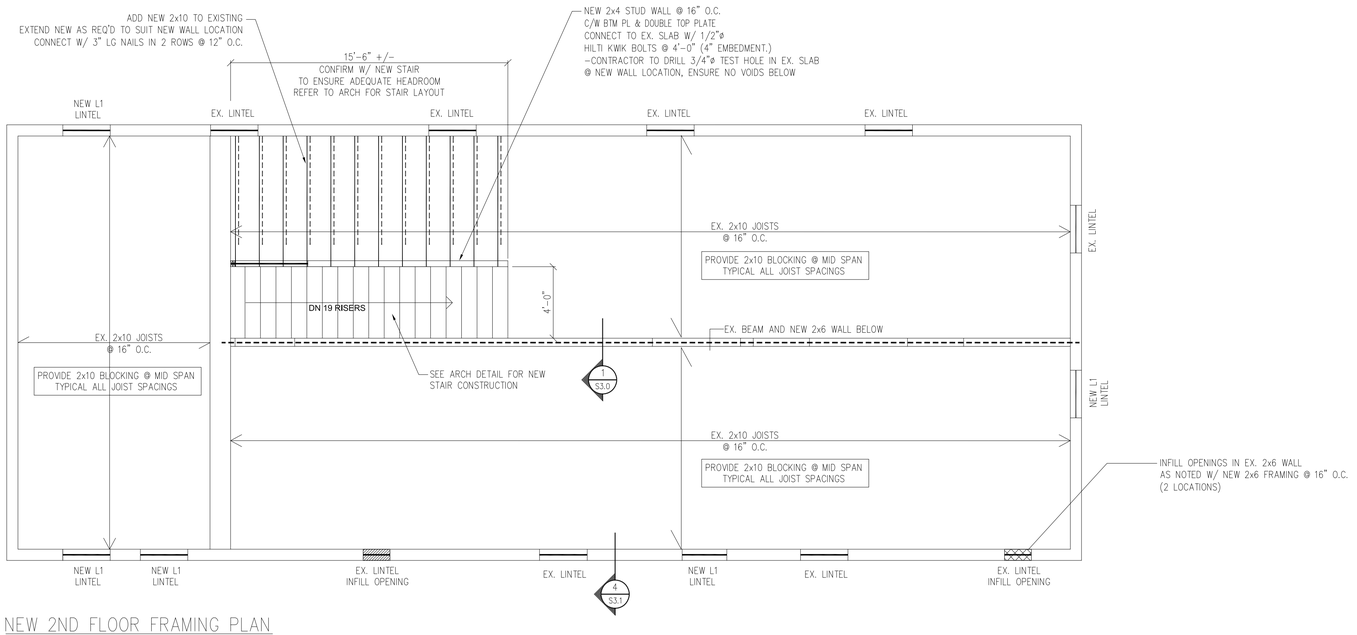
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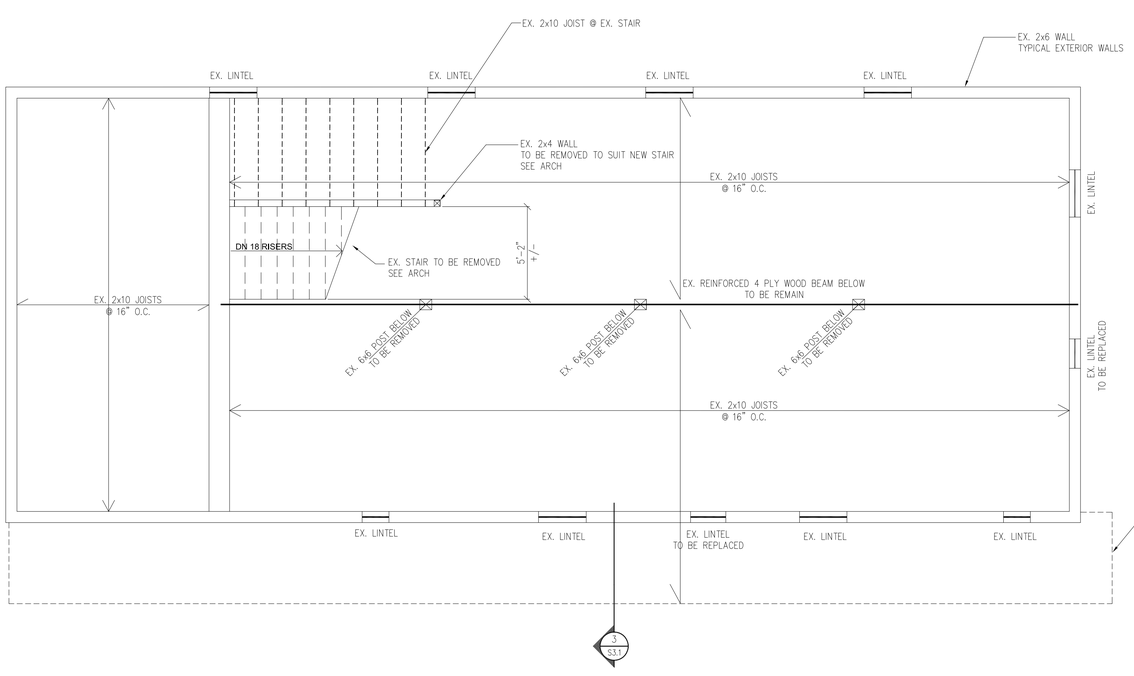
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date plotted:	
AUG 19 2025	
date revised:	
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dwg no: S2.0



NEW 2ND FLOOR FRAMING PLAN



EX. 2ND FLOOR CANTILEVERED BALCONY
TO BE REMOVED
-EXISTING 2x10 FLOOR JOIST TO BE CUT BACK TO EXISTING WALL
-PROVIDE NEW 2x10 RIM JOIST
-PROVIDE ADDITIONAL BLOCKING BETWEEN JOIST @ WALL AS REQ'D

CONTRACTOR TO NOTIFY NORTHSHORE ENGINEERING WHEN JOISTS ARE CUT BACK AND WALL IS OPEN FOR REVIEW OF CONDITION OF EXISTING JOISTS

EXISTING 2ND FLOOR FRAMING PLAN
NTS

SPECIAL NOTE:

1) ALL TEMPORARY SHORING AND SUPPORTS BY CONTRACTOR

2) CONTRACTOR TO NOTIFY NORTHSHORE ENGINEERING WHEN EXISTING LINTELS ARE EXPOSED FOR REVIEW OF EXISTING CONDITIONS

3) ALL FRAMING NOT SHOWN ON DRAWINGS TO COMPLY W/ OBC PART 9

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0	ISSUED FOR PERMIT AND TENDER	AUG 19 25
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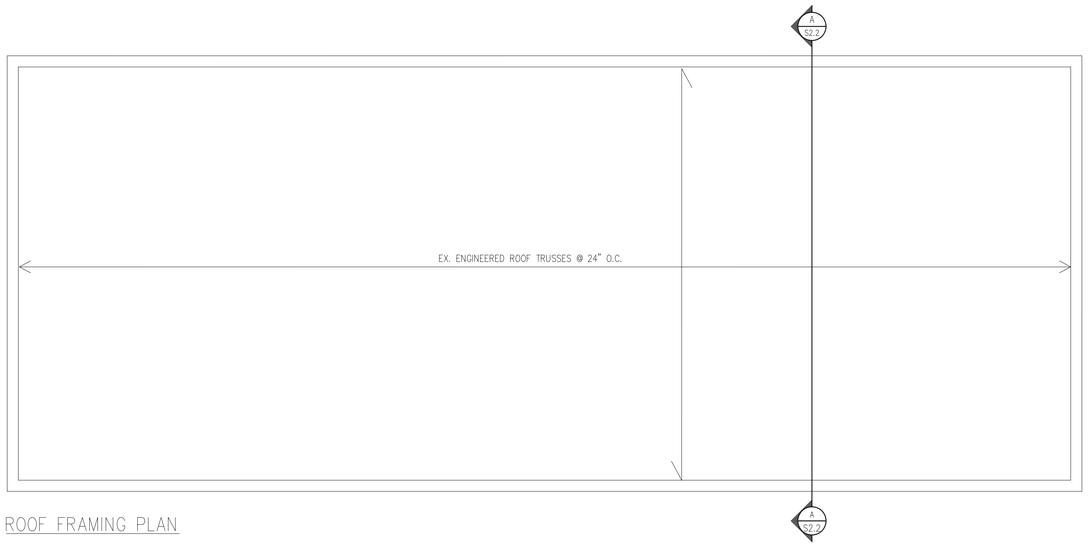
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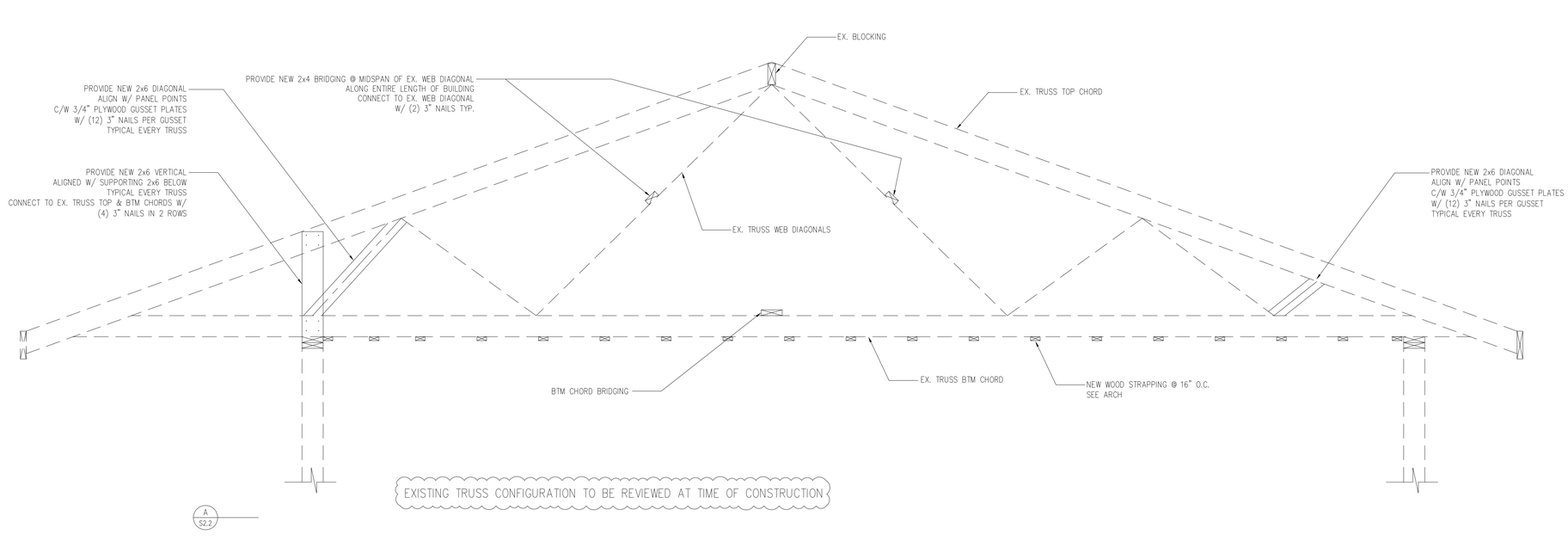
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title
2ND FLOOR FRAMING PLAN

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ROOF FRAMING PLAN



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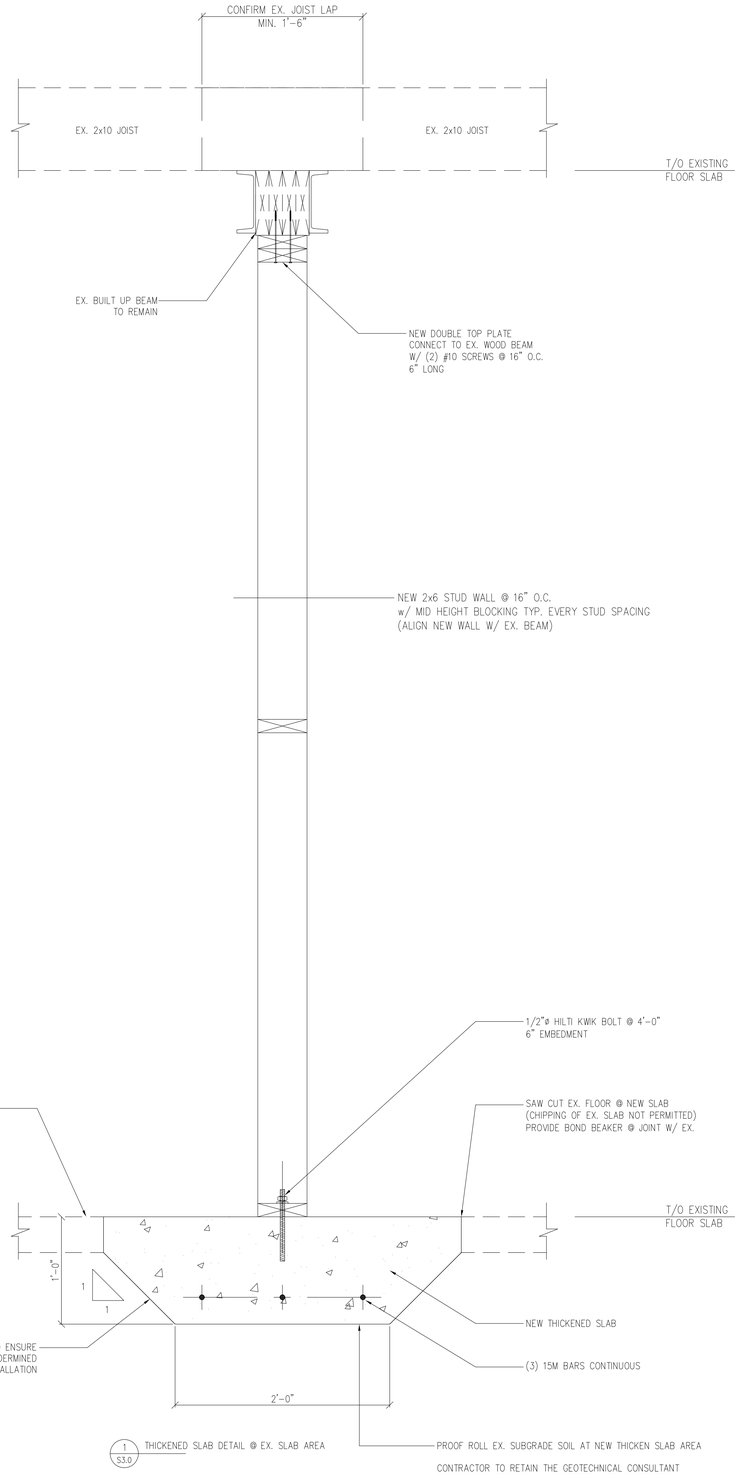
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title
ROOF FRAMING PLAN
ROOF TRUSS MODIFICATIONS

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revision		
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B	99% PROGRESS SET	AUG 06 25
A	95% PROGRESS SET	JULY 18 25

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W.B. MANN
100508514
Aug 20, 2025
PROVINCE OF ONTARIO

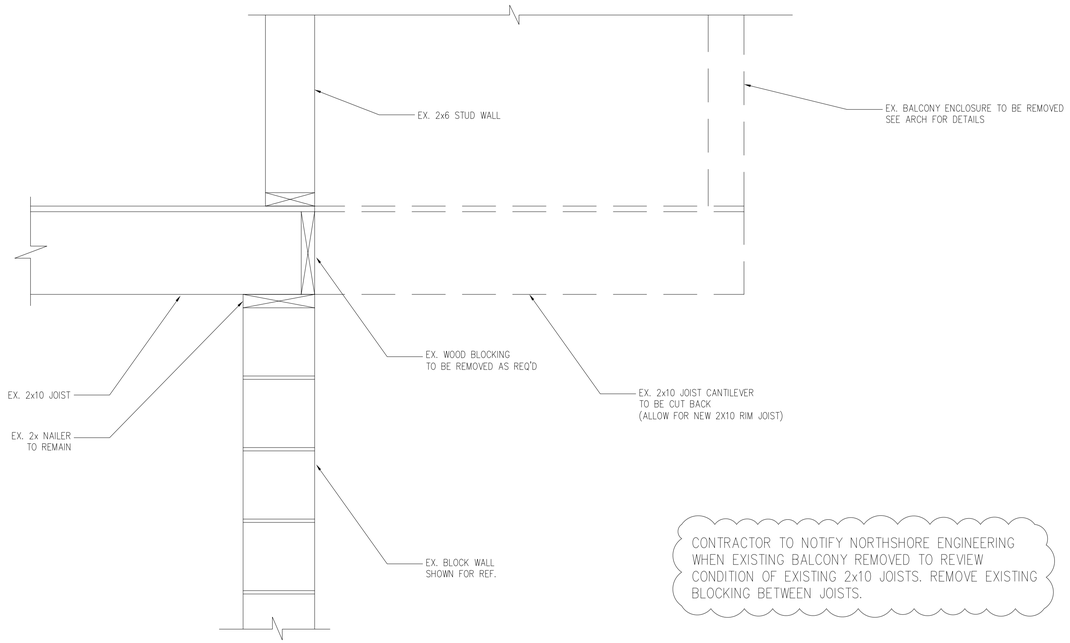
NORTHSHORE ENGINEERING
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project
ONTC CODE COMPLIANCE
438 WHITSON STREET
NORTH BAY, ONTARIO

title
SECTIONS / DETAILS

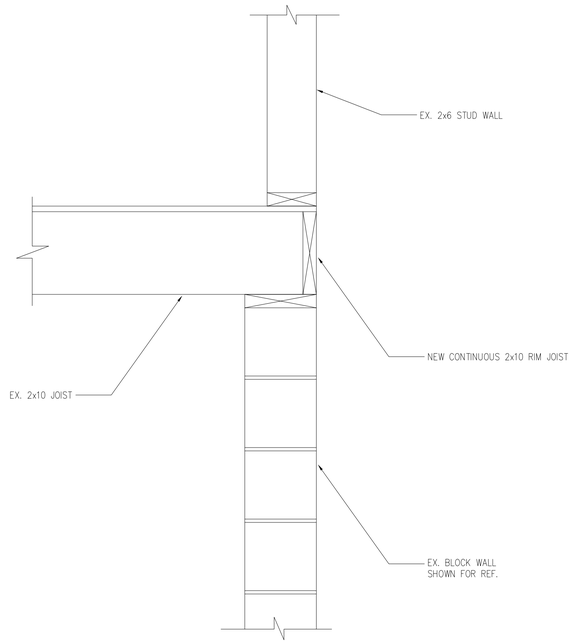
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date plotted: AUG 19 2025	
date revised: --	

dwg no:
S3.0



3 S3.1 EXISTING

CONTRACTOR TO NOTIFY NORTHSHORE ENGINEERING WHEN EXISTING BALCONY REMOVED TO REVIEW CONDITION OF EXISTING 2x10 JOISTS. REMOVE EXISTING BLOCKING BETWEEN JOISTS.



4 S3.1 NEW

revision	
A	JULY 18 25 95% PROGRESS SET
B	AUG 08 25 99% PROGRESS SET
0	AUG 19 25 ISSUED FOR PERMIT AND TENDER

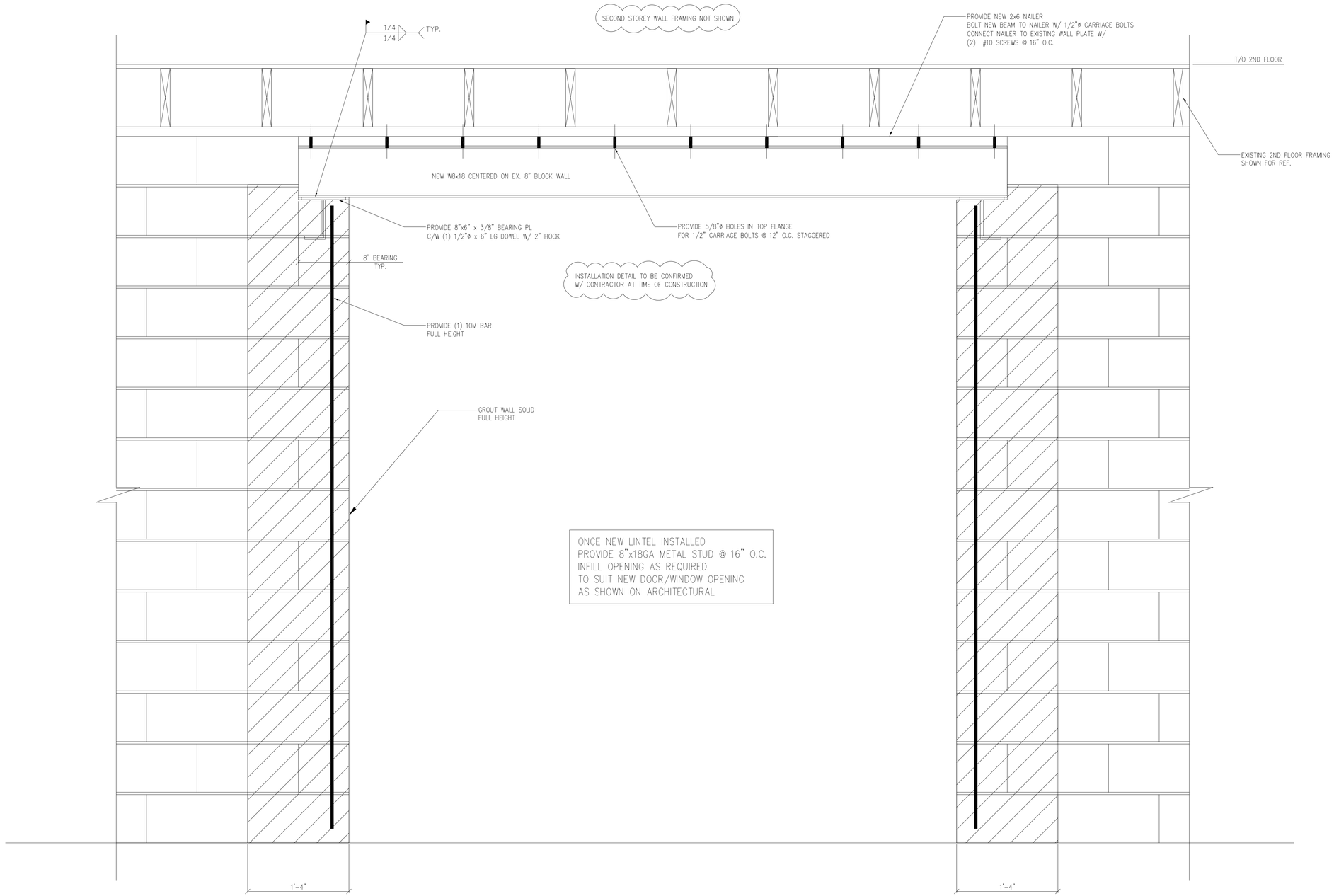
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project: ONTC CODE COMPLIANCE
435 WHITSON STREET
NORTH BAY, ONTARIO

title: SECTIONS / DETAILS

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date plotted: AUG 19 2025	
date revised: --	
dwg no: S3.1	



NEW MASONRY LINTEL ML2 DETAIL
DETAIL SHOWN @ EXISTING DOOR OPENING
DETAIL AT EXISTING WINDOW OPENING SIMILAR

revision		
0	ISSUED FOR PERMIT AND TENDER	AUG 19 25
B	99% PROGRESS SET	AUG 08 25
A	FOR REVIEW	JULY 18 25

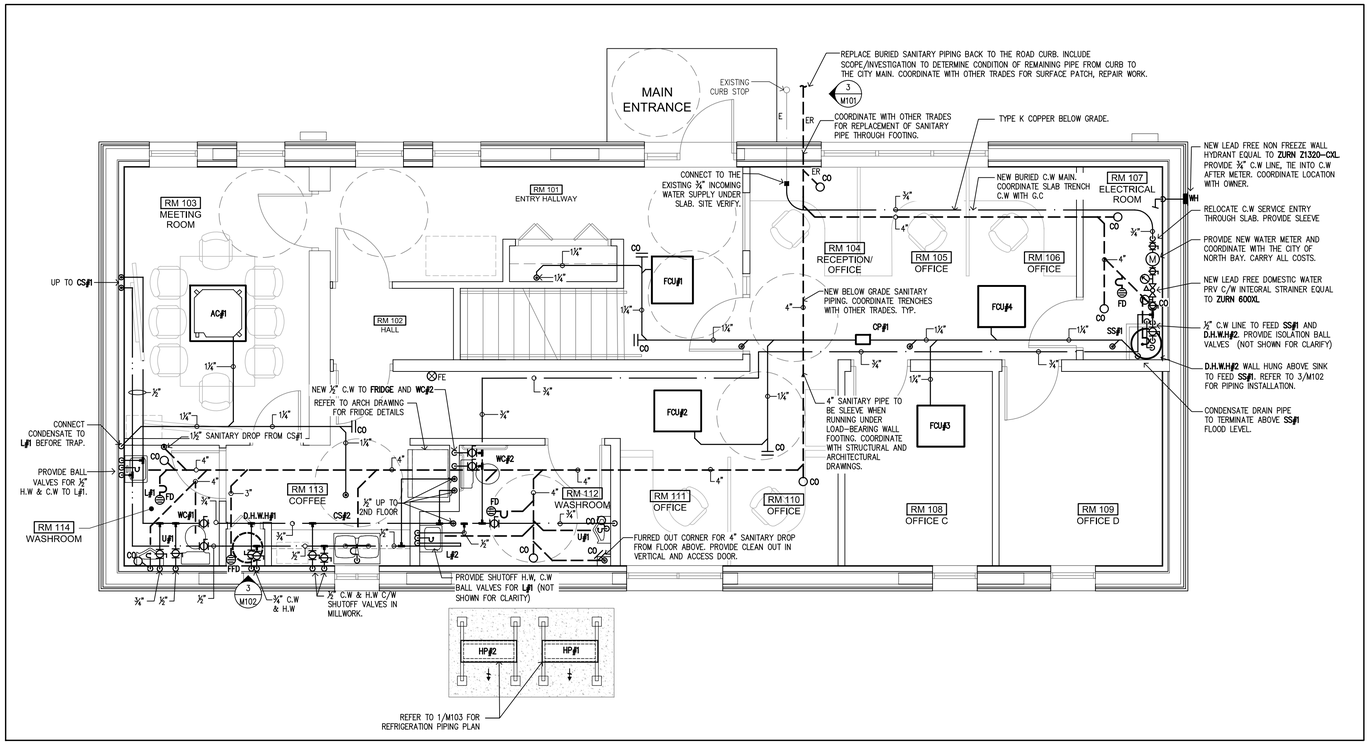
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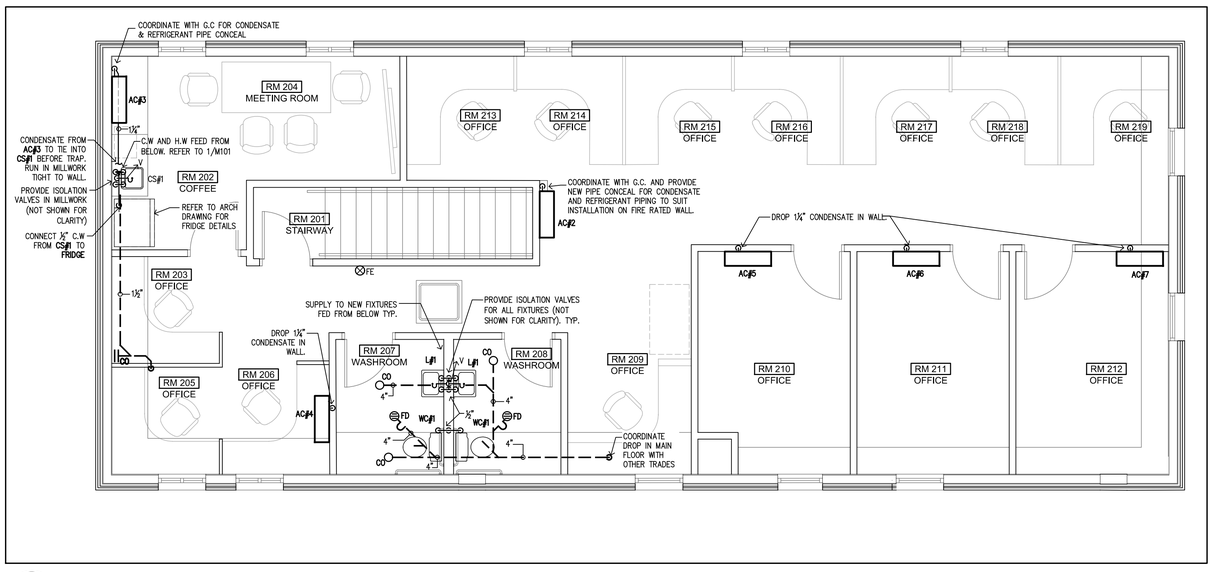
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435 WHITSON STREET
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scale: NTS	project no: 252187
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date revised: --	
dwg no: S3.2	



1 M101 **Mechanical - Plumbing - Domestic Water and Sanitary - Main Floor Plan Proposed**
1/4" = 1' - 0"



2 M101 **Mechanical - Plumbing - Domestic Water & Sanitary - Upper Floor Plan Proposed**
1/4" = 1' - 0"

MECHANICAL GENERAL NOTES:

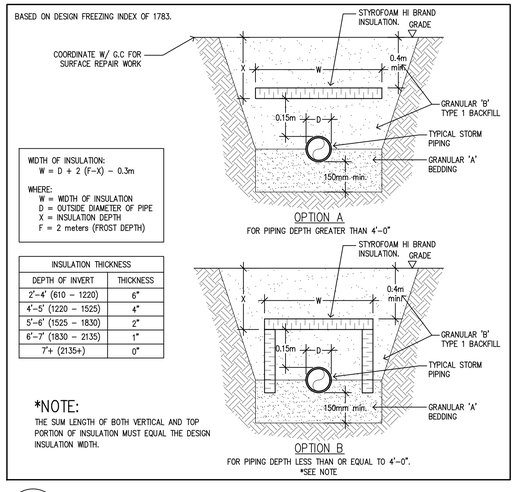
1. FIRE STOP ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.
2. NEW AND REUSED PENETRATIONS THROUGH MASONRY OR CONCRETE TO BE SLEEVED.
3. REMOVE ALL UNUSED EQUIPMENT, PIPING, DUCTWORK, ETC. CUT CAP AND MAKE SAFE.
4. VERIFY ALL POINTS OF CONNECTION TO EXISTING SERVICES PRIOR TO ROUGH-IN.
5. PROVIDE CLEARANCE TO EQUIPMENT AS PER MANUFACTURERS RECOMMENDATIONS.
6. PAINT/PATCH BARE WALL AFTER REMOVAL OR REPLACEMENT OF EXISTING THERMOSTATS, WALL SENSORS.
7. NEW THERMOSTATS, TEMPERATURE SENSORS, OPERATOR INTERFACE CONTROLLERS, ETC. TO BE INSTALLED AT MAXIMUM HEIGHT OF 47" (1200mm) ABOVE FINISHED FLOOR. COORDINATE ON SITE WITH ALL OTHER TRADES PRIOR TO ROUGH IN.
8. MOTORIZED DAMPER AT LOUVERS / EXTERIOR WALL / BUILDING PENETRATIONS TO BE LOW LEAK INSULATED TYPE EQUAL TO TAMCO 9000BF, PARALLEL BLADE. MOTORIZED DAMPERS IN INTERIOR SPACES AND/OR FLOW CONTROL APPLICATIONS TO BE LOW LEAK NON-INSULATED EQUAL TO TAMCO 1000, OPPOSED BLADE.
9. COORDINATE ALL MAIN FLOOR MECHANICAL SERVICES IN CEILING SPACE WITH EACH SUB DISCIPLINE AND ARCHITECTURAL. PROVIDE ADDITIONAL OFFSETS AND PRESENT ALL PROPOSED ROUTING CHANGES TO CONSULTANTS FOR APPROVALS PRIOR TO INSTALLATION. **COORDINATE CEILING HEIGHT REQUIREMENTS WITH G.C**

PLUMBING GENERAL NOTES:

1. COORDINATE SANITARY AND STORM PIPING PENETRATIONS THROUGH STRUCTURAL FOUNDATION. PIPE SLEEVES THROUGH FOUNDATION WALLS TO BE 1.25x PIPE O.D. OR MIN. 50mm FILLED WITH SOFT FOAM INSULATION.
2. PRIME ALL FLOOR DRAINS TO COLD WATER PIPING AT NEAREST SINK OR TRAP PRIMER VALVE AS REQUIRED.
3. EXTEND CONDENSATE FROM EVAPORATOR TO NEAREST DRAIN. PROVIDE FUNNEL FLOOR DRAIN C/W AIR GAP.
4. REFER TO SPECIFICATION FOR LEAD FREE FIXTURE, VALVES, SOLDER ETC.
5. PVC MAY BE USED IN LIEU OF CAST AND COPPER FOR ABOVE GRADE DRAINAGE AND VENT. PVC-XFR, CAST OR COPPER MUST BE USED FOR DRAINAGE AND VENT LINES IN ALL CEILING SPACES.
6. COORDINATE COLD WATER AND SANITARY SERVICE WORK WITH THE CITY OF NORTH BAY. CARRY ALL COSTS.
7. ALL EXISTING PLUMBING FIXTURES, PIPING & DRAINAGE TO BE REMOVED. CUT BACK SANITARY PIPING TO SLAB. CAP/SEAL AND ABANDON BELOW GRADE SANITARY PIPING WHERE FLOOR SLAB IS NOT BEING REPLACED. OTHERWISE REMOVE AND MAKE SAFE AND COORDINATE WITH FLOORING WORK.
8. PROVIDE NEW VENTING FOR ALL SANITARY FIXTURES, TRAPS AS PER OBC. REMOVE EXISTING AND PROVIDE NEW VENT STACKS AS REQUIRED.

DRAWING NOTE:

1. HEAT PUMP THERMOSTAT TO CONNECT TO ELECTRIC RESISTANCE BASE BOARD HEAT AS 2ND STAGE (ADDITIVE). COORDINATE WITH ELECTRICAL DRAWINGS.
2. 2ND STAGE HEAT BY DUCT MOUNTED ELECTRIC REHEAT COIL. REFER TO 4/M103 AND PROVIDE NEPTRONIC CONTROLLER FOR HEAT STAGING.
3. PROVIDE 1" UNDERCUT UNDER WASHROOM DOOR.



3 M101 **Sanitary Installation Detail**
N.T.S.

MECHANICAL LEGEND

- COLD WATER PIPING
- HOT WATER PIPING
- SANITARY SEWER BELOW
- SANITARY SEWER ABOVE
- RD — REFRIGERANT DISCHARGE
- RS — REFRIGERANT SUCTION
- R — 2 LINE REFRIGERANT PIPING
- G — GAS LINE
- CO — CLEAN OUT
- CO — CLEAN OUT AT FLOOR LEVEL
- TRAP
- FD — FLOOR DRAIN
- FFD — FUNNEL FLOOR DRAIN
- FE — FIRE EXTINGUISHER
- E — CAPPED PIPING
- PIPE RISER
- PIPE DROP
- M — METER
- T — THERMOSTAT, ELECTRIC
- T — TEMPERATURE SENSOR
- BALL VALVE
- THERMOMETER
- RELIEF VALVE – EXTEND TO DRAIN
- DUCT SECTION– POSITIVE PRESSURE
- DUCT SECTION– NEGATIVE PRESSURE
- 12"x12" — DUCT WITH DIMENSIONS
- CHANGE OF ELEVATION– RISE(R), DROP(D)
- ACCOUSTICALLY LINED DUCT
- THERMALLY INSULATED DUCT
- FLEXIBLE DUCT CONNECTION
- FLEXIBLE DUCT
- 12"x12" 10"x8" — DUCT TRANSITION
- TURNING VANES
- BCD — BACKDRAFT DAMPER– MULTI-BLADE WITH POSITION LOCKING
- MD — MOTORIZED DAMPER
- FD FD — FIRE DAMPER (PROVIDE ACCESS DOOR)
- BD — BRANCH TAKE OFF WITH BALANCING DAMPER
- RC#1 — REHEAT COIL
- EXHAUST/RETURN GRILLE OR REGISTER
- SUPPLY GRILLE OR REGISTER
- CEILING DIFFUSER, GRILLE OR REGISTER RECTANGULAR
- X/XX — AIR TERMINAL DESIGNATION X – TYPE, XX – AIR VOLUME
- CFS — CEILING FAN SPEED CONTROLLER
- R — EXISTING DEVICE TO BE REMOVED
- RL — EXISTING DEVICE TO BE RELOCATED
- E — EXISTING DEVICE TO REMAIN
- ER — EXISTING DEVICE TO BE REPLACED
- AFF — CENTERLINE OF DEVICE MOUNTING HEIGHT ABOVE FINISHED FLOOR
- AD — PROVIDE NEW ACCESS DOOR

1. ISSUED FOR PERMIT AND TENDER	2025/08/19
revision	date

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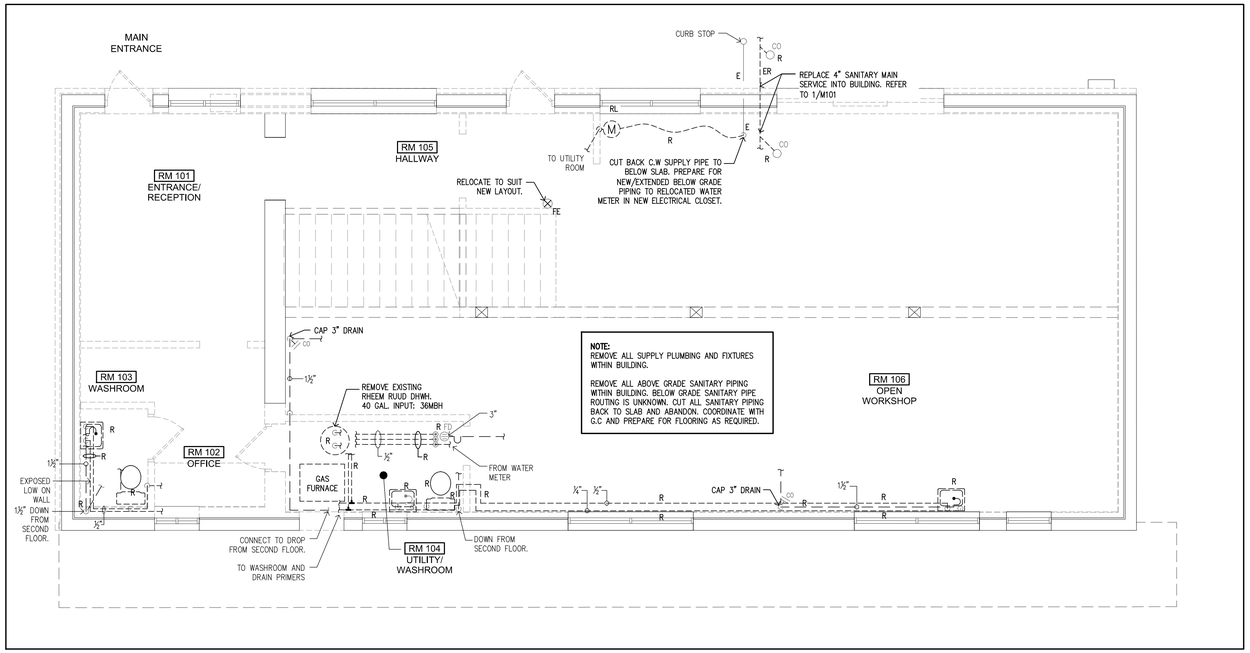
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project
ONTC OFFICE CONVERSION
ONTARIO NORTHLAND TRANSPORTATION COMISSION
435 WHITSON STREET
NORTH BAY ONTARIO

title
MECHANICAL
PLUMBING
PROPOSED FLOOR PLANS, LEGEND, DETAILS, AND NOTES

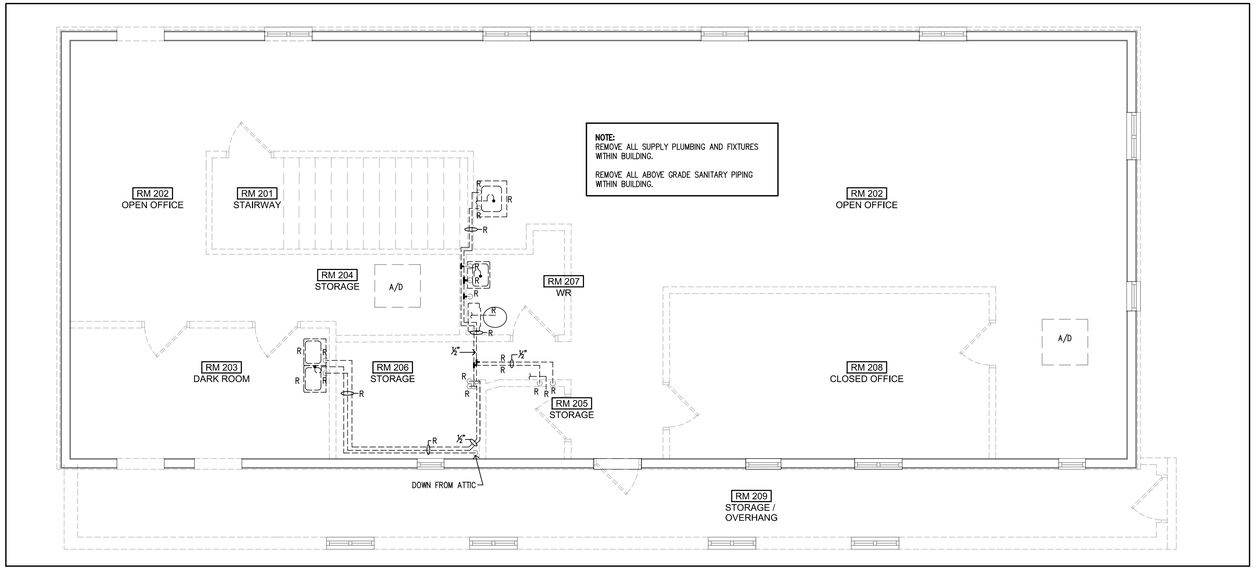
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checked by: AH	project no: 6761
scale: AS NOTED	dwg no: M101
plotted: August 19, 2025	

2025 BIM - MECH & ELECTRICAL



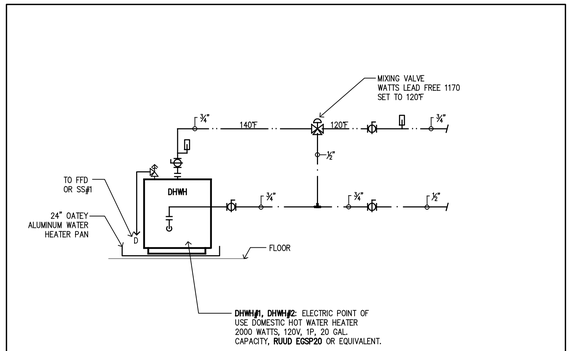
1 M102 Mechanical - Plumbing - Main Floor Plan Removals

1/4" = 1' - 0"



2 M102 Mechanical - Plumbing - Upper Floor Plan Removals

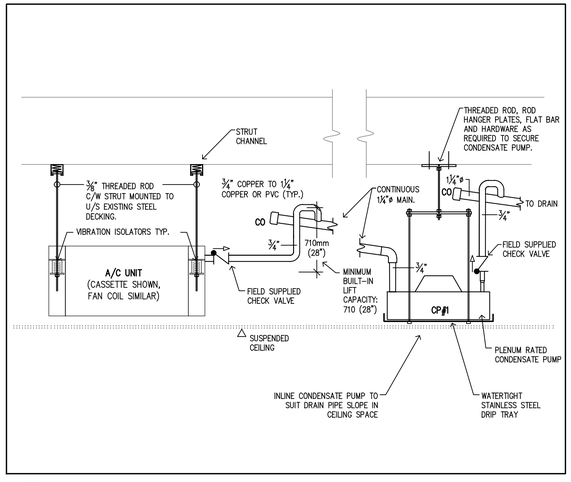
1/4" = 1' - 0"



NOTE: INSTALL DHWH#1 WITHIN NEW MECHANICAL CLOSET. INSTALL DHWH#2 IN ELECTRICAL CLOSET WALL MOUNTED ABOVE NEW SS#1 C/W NEW GALVANIZED METAL WALL STAND AND EPOXY ANCHORED TO BLOCK WALL. PROVDE LEAK TRAY FOR EACH TANK.

3 M102 Tank Type Electric DHWH Piping Diagram

N.T.S.



4 M102 Typical A/C Unit & Condensate Pump Installation Detail

N.T.S.

Plumbing Fixture Schedule

FIXTURE	MARKED	DRAIN	VENT	H.W.	C.W.	COMMENTS
WATER CLOSET	WC	4"	1-1/2"	-----	1/2"	TO FLUSH TANK
SERVICE SINK	SS	3"	1-1/2"	1/2"	1/2"	
COUNTER SINK	CS	1-1/2"	1-1/4"	1/2"	1/2"	
LAVATORY SINK	L	1-1/4"	1-1/4"	1/2"	1/2"	
FLOOR DRAIN	FD	3"	1-1/2"	-----	1/2"	FROM PRIMER
URINAL	U	2"	1-1/2"	-----	3/4"	TO FLUSH VALVE

Pump Schedule

No.	MODEL BY DIVERSITECH	FLOW GPM	HEAD FT H2O	MOTOR & POWER SUPPLY	MEDIA & TEMPERATURE	NOTES
CP#1	CP-22	0.6	22	0.230 kW-120V SP	A/C CONDENSATE	FOR CEILING A/C UNITS, PROVDE UNIT SUPPORTING TRAY, MOUNTS, CHECK VALVES, AND TUBING AS PER DETAIL 4/M102. **PLENUM RATED.**

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revision	date

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project

ONTC OFFICE CONVERSION
ONTARIO NORTHLAND TRANSPORTATION COMISSION
435 WHITSON STREET

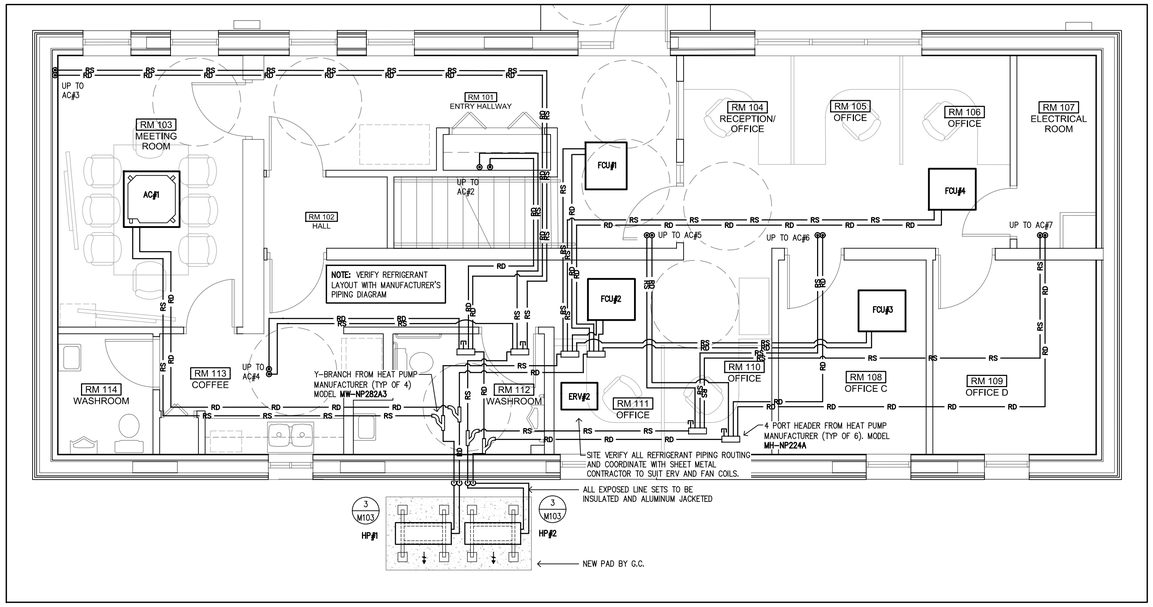
NORTH BAY ONTARIO

title

MECHANICAL
PLUMBING
REMOVALS FLOOR PLAN, DETAILS, AND SCHEDULES

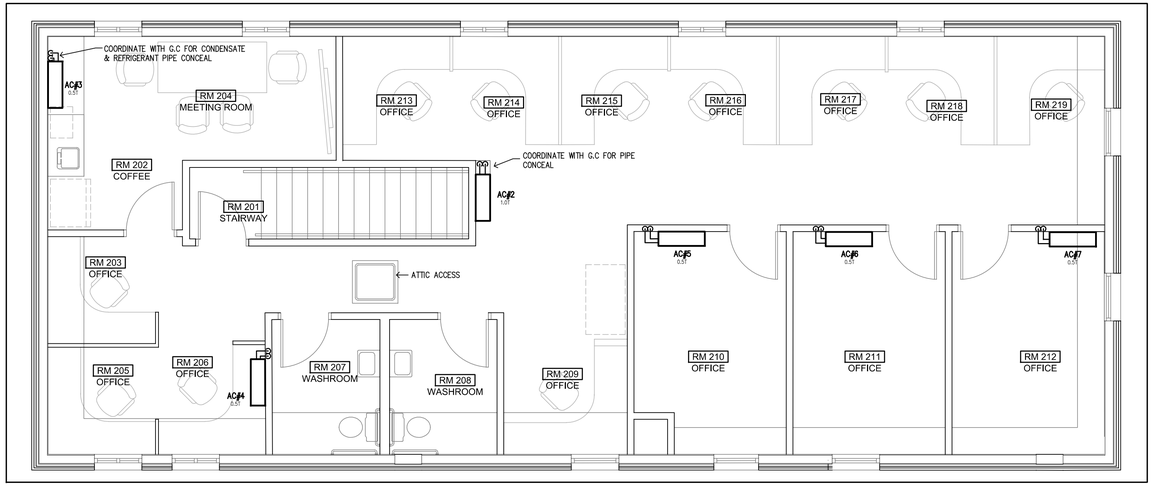
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scale: AS NOTED	dwg no: M102
plotted: August 19, 2025	

2025 BIM + CAD STANDARD



1 M103 Mechanical - HVAC - Main Floor Refrigerant Piping Plan Proposed

1/4" = 1' - 0"



2 M103 Mechanical - HVAC - Upper Floor Refrigerant Piping Plan Proposed

1/4" = 1' - 0"

Heat Pump Schedule

Indoor Units

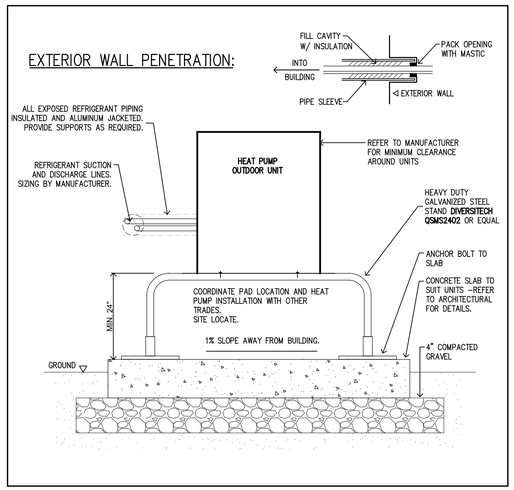
MARKED	MODEL BY HITACHI	AREA SERVED	UNIT TYPE	DIMENSIONS (W x D x H)	COOLING CAPACITY (MBH)	HEATING CAPACITY (MBH)	MAX AIRFLOW (CFM)	RATED POWER (W)	POWER SUPPLY	REHEAT COIL CAPACITY (NEPTRONIC)
FCU#1	HIDM008C23S	RECEPTION HALLWAY 101, 102	DUCTED MED STATIC FAN COIL	27-9/16" x 31-1/2" x 10"	8	9	335	157	208V/SP MCA: 1.2A MOP: 15A	RC#1 2kw 208/1
FCU#2	HIDM008C23S	OFFICE & COFFEE 110, 111, 113	DUCTED MED STATIC FAN COIL	27-9/16" x 31-1/2" x 10"	8	9	335	157	208V/SP MCA: 1.2A MOP: 15A	RC#2 2kw 208/1
FCU#3	HIDM006C23S	OFFICE 108, 109	DUCTED MED STATIC FAN COIL	27-9/16" x 31-1/2" x 10"	6	6.7	300	157	208V/SP MCA: 1.1A MOP: 15A	RC#3 1.5kw 208/1
FCU#4	HIDM006C23S	OFFICE 104,105,106	DUCTED MED STATIC FAN COIL	27-9/16" x 31-1/2" x 10"	6	6.7	300	157	208V/SP MCA: 1.1A MOP: 15A	RC#4 1.5kw 208/1
AC#1	HIC400BC23S	MEETING 103	4-WAY CASSETTE	37-7/8" x 37 3/8" x 9-3/4"	8	9	530	53	208V/SP MCA: 0.5A MOP: 15A	N/A
AC#2	HIWM012C23S	OFFICE 214	WALL MOUNT	11-13/16" x 35-7/16" x 9-5/8"	12	13.5	494	38	208V/SP MCA: 0.3A MOP: 15A	N/A
AC#3	HIWM006C23S	OFFICE 204	WALL MOUNT	11-13/16" x 31-1/8" x 9-5/8"	6	6.7	300	38	208V/SP MCA: 0.3A MOP: 15A	N/A
AC#4	HIWM006C23S	OFFICE 206	WALL MOUNT	11-13/16" x 31-1/8" x 9-5/8"	6	6.7	300	38	208V/SP MCA: 0.3A MOP: 15A	N/A
AC#5	HIWM006C23S	OFFICE 210	WALL MOUNT	11-13/16" x 31-1/8" x 9-5/8"	6	6.7	300	38	208V/SP MCA: 0.3A MOP: 15A	N/A
AC#6	HIWM006C23S	OFFICE 211	WALL MOUNT	11-13/16" x 31-1/8" x 9-5/8"	6	6.7	300	38	208V/SP MCA: 0.3A MOP: 15A	N/A
AC#7	HIWM006C23S	OFFICE 212	WALL MOUNT	11-13/16" x 31-1/8" x 9-5/8"	6	6.7	300	38	208V/SP MCA: 0.3A MOP: 15A	N/A

Outdoor Unit

MARKED	MODEL BY HITACHI	AHRI COOLING TONS	NOMINAL HEATING MBH	DIMENSIONS W x D x H	POWER SUPPLY	UNIT WEIGHT (lbs)
HP#1	HVAHP036C23S	3	40	14-9/16" x 37-3/8" x 54- 9/16"	208V/SP/60 MCA: 30A MOP: 40A	249
HP#2	HVAHP036C23S	3	40	14-9/16" x 37-3/8" x 54- 9/16"	208V/SP/60 MCA: 30A MOP: 40A	249

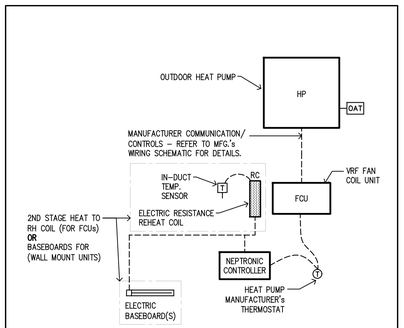
Notes

- INDOOR UNITS C/W FACTORY INSTALLED CONDENSATE PUMPS ON ALL FAN COILS, CONDENSATE CHECK VALVES FIELD SUPPLIED, INDIVIDUAL ISOLATION VALVES AT EACH EVAPORATOR AND CONDENSING UNIT/HEAT PUMP (HP). PROVIDE 100mm (4") DEEP 200mm (8"H) **FILTER BOX SECTION** ON ALL FAN COIL UNITS TO HOUSE 2" DEEP MERV 8 FILTERS 24"x8" SIZE. FILTERS TO BE CAPABLE OF BOTH SIDE ACCESS FOR CHANGE-OUT AND ONLY REQUIRE ONE FOR SERVICE. FAN COIL FANS TO RUN AT LOW SPEED DURING OCCUPANCY HOURS. ALL FAN COIL UNITS TO COME COMPLETE WITH NEPTRONIC ELECTRIC RESISTANCE REHEAT COILS, DAT SENSOR, CONTROLLER & AIR PROVING SWITCH.
- EACH INDOOR UNIT TO BE CONNECTED TO A PROGRAMMABLE CONTROLLER EQUAL TO **HITACHI CWI04-H.**
- EACH OUTDOOR UNIT TO BE COMPLETE WITH A **LOW AMBIENT KIT** FOR OPERATION IN -17°F TEMPERATURE.



3 M103 Heat Pump Outdoor Unit Mounting Detail (Typical)

N.T.S.



NOTE:

- FIRST STAGE HEAT BY HEAT PUMP
- SECOND STAGE HEAT TO BE ELECTRIC RESISTANCE (IN DUCT HEATER OR BASEBOARD HEATER).

4 M103 Fancoil Unit With Perimeter Heat Control Diagram

N.T.S.

revision	date
1. ISSUED FOR PERMIT AND TENDER	2025/08/19

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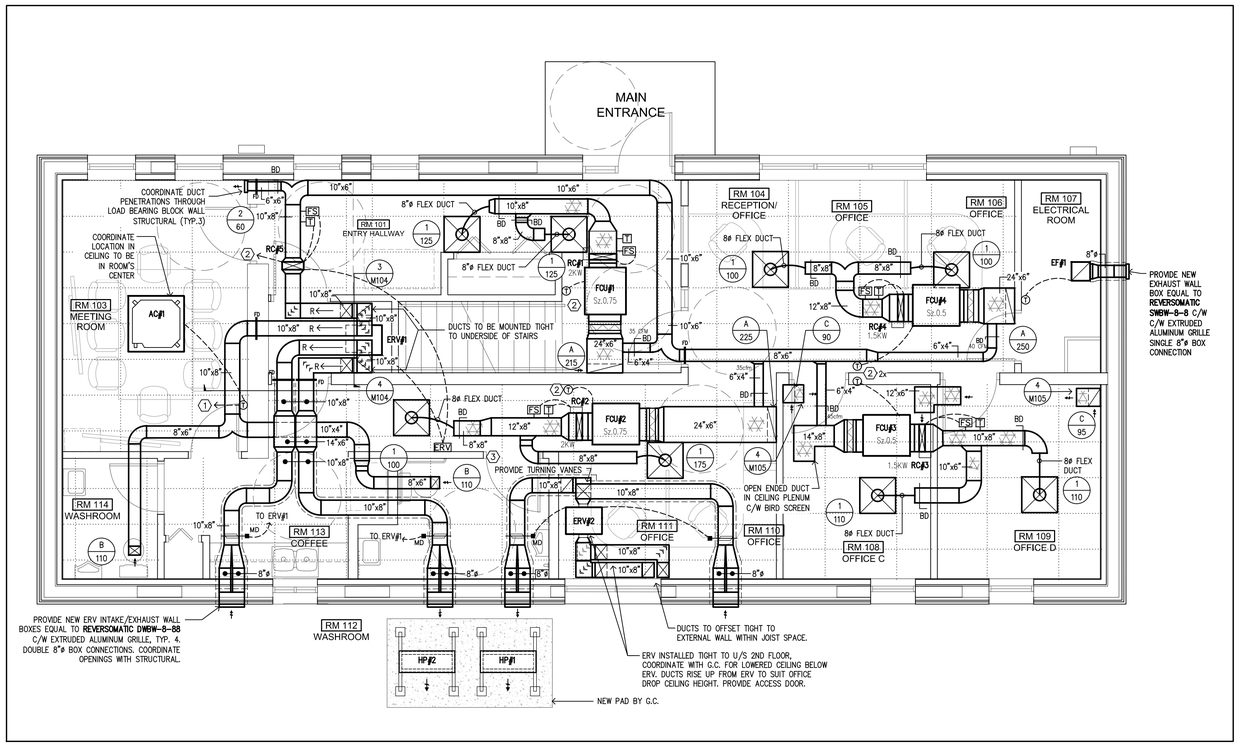
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project
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ONTARIO NORTHLAND TRANSPORTATION COMISSION
435 WHITSON STREET
NORTH BAY ONTARIO

title
MECHANICAL
REFRIGERATION
PROPOSED FLOOR PLANS, DETAILS AND SCHEDULE

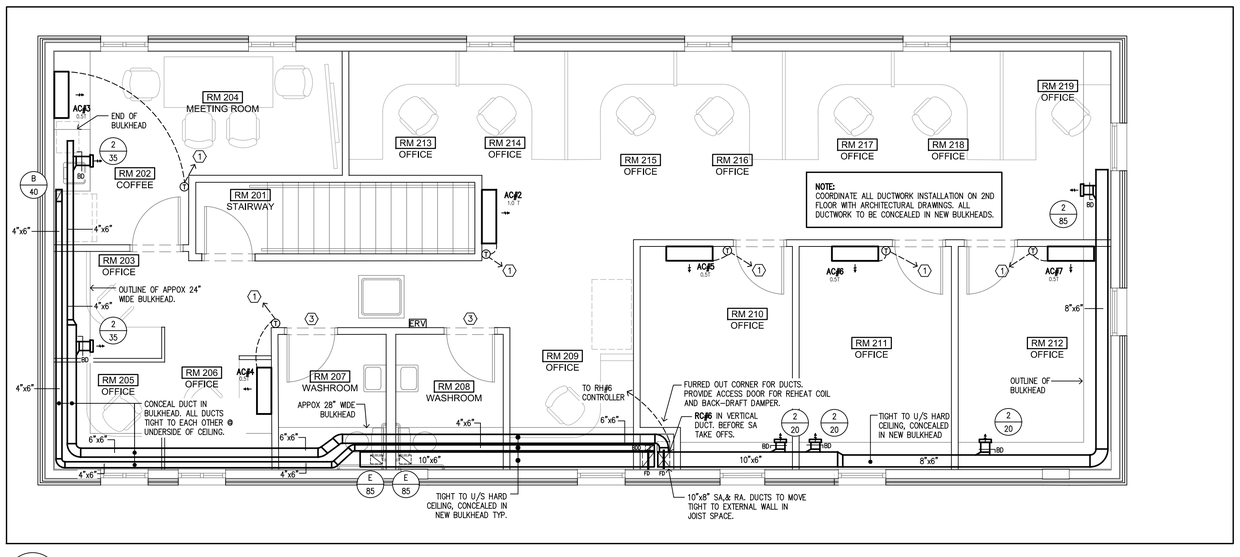
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TW	AUGUST 2025
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scale: AS NOTED	dwg no: M103
plotted: August 19, 2025	

CONSULTANTS - DRAWINGS



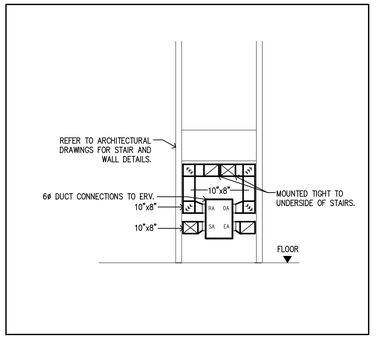
1 M104 Mechanical - Ventilation - Main Floor Plan Proposed

1/4" = 1' - 0"



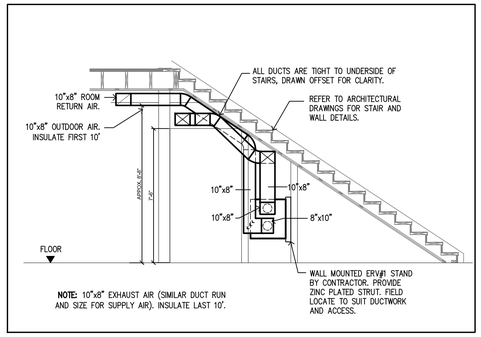
2 M104 Mechanical - Ventilation - Upper Floor Plan Removals

1/4" = 1' - 0"



3 M104 ERV#1 Front Elevation

N.TS



NOTE: 10"x8" EXHAUST AIR (SIMILAR DUCT RUN AND SIZE FOR SUPPLY AIR). INSULATE LAST 10'.

4 M104 ERV#1 Side Elevation

N.TS

Exhaust Fan Schedule

No.	MODEL BY	AIR FLOW CFM	ESP "	MOTOR & POWER SUPPLY	NOTES
EF#1	S&P L200E	150	0.25	120/SP	THERMOSTAT CONTROLLED EXHAUST FAN C/W DISCONNECT SWITCH, SPEED CONTROLLER MOUNTED ON FAN, NEW VIBRATION ISOLATORS, HANGER, COOLING THERMOSTAT. INTEGRAL BACK DRAFT DAMPER.

Diffuser and Grille Schedule

NO.	DESCRIPTION	MODEL BY NAILOR	SIZE NECK/OVERALL	NOTES
1	ALUMINUM SUPPLY AIR DIFFUSER – ADJUSTABLE	6250	8ø/24"x24"	C/W OBD AND COLOUR WHITE.
2	ALUMINUM SUPPLY GRILLE	51DH	8"x4"	C/W OBD AND COLOUR WHITE.
A	ALUMINUM RETURN EGG CRATE	51EC	24" x 6"	
B	ALUMINUM RETURN GRILLE	5145H	8" x 4"	
C	ALUMINUM RETURN EGG CRATE	51EC	12" x 6"	
D	ALUMINUM RETURN EGG CRATE	51EC	12" x 8"	
E	ALUMINUM RETURN GRILLE	5145H	8" x 6"	

Unit Ventilator Schedule (ERV Type)

No.	MODEL BY RENEWAIRE	AIR FLOW CFM	ESP ("WC)	MINIMUM EFFICIENCY	AIR FILTERS	UNIT SIZE & WEIGHT	POWER SUPPLY	DUCT HEATER CAPACITY	NOTES
ERV#1	EV PREMIUM LH	220	0.7	70%	MERV 8	22-½"x24-¾"x26-¾" 52 LBS	120V/1P MCA: 15 MOP: 15 85W	RC#5 3.5 KW 208/1/60	**REVERSED AIRFLOW**, HORIZONTAL UNIT, L-100-GS ENTHALPY RECOVERY CORE, CROSS-CORE PRESSURE PORTS, C/W REMOTE ADJUSTMENT, 24hr PROGRAMMABLE TIMER, PREMIUM CONTROLS, DISCONNECT SWITCH. EXHAUST ONLY DEFROST.
ERV#2	EV PREMIUM LH	215	0.7	70%	MERV 8	22-½"x24-¾"x26-¾" 52 LBS	120V/1P MCA: 15 MOP: 15 85W	RC#6 3.5 KW 208/1/60	**REVERSED AIRFLOW**, HORIZONTAL UNIT, L-100-GS ENTHALPY RECOVERY CORE, CROSS-CORE PRESSURE PORTS, C/W REMOTE ADJUSTMENT, 24hr PROGRAMMABLE TIMER, PREMIUM CONTROLS, DISCONNECT SWITCH, EXHAUST ONLY DEFROST.

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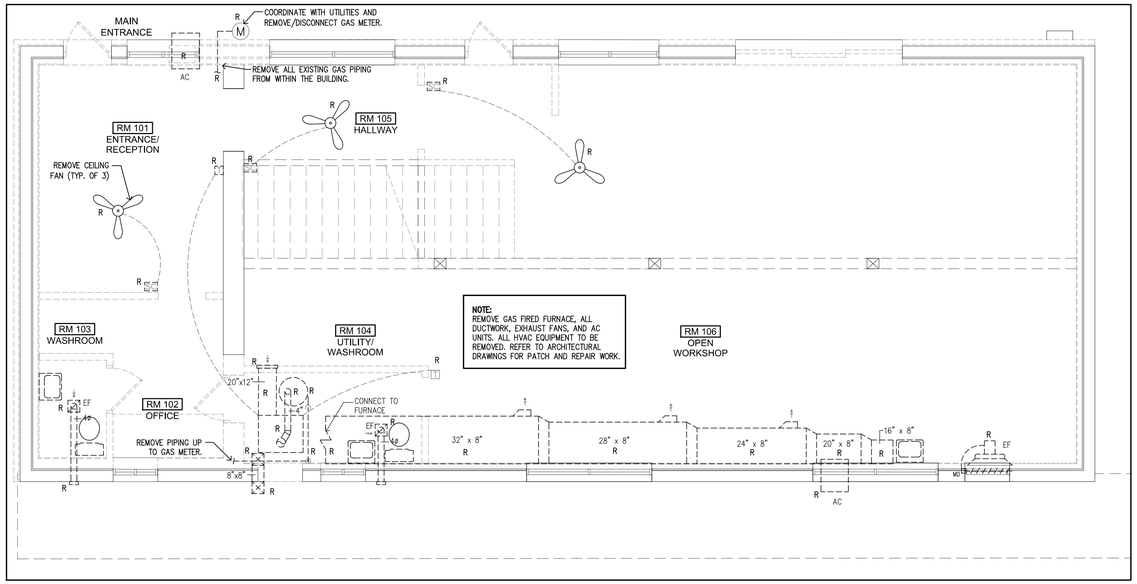
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project
ONTC OFFICE CONVERSION
ONTARIO NORTHLAND TRANSPORTATION COMISSION
435 WHITSON STREET
NORTH BAY ONTARIO

title
MECHANICAL
HVAC
FLOOR PLANS, DETAILS, AND SCHEDULES

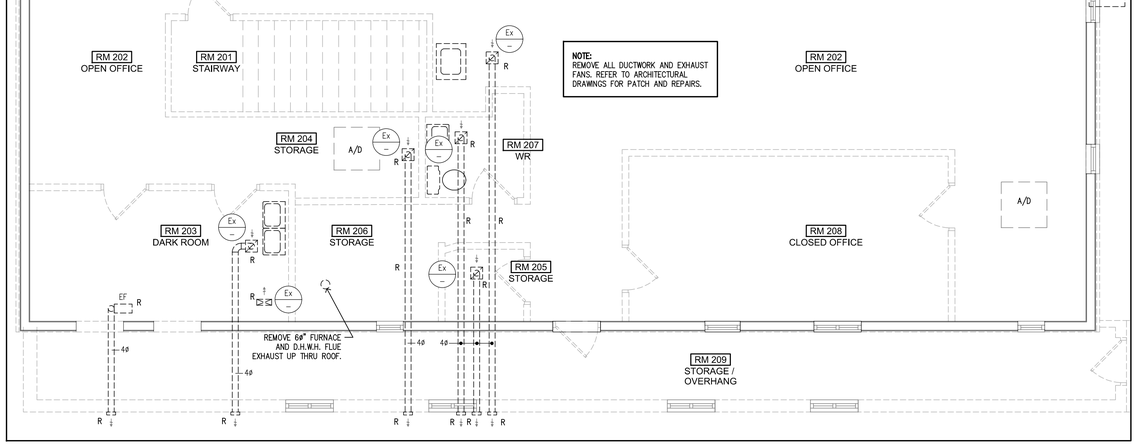
drawn by: TW	date: AUGUST 2025
checked by: AH	project no: 6761
scale: AS NOTED	dwg no: M104
plotted: August 19, 2025	

2025 BIM - ONTC - M104.rvt



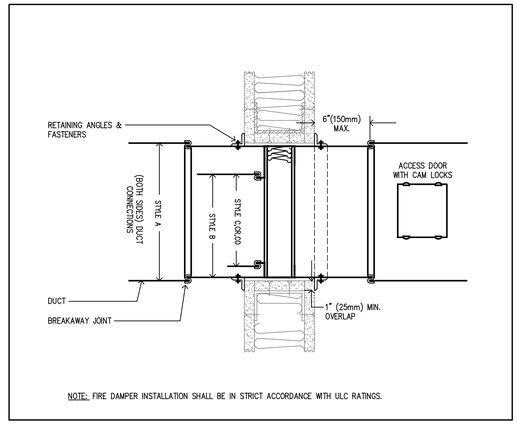
1 M105 Mechanical - Ventilation - Main Floor Plan Removals

1/4" = 1' - 0"



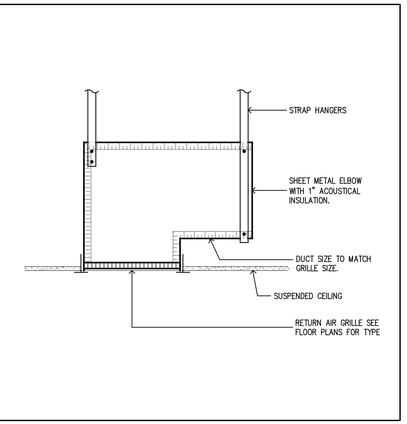
2 M105 Mechanical - Ventilation - Upper Floor Plan Removals

1/4" = 1' - 0"



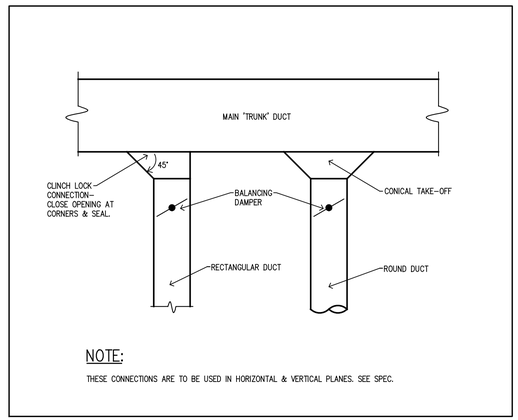
3 M105 Fire Damper Installation Detail (GWB Partition)

N.T.S.



4 M105 Return Air Grille With Insulated Boot (Typical - All R.A. Grilles)

N.T.S.



5 M105 Typical Small Duct Take-Off Detail

N.T.S.

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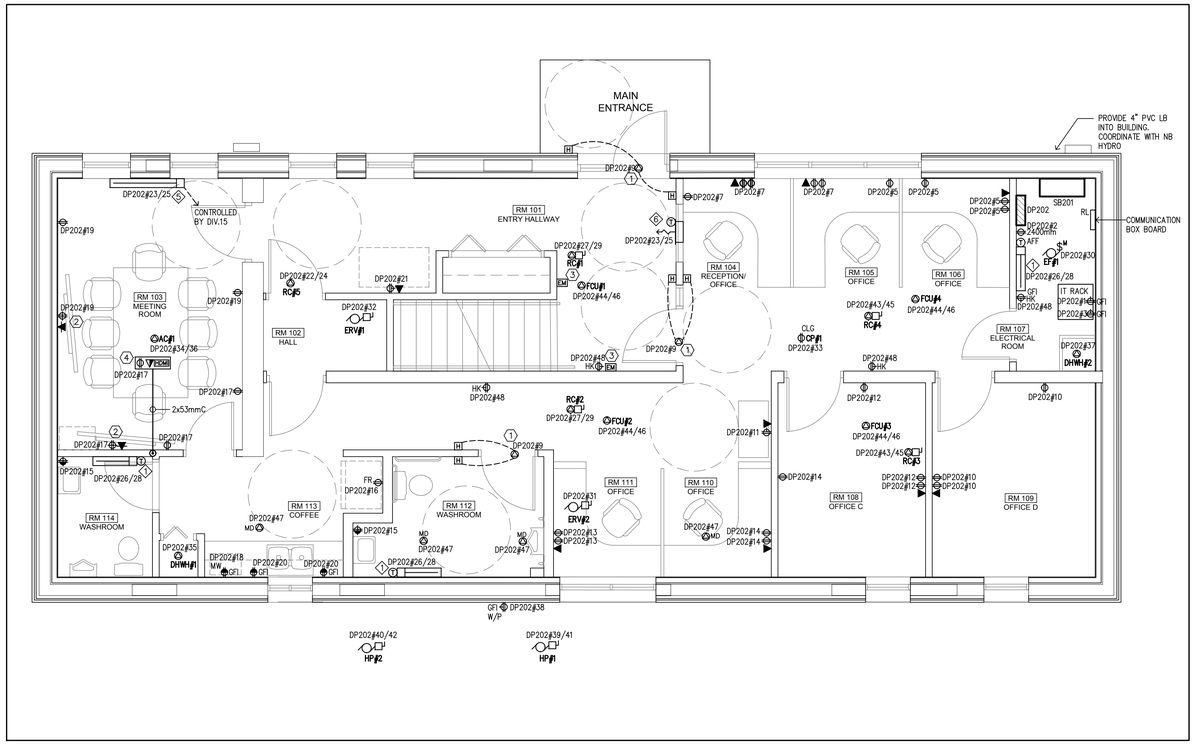
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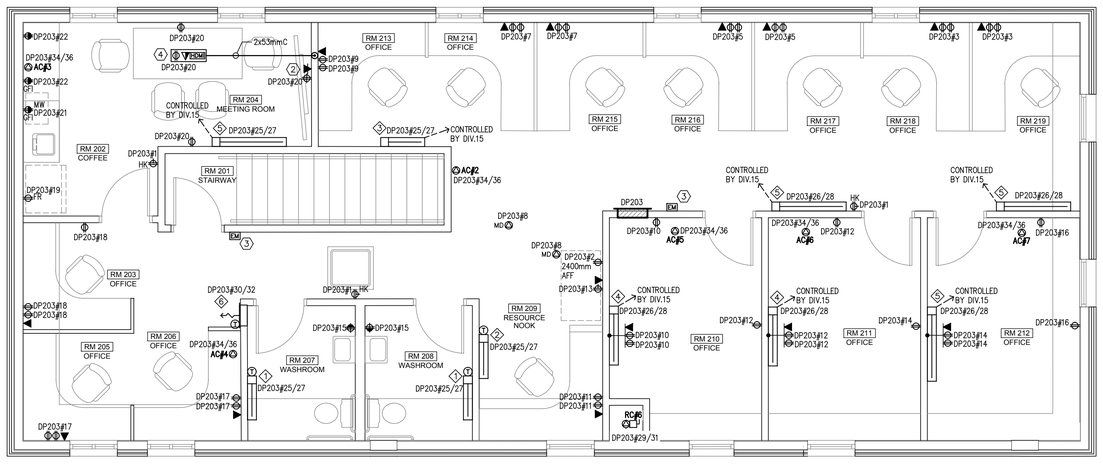
MECHANICAL
HVAC
REMOVALS FLOORS, AND DETAILS

drawn by: TW	date: AUGUST 2025
checked by: AH	project no: 6761
scale: AS NOTED	dwg no: M105
plotted: August 19, 2025	



1 E101 Power - Main Floor Plan Proposed

1/4" = 1' - 0"



2 E101 Power - Upper Floor Plan Proposed

1/4" = 1' - 0"

ELECTRICAL LEGEND

- LIGHTING FIXTURE, CLG MTD (TYPE AS NOTED)
- EXISTING LIGHTING FIXTURE TO BE REMOVED
- WALL MOUNTED LIGHT FIXTURE (TYPE AS INDICATED)
- CEILING MOUNTED LIGHT FIXTURE (TYPE AS INDICATED)
- LIGHTING FIXTURE, WALL MTD (TYPE AS INDICATED)
- STRIP LIGHTING FIXTURE (TYPE AS INDICATED)
- $ — 120V WALL MOUNTED SWITCH UNLESS OTHERWISE SPECIFIED
- $3 — 120V THREE WAY WALL MOUNTED SWITCH
- $D1 — SINGLE ZONE 0-10V WALL MOUNTED DIMMER SWITCH WITH ON/OFF CONTROL EQUAL TO SENSOR SWITCH sPODMRA SERIES
- $M — MOTOR RATED SWITCH WITH PILOT LIGHT
- $T — IN WALL TIMER SWITCH W/ ASTRO FEATURE EQUAL TO INTERMATIC PART#ST01 (PROVIDE SHOP DRAWINGS)
- EXIT SINGLE FACE / EXIT DOUBLE FACE — PICTOGRAM EXIT LIGHT, CEILING MOUNTED C/W DIRECTIONAL ARROWS AS REQUIRED. WIRE TO EMERGENCY BATTERY PACK AS NOTED AND EXIT LTG CIRCUIT.
- EXIT SINGLE FACE / EXIT DOUBLE FACE — PICTOGRAM EXIT LIGHT, WALL MOUNTED C/W DIRECTIONAL ARROWS AS REQUIRED. WIRE TO EMERGENCY BATTERY PACK AS NOTED AND EXIT LTG CIRCUIT.
- SINGLE REMOTE EMERGENCY LIGHTING HEAD WALL MOUNTED
- DUAL REMOTE EMERGENCY LIGHTING HEAD WALL MOUNTED
- EBP/# — EMERGENCY BATTERY PACK WITH DUAL HEADS (NUMBER AS SHOWN)
- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
- DUPLEX RECEPTACLE 5-20R 20A T-SLOT
- DUPLEX RECEPTACLE 5-20R 20A T-SLOT MOUNTED ABOVE COUNTER
- GROUND FAULT DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
- FBOX — FLOOR BOX C/W DUPLEX RECEPTACLE, VOICE/DATA OUTLET AND HDMI
- ELECTRICAL CONDUIT RISER
- EP'X' — ELECTRICAL PANEL, FLUSH MOUNTED (DESIGNATION AS SHOWN)
- EP'X' — ELECTRICAL PANEL, SURFACE MOUNTED (DESIGNATION AS SHOWN)
- JB — JUNCTION BOX MOUNTED IN CEILING SPACE COMPLETE WITH COVER PLATE
- SAFETY DISCONNECT SWITCH – UNFUSED
- H — DOOR OPERATOR BY OTHERS – PROVIDE RECESSED DOUBLE GANG BACK BOX AND 21mm CONDUIT TO ACCESSIBLE CEILING SPACE
- DIRECT CONNECTION FOR EQUIPMENT
- MD — MOTORIZED DAMPER
- MOTOR CONNECTION
- T — THERMOSTAT– LINE VOLTAGE
- ELECTRIC BASEBOARD HEATER
- VOICE/DATA OUTLET C/W ONE DATA JACKS & 1 VOICE JACK AND A 21mm CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
- DATA OUTLET C/W TWO DATA JACKS AND A 21mm CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
- DATA OUTLET C/W TWO DATA JACKS AND A 21mm CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE. OUTLET TO BE MOUNTED ABOVE COUNTER
- PHONE OUTLET C/W ONE VOICE JACK AND A 21mm CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE.
- CEILING MOUNTED PoE SPEAKER EQUAL TO ALGO INDOOR PoE+ CEILING SPEAKER PART No: 8198
- EM — EMERGENCY PUSH BUTTON EQUAL TO STI STOPPER STATION SERIES PART#SS2281EM-EN, PROVIDE BACKBOX AND 6#22-16mmC.
- CP#'X' — CONDENSATE PUMP (DESIGNATION AS SHOWN)
- HP#'X' — HEAT PUMP (DESIGNATION AS SHOWN)
- AC#'X' — AIR CONDITIONING UNIT (DESIGNATION AS SHOWN)
- FCU#'X' — FAN CONTROL UNIT (DESIGNATION AS SHOWN)
- DHWH — DOMESTIC HOT WATER HEATER
- RC#'X' — REHEAT COIL (DESIGNATION AS SHOWN)
- EF#'X' — EXHAUST FAN (DESIGNATION AS SHOWN)
- ERV#X — ENERGY RECOVERY VENTILATOR (DESIGNATION AS SHOWN)
- CLG — DEVICE MOUNTED WITHIN CEILING SPACE
- W/P — WEATHERPROOF DEVICE
- W/G — DEVICE WITH GUARD AS NOTED
- AFF — CENTERLINE DEVICE MOUNTING HEIGHT ABOVE FINISHED FLOOR
- MW — MICROWAVE OVEN, COORDINATE EXACT LOCATION OF RECEPTACLE WITH MILLWORK ON SITE.
- FR — REFRIGERATOR RECEPTACLE ON DEDICATED CIRCUIT
- HK — HOUSEKEEPING DEVICE
- R — EXISTING DEVICE TO BE REMOVED
- ER — EXISTING DEVICE TO BE REPLACED WITH NEW
- GFI — GROUND FAULT DEVICE
- RL — EXISTING DEVICE TO BE RELOCATED

ELECTRICAL GENERAL NOTES:

1. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE ONTARIO ELECTRICAL SAFETY CODE.
2. ELECTRICAL CONTRACTOR IS TO OBTAIN ALL APPROVALS FROM LOCAL ELECTRICAL SAFETY AUTHORITY PRIOR TO COMMENCING WORK.
3. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH BERTRAND WHEELER ARCHITECTURE INC. DRAWINGS. ENSURE ALL REQUIREMENTS ARE COORDINATED AND CARRIED.
4. ALL DEVICES SHOWN ARE NEW, UNLESS OTHERWISE NOTED.
5. FIRE STOP ALL PENETRATIONS THRU FIRE RATED ASSEMBLIES.
6. ALL UNUSED WIRING SHALL BE PROPERLY TERMINATED, OR REMOVED. WIRING THAT CANNOT BE REMOVED AND IS CONCEALED AND INACCESSIBLE MUST BE CUT OFF WHERE EXPOSED (SO AS TO BE TOO SHORT TO BE REUSED) AND BE MADE SAFE.
7. ALL EXISTING ELECTRICAL EQUIPMENT WITHIN EXISTING WALLS AND CEILINGS BEING DEMOLISHED ARE TO BE REMOVED, AND WIRING TO BE PULLED BACK TO PANEL. ALL EXISTING ELECTRICAL EQUIPMENT WITHIN EXISTING WALLS AND CEILINGS THAT ARE STAYING ARE TO REMAIN, UNLESS OTHERWISE NOTED. REFER TO ARCH. DRAWINGS FOR DETAILS.
8. ALL WIRING TO BE CONCEALED WHERE POSSIBLE. IF NOT POSSIBLE, PROVIDE SURFACE MOUNTED METAL RACEWAY AND MATCHING SURFACE MOUNTED BOX. RACEWAY TO BE SAME COLOUR AS BACKGROUND SURFACE, AND BE RAN AS NEAT AS POSSIBLE, PARALLEL / PERPENDICULAR TO BUILDING LINES. CONFIRM INSTALLATION DETAILS PRIOR TO ROUGH-IN.
9. PROVIDE STAINLESS STEEL COVERPLATES FOR ALL WIRING DEVICES, INCLUDING NEW OR EXISTING UN-USED WALL BOXES.

POWER GENERAL NOTES:

1. PROVIDE BONDING CONDUCTOR AND CONNECTION (AS PER OESC) FOR ALL PERMANENTLY CONNECTED EQUIPMENT. COORDINATE EXACT REQUIREMENTS ON SITE.
2. BRANCH CIRCUIT WIRING IN CONCEALED SPACES TO BE INSTALLED IN CONDUIT. REFER TO THE SPECIFICATIONS ON THE MAXIMUM LENGTH OF ARMOURED CABLES THAT CAN BE USED.
3. COORDINATE EXACT LOCATION OF ALL DEVICES ON SITE WITH MILLWORK, FURNITURE AND EQUIPMENT SHOWN ON ARCHITECTURAL PLANS, PRIOR TO ROUGH-IN.
4. ENSURE A MINIMUM OF 1M CLEARANCE IS MAINTAINED IN FRONT OF ALL PANELS AND DISCONNECT SWITCHES.
5. ALL VOICE / DATA OUTLETS TO BE COMPLETE WITH 27mm CONDUIT TO ACCESSIBLE CEILING SPACE, ALL CABLES TO BE PROVIDED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
6. ALL VOICE, DATA, COMMUNICATION, P.A. SYSTEM AND SECURITY SYSTEM CABLES IN CEILING SPACE TO BE SUPPORTED BY J-HOOKS. REFER TO DIVISION 16 FASTENING AND SUPPORT SPECIFICATIONS FOR FURTHER DETAILS.
7. ALL VOICE, DATA AND COMMUNICATIONS CABLE TO BE FT6 PLENUM RATED.

LIGHTING GENERAL NOTES:

1. DASHED LINES JOINING FIXTURES, SENSORS, AND SWITCHES INDICATE THE FIXTURES THAT ARE CONTROLLED BY EACH SENSOR AND SWITCHES.
2. COORDINATE INSTALLATION OF EXIT SIGNS WITH CEILINGS TO ENSURE ADEQUATE HEIGHT IS MAINTAINED.
3. NOT ALL CEILING TYPES ARE SHOWN ON THE DRAWINGS AND ARE USED FOR REFERENCES PURPOSES ONLY.
4. EXISTING LAMPS AND BALLASTS TO BE DISPOSED OF IN MANNER THAT SATISFIES ALL LOCAL AND ENVIRONMENTAL CODES, IN ACCORDANCE WITH MOE GUIDELINES AND IN APPROVED DISPOSAL FACILITY.
5. ALL LIGHTING FIXTURES SHALL BE INDEPENDENTLY SUPPORTED TO THE STRUCTURE BY PROVIDING TWO CHAINS INSTALLED AT EACH OPPOSITE CORNER. COORDINATE EXACT REQUIREMENTS ON SITE.

ELECTRICAL DRAWING NOTES:

1. PROVIDE 120V CONNECTION TO AUTOMATIC DOOR OPERATOR, COORDINATE REQUIREMENTS WITH DOOR HARDWARE SUPPLIER ON SITE PRIOR TO ROUGH IN.
2. PROVIDE 19MM PLYWOOD BACKBOARD TO SUPPORT EQUIPMENT. PROVIDE OPENING FOR RECESSED ENTERTAINMENT BACKBOX. RECESSED ENTERTAINMENT BACKBOX SHALL BE EQUAL TO HUBBELL NSAV62M SERIES WITH 2 INCH CONDUIT AND ACCOMODATE TWO 2-GANG BACKBOXES FOR POWER AND DATA. COORDINATE EXACT LOCATION WITH ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.
3. CABLE SHALL BE TERMINATED TO ELECTRICAL ROOM 107 IT RACK, COORDINATE WITH OWNERS IT REPRESENTATIVE ON SITE PRIOR TO ROUGH-IN.
4. PROVIDE A FOUR GANG FLOOR BOX EQUAL TO HUBBLE SYSTEM ONE SERIES. COMPLETE WITH ONE DUPLEX RECEPTACLE, ONE VOICE/DATA OUTLET AND ONE HDMI PASS THROUGH. COVER PLATE FINISH BY ARCHITECT.

Electric Heater Schedule

No.	DESCRIPTION	MAKE & MODEL	CAPACITY (kW)	SIZE mm (in)	VOLTAGE	NOTES
1	BASEBOARD HEATER	OUELLET OFM0502 OR EQUAL BY STELPRO	0.5	691 (27⅛)	208V SP	C/W BUILT-IN THERMOSTAT
2	BASEBOARD HEATER	OUELLET ODL0502 OR EQUAL BY STELPRO	0.5	750 (29½)	208V SP	C/W BUILT-IN THERMOSTAT
3	BASEBOARD HEATER	OUELLET ODL0502 OR EQUAL BY STELPRO	0.5	750 (29½)	208V SP	C/W TRIAC RELAY, CONTROLLED BY DIV.15
4	BASEBOARD HEATER	OUELLET ODL0758 OR EQUAL BY STELPRO	0.75	1004 (39½)	208V SP	C/W TRIAC RELAY, CONTROLLED BY DIV.15
5	BASEBOARD HEATER	OUELLET ODL1008 OR EQUAL BY STELPRO	1.0	1265 (49⅞)	208V SP	C/W TRIAC RELAY, CONTROLLED BY DIV.15
6	FORCED FAN HEATER	OUELLET OAWH02002 OR EQUAL BY STELPRO	2.0	408 (16⅛) X 578 (22¾)	208V SP	C/W BUILT-IN THERMOSTAT

revision	date
1. ISSUED FOR PERMIT AND TENDER	2025/08/19

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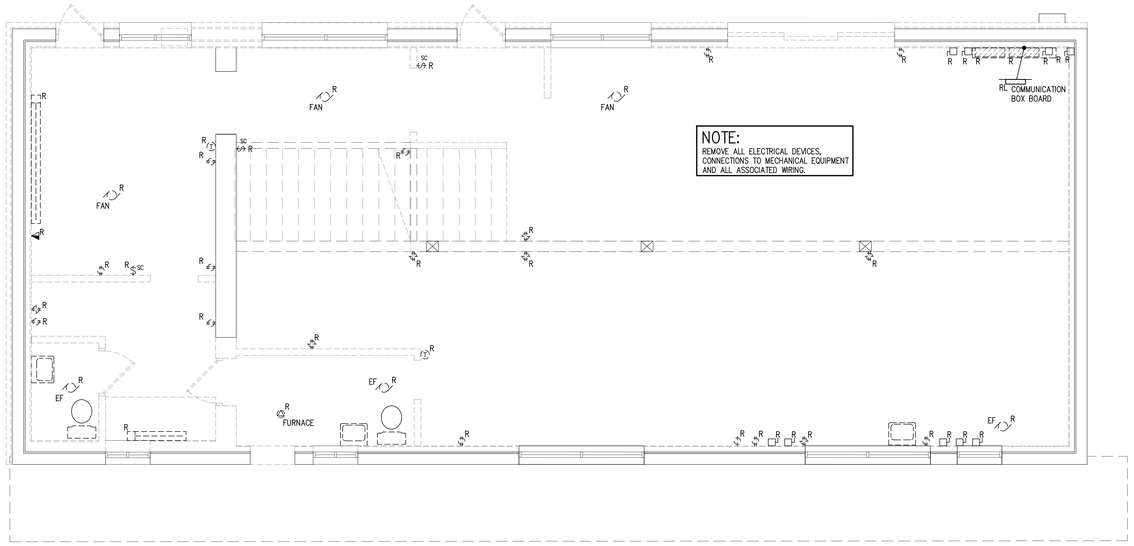
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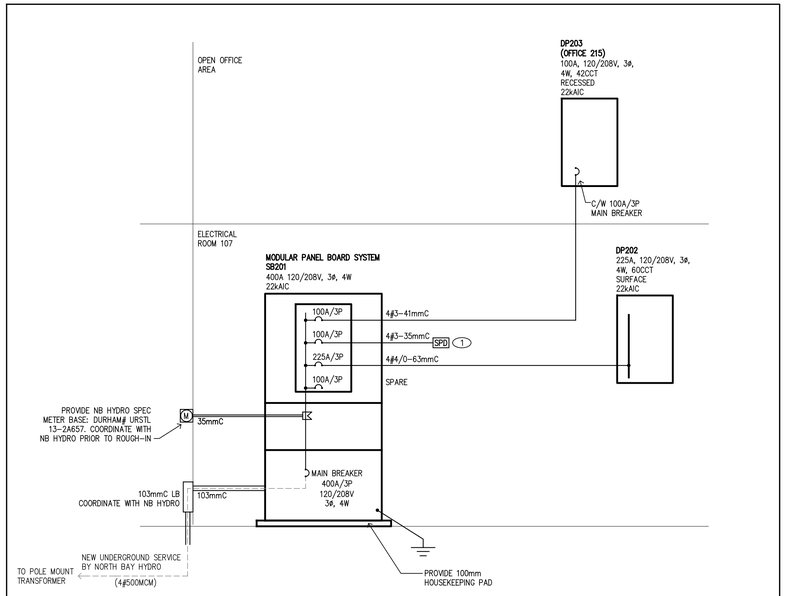
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ONTARIO NORTHLAND TRANSPORTATION COMISSION
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NORTH BAY ONTARIO

title
ELECTRICAL
POWER
PROPOSED FLOOR PLANS
LEGEND & NOTES

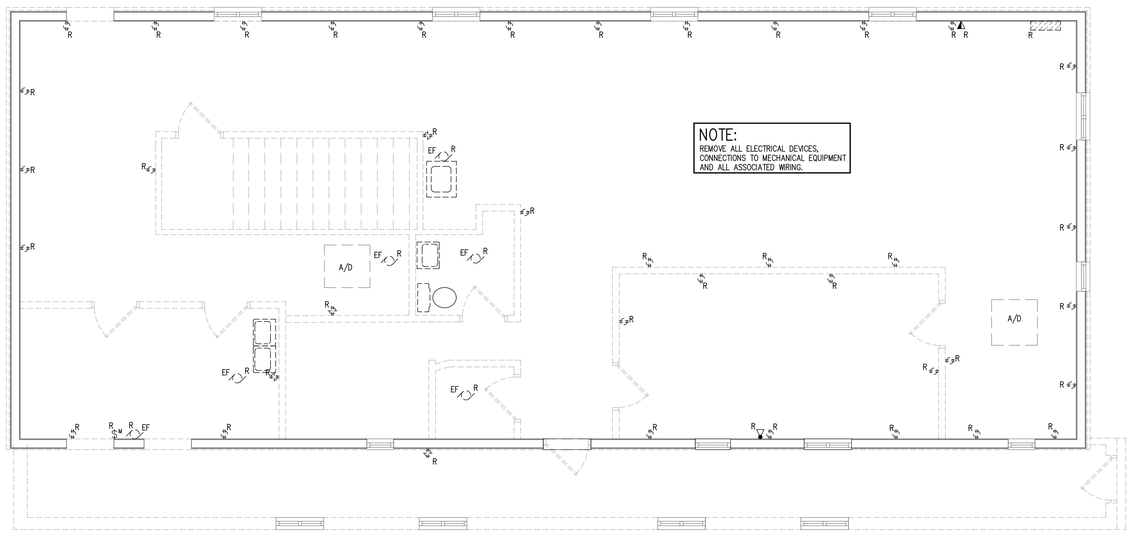
drawn by: EH	date: AUGUST 2025
checked by: NGA	project no: 6761
scale: AS NOTED	dwg no: E101
plotted: August 19, 2025	



1 E102 **Power - Main Floor Plan Removals**
1/4" = 1' - 0"



3 E102 **Electrical Riser Diagram**
N.T.S.



2 E102 **Power - Upper Floor Plan Removals**
1/4" = 1' - 0"

RISER DIAGRAM GENERAL NOTES:

1. PROVIDE 100mm HOUSEKEEPING PAD FOR ALL FLOOR MOUNTED EQUIPMENT, INCLUDING SWITCHBOARDS AND PANELS.
2. ALL CABLES SHOWN ARE TO BE COPPER, UNLESS OTHERWISE NOTED.
3. NOT ALL BREAKERS ARE SHOWN ON THIS RISER (SINGLE LINE DIAGRAM). REFER TO PANEL SCHEDULES FOR ALL BREAKERS AND ASSOCIATED LOADS.
4. CONDUIT SHALL NOT BE USED AS A GROUND. PROVIDE AN ADDITIONAL GROUNDING WIRE AS PER THE SPECIFICATIONS.
5. ALL EXTERIOR EQUIPMENT TO BE NEMA 3R ENCLOSURES.

RISER DIAGRAM NOTES:

(1) ACCEPTABLE PRODUCT: INNOSYS POWER MODEL #TK-ST200-3Y208L. BREAKER FEEDING SPD SHALL BE SIZED BY SPD MANUFACTURER. COORDINATE INSTALLATION OF SPD WITH MANUFACTURER OF DISTRIBUTION EQUIPMENT, SPD MAY BE INTERNALLY OR EXTERNALLY MOUNTED. CABLING MUST BE KEPT AS SHORT AS POSSIBLE WITH MINIMAL BENDS.

1. ISSUED FOR PERMIT AND TENDER	2025/08/19
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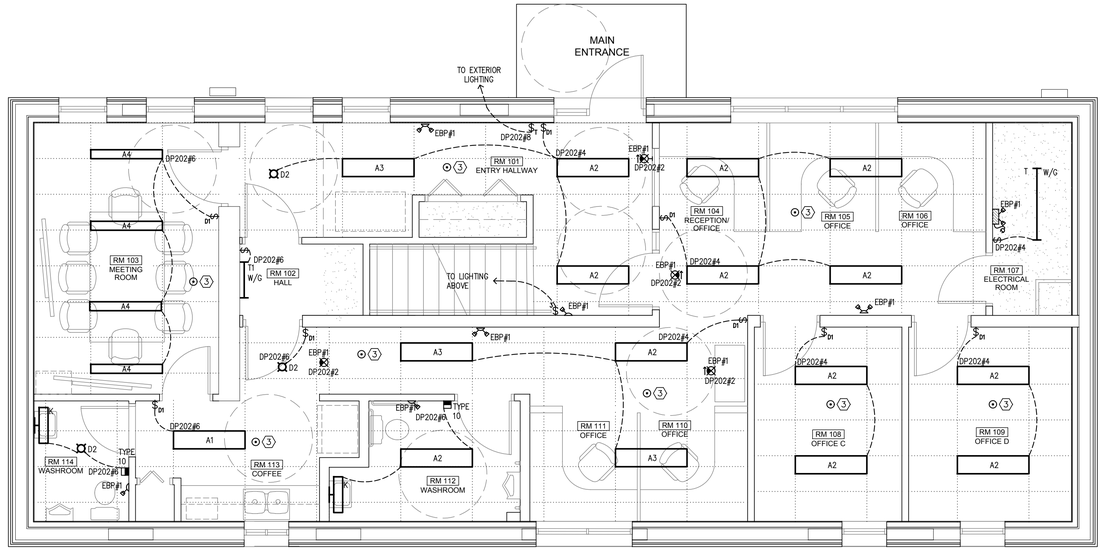
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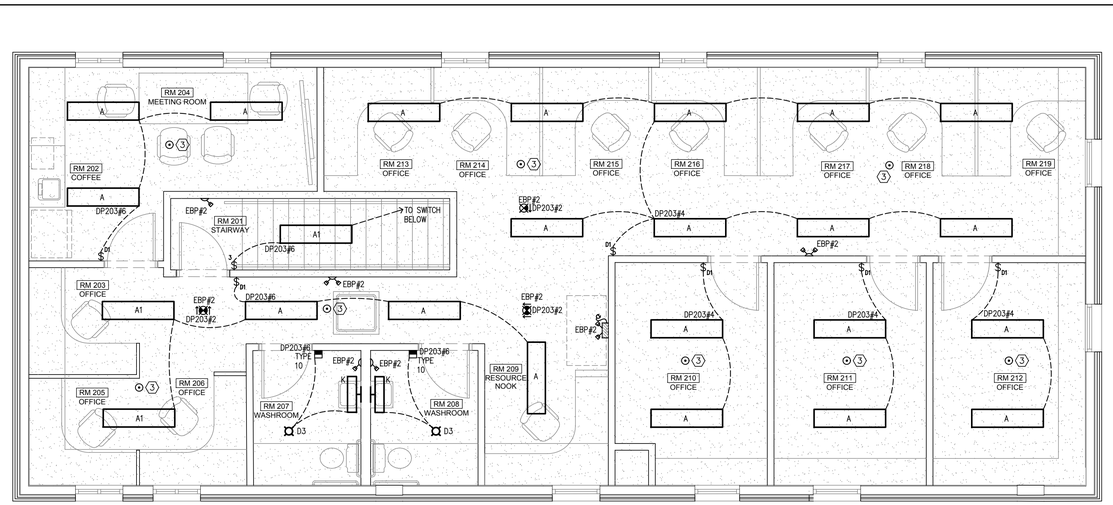
title
ELECTRICAL
POWER
REMOVALS FLOOR PLANS

drawn by: EH	date: AUGUST 2025
checked by: NGA	project no: 6761
scale: AS NOTED	dwg no: E102
plotted: August 19, 2025	



1 E201 Lighting - Main Floor Plan Proposed

1/4" = 1' - 0"



2 E201 Lighting - Upper Floor Plan Proposed

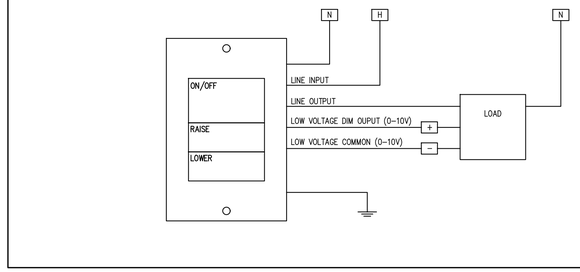
1/4" = 1' - 0"

Lighting Schedule

FIXTURE TYPE	DESCRIPTION	LUMENS	COLOUR TEMP	VOLTAGE	MOUNTING	DIMMING	CONTROLS	OPTIONS	ACCEPTABLE PRODUCTS
A	1X4 LED FLAT PANEL	3300	4000K	120V	SURFACE MOUNT	0-10V TO 1%	N/A	DIRECT CEILING MOUNT KIT	LITHONIA CPANL SERIES
A1	1X4 LED FLAT PANEL	4400	4000K	120V	SURFACE MOUNT	0-10V TO 1%	N/A	DIRECT CEILING MOUNT KIT	LITHONIA CPANL SERIES
A2	1X4 LED FLAT PANEL	3300	4000K	120V	RECESSED T-BAR	0-10V TO 1%	N/A	N/A	LITHONIA CPANL SERIES
A3	1X4 LED FLAT PANEL	4400	4000K	120V	RECESSED T-BAR	0-10V TO 1%	N/A	N/A	LITHONIA CPANL SERIES
A4	6"X4' LED FLAT PANEL	2000	4000K	120V	RECESSED T-BAR	0-10V TO 1%	N/A	EXTRUDED FLAT FRAME, MATTE WHITE FINISH	LITHONIA SIX SERIES
D	6" RETROFIT DOWNLIGHT	1500	4000K	120V	RECESSED DRYALL	0-10V TO 1%	N/A	CLEAR REFLECTOR, SELF FLANGED, SEMI-SPECULAR REFLECTOR, MEDIUM WIDE DISTRIBUTION	LITHONIA LBR6 SERIES
D1	6" RETROFIT DOWNLIGHT	2000	4000K	120V	RECESSED DRYALL	0-10V TO 1%	N/A	CLEAR REFLECTOR, SELF FLANGED, SEMI-SPECULAR REFLECTOR, MEDIUM WIDE DISTRIBUTION	LITHONIA LBR6 SERIES
D2	6" DOWNLIGHT	1500	4000K	120V	RECESSED T-BAR	0-10V TO 1%	N/A	CLEAR REFLECTOR, SELF FLANGED, SEMI-SPECULAR REFLECTOR, MEDIUM WIDE DISTRIBUTION	LITHONIA LBR6 SERIES
D3	6" RETROFIT DOWNLIGHT	750	4000K	120V	RECESSED DRYALL	0-10V TO 1%	N/A	CLEAR REFLECTOR, SELF FLANGED, SEMI-SPECULAR REFLECTOR, MEDIUM WIDE DISTRIBUTION	LITHONIA LBR6 SERIES
K	2FT LOW PROFILE WRAPAROUND	2000	4000K	120V	WALL MOUNT	N/A	N/A	DIE FORMED HOUSING SQUARE SMOOTH ACRYLIC DIFFUSER LENS, WHITE FINISH	LITHONIA BLWP SERIES
T	4FT LED STRIP LIGHT	5000	4000K	120V	SUSPENDED	N/A	N/A	FROSTED DIFFUSER, WHITE PAINT FINISH, WIRE GUARD	LITHONIA ZL1N SERIES
T1	2FT LED STRIP LIGHT	3500	4000K	120V	WALL MOUNT	N/A	N/A	FROSTED DIFFUSER, WHITE PAINT FINISH, WIRE GUARD	LITHONIA ZL1N SERIES

Emergency Lighting Schedule

DESCRIPTION	VOLTAGE	WATTAGE	LED HEADS	OPTIONS	ACCEPTABLE PRODUCTS
EMERGENCY BATTERY PACK (EBP#1, EBP#2)	12V	360W	2 x 6W	COMPLETE WITH AUTO-TEST, LAMP DISCONNECT, BATTERY DISCONNECT AND TIME DELAY	STANPRO-SLC-2S-6WLA-WH-AT-LD-TD
SINGLE REMOTE EMERGENCY LIGHTING HEADS	12V	7W	7W	COMPLETE ADJUSTABILITY, TWIST LOCK LAMP COLLAR	STANPRO M-LED SERIES
DUAL REMOTE EMERGENCY LIGHTING HEADS	12V	7W	2 x 7W	COMPLETE ADJUSTABILITY, TWIST LOCK LAMP COLLAR	STANPRO M-LED SERIES
RUNNING MAN PICTOGRAM EXIT SIGN	120/277/347V	2W	N/A	CSA22.2 NO. 141-15 RATED, EDGE-LIT, RECESSED MOUNT PROVIDE ADDITIONAL CONVERSION KITS IF APPLICABLE	STANPRO RMTE SERIES



3 E201 Lighting - Typical Dimming Wiring Detail

N.T.S.

revision	date
1. ISSUED FOR PERMIT AND TENDER	2025/08/19

the Contractor shall check and verify all dimensions before proceeding with the work

A/B detail no. sheet no. where detailed

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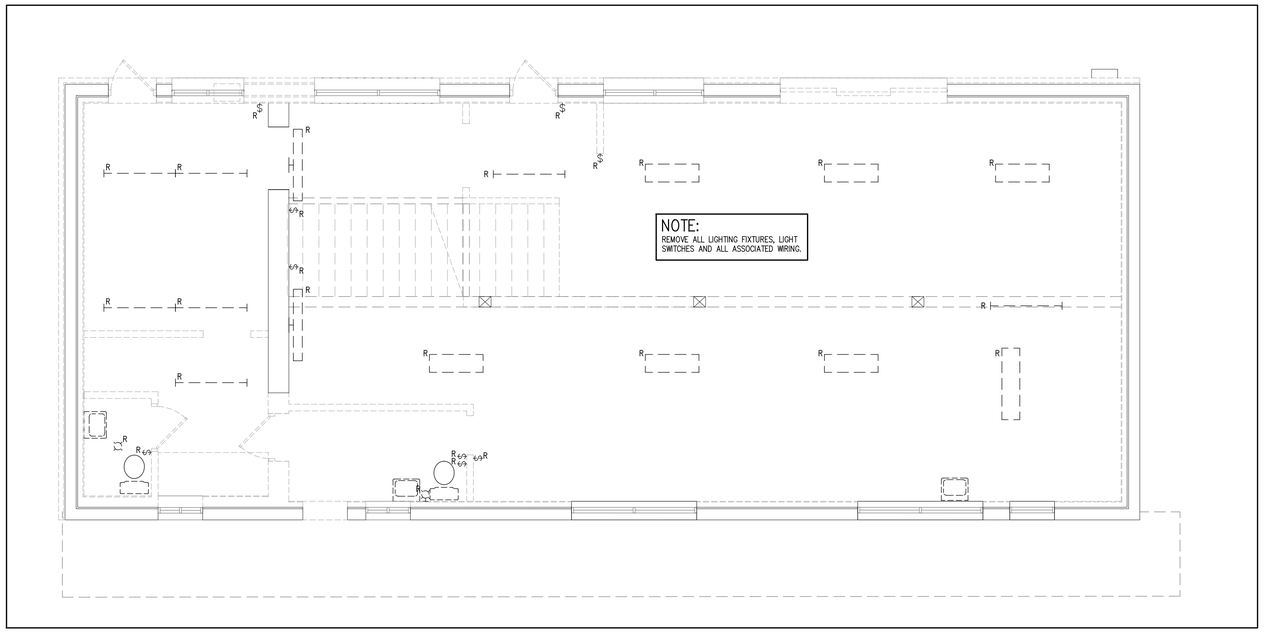
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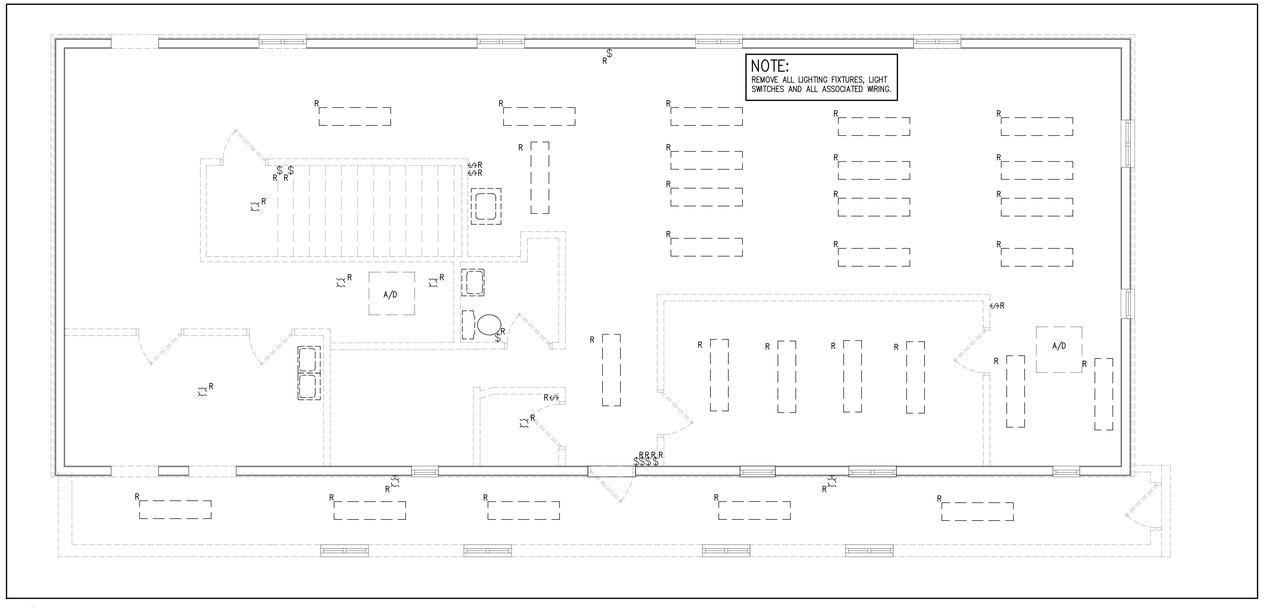
project
ONTC OFFICE CONVERSION
ONTARIO NORTHLAND TRANSPORTATION COMISSION
435 WHITSON STREET
NORTH BAY ONTARIO

title
ELECTRICAL
LIGHTING
PROPOSED FLOOR PLANS

drawn by:	date:
EH	AUGUST 2025
checked by:	project no:
NGA	6761
scale:	dwg no:
AS NOTED	E201
plotted:	
August 19, 2025	



1 / E202 **Lighting - Main Floor Plan Removals**
1/4" = 1' - 0"



2 / E202 **Lighting - Upper Floor Plan Removals**
1/4" = 1' - 0"

1. ISSUED FOR PERMIT AND TENDER	2025/08/19
revision	date

the Contractor shall check and verify all dimensions before proceeding with the work

A/B detail no. / sheet no. where detailed

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title
ELECTRICAL
LIGHITNG
REMOVALS FLOOR PLANS

drawn by: EH	date: AUGUST 2025
checked by: NGA	project no: 6761
scale: AS NOTED	dwg no: E202
plotted: August 19, 2025	

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-4
REFERENCE REPORTS AND PHOTOGRAPHS

Refer to the Reference Reports, as outlined below, and which are attached to this Schedule 3-A-4.

DESCRIPTION	DATE
Designated Substances Survey Report	April, 2025
435 Whitson Site Plan	July, 2025
Photographs - 435 Whitson	Undated

April 2025

DESIGNATED SUBSTANCES SURVEY REPORT

435 WHITSON STREET
NORTH BAY, ONTARIO



Prepared by:

THOMAS CONTRACTING

Project No. TC-201677

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APPENDIX A – Asbestos Lab Transcripts & Sample Photos
APPENDIX B – Lead Lab Transcripts & Sample Photos
APPENDIX C – Thermostatic Control Switch and Light Ballast Photos
APPENDIX D – Room by Room DSS Assessment & Floor Plans

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ENVIRONMENTAL MANAGEMENT EXPERTS

Reference: TC - 201677 *April 8th, 2025*

ONTARIO NORTHLAND
555 Oak Street East
North Bay, ON
P1B 8L3

ATTENTION: Sharon Zwaan – Project Manager Facilities

Dear Sirs:

2025 DESIGNATED SUBSTANCES SURVEY
435 WHITSON STREET
North Bay, Ontario

1.0 INTRODUCTION

Thomas Contracting was commissioned by the ONTC to complete a designated substances survey (DSS) of the building located at 435 Whitson Street in North Bay, Ontario. The objective of this study was to determine whether any designated substances, as defined under the Ontario Occupational Health and Safety Act, were present within the building prior to any future renovation and/or demolition work. This survey does not include and was not intended to cover any investigation of subsurface hazardous materials / designated substances.

Eleven substances have been "designated" in Ontario - acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. Mould and PCB containing materials are also harmful to the environment if handled improperly and therefore are included in our study.

The Ontario Occupational Health and Safety Act requires that a list of all designated substances at a project site be provided to all bidders at the tendering stage. A Designated Substance Survey (DSS) identifies the designated substances present, their locations and concentrations. This information allows contractors involved in demolition or renovation activities to take appropriate steps to control exposure of workers and the general public to the designated substances that are present.

This survey satisfies requirements of the Occupational Health and Safety Act with regards to the presence / absence of designated substances identified within this report.

The study area, methodology and findings are outlined in the sections, which follow.

2.0 STUDY AREA

The study area under this assessment consisted of the two-storey slab on-grade building (see photos #1 & #2 in Appendix 'A' and floor plan in Appendix 'D') and did not include surface or subsurface soil investigations (ie. underground holding/storage tanks or soil/water site contamination) for the above noted building(s) or property.

3.0 STUDY METHODOLOGY

On February 17th and 18th, 2025, Thomas Contracting personnel conducted the DSS fieldwork at the above noted building, focusing primarily on asbestos-containing materials, lead painted surfaces and mercury containing materials (thermostatic controls and fluorescent light tubes). Access to suspected designated substances was made following industry-standard, non-destructive testing protocols. All collected samples were subsequently labeled and the retrieval location(s) identified. All collected samples of suspected asbestos-containing material and lead-containing paint were forwarded to our laboratory subconsultant for positive identification of asbestos fibres and lead content levels.

4.0 ASBESTOS-CONTAINING MATERIALS (ACM's)

The DSS fieldwork resulted in the retrieval of fifteen (15) representative samples of potential asbestos-containing building material of which twenty-three (23) tests were required/performed under Ont. Reg. 278/05. The potential ACM sampled consisted of drywall mud, vinyl flooring, flooring mastic, and caulking. All samples were submitted to our laboratory sub-consultant (Lex Scientific Inc., Ontario) for PLM bulk analysis with photos of each sample material and laboratory transcripts of the findings presented in Appendix 'A'.

A summary of sample locations and type of building material is presented in Table 1 (below) with the raw laboratory results and photos given in Appendix 'A'. Locations containing ACM's representative of the obtained bulk samples are shown in the "Room by Room DSS" table in Appendix 'D'.

Table 1
Summary of Asbestos Bulk Sample Results

Sample No.	***Photo No.*** *(Appendix 'A')*	***Location***	***Material***	***Asbestos Content***
WHS – 1	***3***	***Room 1***	***12" x 12" Vinyl Floor Tile (beige / grey streaks) located under carpet***	***2% Chrysotile***
			Mastic (black)	*None Detected*
WHS – 1A	-	*Room 1*	*12" x 12" Vinyl Floor Tile (beige / grey streaks) located under carpet*	*Stop Positive*
			Mastic (black)	*None Detected*
WHS – 1B	-	*Room 1*	*12" x 12" Vinyl Floor Tile (beige / grey streaks) located under carpet*	*Stop Positive*
			Mastic (black)	*None Detected*
WHS – 2	*4*	*Room 5*	*Roll Vinyl Flooring (grey / blotchy)*	*None Detected*
WHS – 2A	-	*Room 5*	*Roll Vinyl Flooring (grey / blotchy)*	*None Detected*
WHS – 2B	-	*Room 5*	*Roll Vinyl Flooring (grey / blotchy)*	*None Detected*
WHS – 3	*5*	*Room 1*	*Drywall Joint Compound (mud) on walls*	*None Detected*
WHS – 3A	-	*Stairwell*	*Drywall Joint Compound (mud) on ceiling*	*None Detected*
WHS – 3B	-	*Second Floor*	*Drywall Joint Compound (mud) on walls*	*None Detected*

Sample No.	***Photo No.*** *(Appendix 'A')*	***Location***	***Material***	***Asbestos Content***
WHS – 4	*6*	*Second Floor*	*12" x 12" Vinyl Floor Tiles (red - blotchy)*	*None Detected*
			12" x 12" Vinyl Floor Tiles (black - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (purple - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (beige/grey - blotchy)	*None Detected*
WHS – 4A	*-*	*Second Floor*	*12" x 12" Vinyl Floor Tiles (red - blotchy)*	*None Detected*
			12" x 12" Vinyl Floor Tiles (black - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (purple - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (beige/grey - blotchy)	*None Detected*
WHS – 4B	*-*	*Second Floor*	*12" x 12" Vinyl Floor Tiles (red - blotchy)*	*None Detected*
			12" x 12" Vinyl Floor Tiles (black - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (purple - blotchy)	*None Detected*
			12" x 12" Vinyl Floor Tiles (beige/grey - blotchy)	*None Detected*
WHS – 5	***7***	***Exterior***	***Window and Door Caulking (grey)***	***4% Chrysotile***
WHS – 5A	*-*	*Exterior*	*Window and Door Caulking (grey)*	*Stop Positive*
WHS – 5B	*-*	*Exterior*	*Window and Door Caulking (grey)*	*Stop Positive*

4.1 Asbestos Findings

Based on our site assessment and laboratory results, the following asbestos findings are presented in Table 2 (below) with a further detailed "Room by Room DSS" table of our findings presented in Appendix 'D'.

Table 2
Summary of Asbestos Findings

Asbestos Findings
Asbestos Building Materials • *12" x 12" vinyl floor tiles (non-friable) located under the carpet in Rooms 1, 2, 3 and exposed in Room 4 of the building all are asbestos-containing (see photo #3 in Appendix 'A').* • *"Transite" fiberboard (grey) located in wall openings within Room 4 of the building is asbestos-containing (see photos #8 & #9 in Appendix 'A').* • *Exterior window and door caulking (grey)(non-friable) located on the exterior of the building is asbestos-containing (see photo #7 in Appendix 'A').* ***Non-Asbestos Building Materials*** • *All drywall joint compound (mud) observed/sampled within the building is non-asbestos.* • *All floor tiles / mastic (other than noted above) observed/sampled within the building are non-asbestos.* • *All roll vinyl flooring observed/sampled within the building is non-asbestos.* • *All pipes within the building are bare or insulated with non-asbestos fiberglass insulation.* • *No other building materials found or suspected to contain asbestos within the building.*

5.0 LEAD-CONTAINING BUILDING MATERIALS

The survey resulted in the retrieval of two (2) representative samples of paint observed within the building under this DSS. These paint samples were submitted to our laboratory sub-consultant (Caduceon Environmental Laboratories, Ottawa, Ontario) for follow-up lead analysis. Photo of the sampled paint(s) and the laboratory transcript of the findings are presented in Appendix 'B'.

A summary of sample location, surface paint colour and lead content is presented in Table 3 (below).

Table 3
Summary of Paint Sample Result

Sample No.	***Photo No.*** *(Appendix 'B')*	***Location***	***Sample Description (surface colour)***	***Lead Content (µg/g)***
WHS – L1	*10*	*Second Floor*	*Wall Paint (beige)*	***6***
WHS – L2	*11*	*Room 1 (drywall behind wood siding)*	*Wall Paint (beige)*	***26***

5.1 Lead Paint Definition

In absence of a Canadian regulated definition of what constitutes a lead-based paint, the "Lead Guideline for Construction, Renovation, Maintenance or Repair", issued in October 2014 by the Environmental Abatement Council of Ontario (EACO) was followed.

Term	*Definition*	*Guideline Requirements*
Low-level lead paints and surface coatings	*Paint or surface coating containing less than or equal to 0.1% lead by dry weight (1000 µg/g, mg/kg, ppm).*	*If these materials (and the surfaces to which they are applied) are disturbed in a non-aggressive manner, performed using normal dust control procedures and are completed so that the TWA for PNOS is not exceeded, then worker protection from the inhalation of lead is not required. General health and safety precautions must still be implemented, which may include, in part, prohibiting eating, drinking, smoking and chewing in the work area, implementing dust suppression techniques and washing facilities for workers to wash hands and face.*
Lead-containing paints and surface coatings	*Paint or surface coating containing greater than 0.1% lead by dry weight (1000 µg/g, mg/kg, ppm) and less than 0.5% lead by dry weight (5000 µg/g, mg/kg, ppm).*	*Tasks performed that disturb these materials must be completed in accordance with the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.*
Lead-based paints and surface coatings	*Paint or surface coating containing equal to or greater than 0.5% lead by dry weight (5000 µg/g, mg/kg, ppm).*	*Tasks must always be completed in accordance with the procedures listed in the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.*

5.2 Lead Paint Findings

Based on our site assessment and laboratory results, the following general lead findings are presented in Table 4 (below) with a further detailed "Room by Room DSS" table of our findings presented in Appendix 'D'.

Table 4
Summary of Lead Findings

Lead Findings
• ***No Lead-based paints*** *were sampled / observed within the building.* • *All paint sampled / observed within the building is presumed as Lead-containing paint or classed as Low-level lead paint.*

Should future activities (demolition/renovation) occur within the building which would disturb any lead materials noted in this report, Thomas Contracting recommends that the affected material(s) be address prior to these activities. All disturbance work should be carried out as outlined in "Lead Guideline for Construction, Renovation, Maintenance or Repair", issued in October 2014 by the Environmental Abatement Council of Ontario (EACO).

5.3 Lead Pipes / Solder

Although not sampled due to inflicting damage / leaks to the existing plumbing within the building, it is Thomas Contracting opinion based on visual inspection that lead may also be present as a component in solder used on pipe fittings.

5.4 Lead Precautions

Prior to any renovations or demolition activities that may disturb materials identified to contain lead of any concentration, precautions must be taken as described in Ontario Regulation 213/91 as amended, Regulations for Construction Projects - made under the Occupational Health and Safety Act. This may include conducting an assessment of the potential exposure of airborne lead by a qualified person.

Exposure to lead-containing materials is regulated under the Revised Regulation of Ontario 843/90 as amended, Regulation respecting Lead - made under the Occupational Health and Safety Act including disposal of such material Ontario Regulation 347/90 Schedule 4 – Leachate Quality Criteria (Acceptable Lead Concentrations of < 5.0 mg/l). Care must be taken to prevent lead-containing particles from becoming airborne during the disturbance of lead-containing surfaces (i.e., during renovation or demolition projects). All lead abatement work must follow procedures outlined in both the "Guideline for Lead on Construction Projects", issued in September 2004 by the Occupational Health and Safety branch of the Ministry of Labour and the "Lead Guideline for Construction, Renovation, Maintenance or Repair", issued in October 2014 by the Environmental Abatement Council of Ontario (EACO).

6.0 MERCURY

Mercury is a naturally occurring metal. At room temperature it is a shiny, silver coloured odourless liquid. When heated it becomes a colourless, odourless gas. Mercury can be found in fluorescent light tubes, electrical switches, thermostats, thermometers, dental fillings, certain batteries and some manufacturing processes. The nervous system is very sensitive to all forms of mercury; however, vapour is especially harmful as it directly reaches the brain. Exposure to high levels of mercury may permanently damage the brain, kidneys and a developing fetus. Short-term exposure may cause lung damage, nausea, vomiting, skin rashes, and eye irritation.

6.1 Fluorescent Light Tubes Findings

Numerous fluorescent T8 light tubes (≈112) were observed throughout the building. All of which contain small amounts of mercury.

6.2 Thermostatic Control Switch Findings

Thomas Contracting observed the presence of two (2) different models of wall mounted thermostatic control switches located throughout the building under this DSS as follows.

- *"White Rogers" thermostatic control switch located within Room 1 of the building which is mercury free (see photo #12 in Appendix 'C').*
- *"White Rogers" thermostatic control switch located within Room 6 of the building which is mercury free (see photo #13 in Appendix 'C').*

6.3 General Notes

Prior to any renovations or demolition activities that may disturb materials identified or suspected to contain mercury of any concentration, precautions must be taken to prevent mercury vapours from becoming airborne or liquid mercury contaminating the surrounding environment. Exposure to airborne mercury is regulated under the Revised Regulation of Ontario 844/90 as amended, Regulation respecting Mercury - made under the Occupational Health and Safety Act.

Mercury waste must be handled and disposed of according to the Revised Regulation of Ontario 347/90 as amended - made under the Environmental Protection Act, and may be subject to Leachate Criteria (Schedule 4) of this regulation. Therefore, it is our recommendation that prior to any demolition / renovation activity or if the fluorescent tubes will not be utilized in the future, the fluorescent tubes shall be disposed of properly or recycled by a licensed contractor.

7.0 POLYCHLORINATED BIPHENYLS (PCBS)

Although not a designated substance, the disposal of PCB's is regulated. Information labels on electrical equipment such as fluorescent light ballasts, transformers and capacitors for motors were examined to assist in determining PCB content. The data was compared against information available in the "Handbook on PCB's in Electrical Equipment" issued by Environment Canada, in order to determine PCB content of materials. No bulk sampling was performed at live PCB impregnated cables, or on dielectric fluids or materials on live ballasts, transformers or capacitors.

7.1 Fluorescent Light Ballast Findings

All fluorescent light ballasts noted / observed within the building consisted of "Sylvana Quicktronic" or "ACCUPRO" T8 Fluorescent Electronic Ballast which are all label marked as non-PCB (see photos #14 and # 15 in Appendix 'C').

7.2 Electrical Transformer Findings

No electrical transformers were observed within the building under this DSS.

7.3 General Notes

Prior to any renovations or demolition activities that may disturb materials identified or suspected to contain PCB's of any concentration, precautions must be taken to prevent the PCB material from contaminating personal or the surrounding environment. Exposure handling and disposal of PCB material is regulated under the EPA's PCB Regulations –SOR/2008-273 and Regulation 362 - EPA, WASTE MANAGEMENT, PCBS - made under the Occupational Health and Safety Act and shall be conducted by a licensed contractor.

8.0 MOULD

No mould growth was identified within the building under this DSS.

9.0 SILICA

Although not sampled under this study, it is our opinion that free crystalline silica (common construction sand) may be present a component of concrete, mortar, brick, masonry, ceramics, granite, slate, stone, asphalt, etc., used in the construction of the building(s). Precautions must be taken to prevent silica-containing particles from becoming airborne during the disturbance of silica-containing surfaces, such as during renovation or demolition projects.

Exposure to airborne silica is regulated under the Revised Regulation of Ontario. 845/90 as amended, Regulation respecting Silica - made under the Occupational Health and Safety Act. All work being carried with silica containing materials should be conducted following the Guide Silica on Construction Projects issued September 2004 by the Occupational Health and Safety branch of the Ministry of Labour. Silica waste must be handled and disposed of according to the Revised Regulation of Ontario 347/90 as amended - made under the Environmental Protection Act.

10.0 OTHER DESIGNATED SUBSTANCES

10.1 Acrylonitrile

No source was identified. Acrylonitrile or CAN (also known as vinyl cyanide) is an explosive, flammable liquid used in the manufacture of acrylic fibres, robber-like materials and pesticide fumigants.

10.2 Arsenic

No source was identified. Arsenic is used in metallurgy for hardening copper, lead and alloys, in pigment production, in the manufacture of certain types of glass, in insecticides, fungicides and rodenticides, as a by-product in the smelting of copper ores, and as a dopant material in semiconductor manufacturing.

10.3 Benzene

No source was identified. Benzene or benzol is a colourless liquid. It is used as an intermediate in the production of styrene, phenol, cyclohexane, and other organic chemicals, and in the manufacture of detergents, pesticides, solvents, and paint removers. It is also found in gasoline.

10.4 Coke Oven Emissions

Not applicable for the surveyed site.

10.5 Ethylene Oxide

No source was identified. Ethylene oxide is a colourless gas liquefying below 12°C. It is used generally as a fumigant and sterilizing agent for medical equipment.

10.6 Isocyanates

No source was identified. Isocyanates (HDI, MDI and TDI) are used in the production of polyurethane and as an elastomer in casting compounds, mastics, and textile coatings (IPDI).

10.7 Vinyl Chloride

No source was identified. Vinyl chloride, also known as chloroethylene, is a colourless gas but is usually handled as a liquid under pressure. It is used in the production of PVC resins and in organic synthesis.

11.0 SUMMARY

The designated substances survey (DSS) of 435 Whitson Street located in North Bay, Ontario, confirmed the presence of the following:

- *12" x 12" vinyl floor tiles (non-friable) located under the carpet in Rooms 1, 2, 3 and exposed in Room 4 of the building all are asbestos-containing.*
- *"Transite" fiberboard (grey) located in wall openings within Room 4 of the building is asbestos-containing.*
- *Exterior window and door caulking (grey)(non-friable) located on the exterior of the building is asbestos-containing.*
- *Lead materials "suspected" to be present as components in solder used in pipe fittings within the building.*
- *Lead-containing paint presumed throughout the building.*
- *Mercury in fluorescent light tubes present throughout the building.*
- *Possible silica in concrete, mortar, brick, masonry, ceramics, granite, slate, asphalt, etc.*

12.0 RECOMMENDATIONS

12.1 Asbestos-containing Material (ACM's)

Based on our field observations, all asbestos-containing materials noted in this DSS do not pose a health hazard in their present state. However, the removal and disposal of any asbestos-containing material be undertaken, all work must be performed in accordance with Ont. Reg. 278, "Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations" and all applicable Federal and Provincial statutes as noted in our report.

12.2 Lead-containing Materials & Paints

Based on our observations, the identified low-level lead paints, presumed lead-containing paints and "possible" lead containing pipe solder located within the building do not pose a health hazard in their present state. However, should removal and disposal of any lead containing paints and/or "possible" lead containing pipes be undertaken, work should be performed in accordance with applicable Federal and Provincial statutes as noted in our report and as outlined in "Lead Guideline for Construction, Renovation, Maintenance or Repair", issued in October 2014 by the Environmental Abatement Council of Ontario (EACO).

Any renovation or demolition work should be carried as outlined in "Lead Guideline for Construction, Renovation, Maintenance or Repair", issued in October 2014 by the Environmental Abatement Council of Ontario (EACO).

12.3 Mercury-containing Materials

Based on our observations, the identified mercury-containing fluorescent light tubes present within the building do not pose a health hazard in their present condition. All maintenance, removal and disposal of any mercury-containing materials must be performed in accordance with applicable Federal and Provincial statutes as noted in this report.

12.4 Silica-containing Materials

Based on our observations, the identified silica-containing materials present within the building do not pose a health hazard in their present condition. All maintenance, removal and disposal of any silica-containing materials must be performed in accordance with applicable Federal and Provincial statutes as noted in this report.

13.0 LIMITATIONS AND WARRANTY

- *This report is for the exclusive use of the client, their agents, and is neither an endorsement nor condemnation of the subject property.*

- *The findings contained in this report are based upon conditions as they were observed at the time of investigation. No assurance is made regarding changes in conditions subsequent to the time of the investigation.*

- *The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by qualified professionals currently practicing in this area of environmental assessment. No other warranty, expressed or implied, is made.*

- *Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such parties. Thomas Contracting accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. In particular, any contractors bidding on site demolition or renovation work should not rely solely upon the present report for volume or quantity estimates, and should satisfy themselves of the exact quantities and conditions encountered on-site before bidding or initiating any project work, and adapt the appropriate work practices needed to comply with the applicable Federal / Provincial codes and regulations. Proper, detailed, tender packages should be prepared and supplied to contractors prior to the initiation of any renovation or demolition activities.*

- *Please note that the above survey was limited to the extent of the visual observation and discrete samples collected. Inaccessible areas could not be investigated, and should renovation / demolition work encounter conditions not reported in this document, Thomas Contracting should be retained to provide comments and guidelines on how to proceed.*

- *Some findings contained in this report may be based upon information provided by occupants or employees. No guarantee is made regarding the accuracy of this information. All attempts have been made to independently verify the accuracy of such information unless specifically noted in our report.*

- *If new information is developed in future work, Thomas Contracting should be contacted to re-evaluate the conclusions of this report and to provide amendments as required.*

14.0 CLOSURE

We trust this report meets your current requirements. Should you have any questions in this regard or require further clarification, please do not hesitate to contact the undersigned at this office.

Yours truly,
Thomas Contracting



Grant Johnson
Manager Environmental Services

APPENDIX 'A'

Asbestos Lab Transcripts
&
Sample Photos

CERTIFICATE OF ANALYSIS

Company Name:	Thomas Contracting	**Report Date:**	05-Mar-25
Company Contact:	Grant Johnson	**Analysis Date:**	05-Mar-25
Company Address:	212 A Birchgrove Dr. East, Callander,	**Received Date:**	25-Feb-25
Company Reference:	435 Whitson Street - DSS	**LEX Job Number:**	08250492
Sampling Date:	18-Feb-25	**No of Analysis:**	23

Analysis Analysis of Bulk Materials for Asbestos by Polarized Light Microscopy (PLM)

Narrative The analysis was completed using a polarized light microscope. All sample collection is completed outside of LEX and is the sole responsibility of the client. Any deviation from the sampling requirements in the analytical method could prevent the interpretation of results as per the method and render the results invalid. Samples are disposed of 90 days following the delivery of the Certificate of Analysis.
LEX Scientific is ISO/IEC 17025: 2017 accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Accreditation No 1002812.

Method The analysis was performed in accordance with the U.S. Environmental Protection Agency, App. E to Sub. E of 40 CFR Part 763 as well as EPA 600/R-93/116: Method for Determination of Asbestos in Bulk Building Materials, adopted in the Ontario Occupational Health and Safety Act, Ontario Regulation 278/05.

Notes
ND = None Detected at the method detection limit.
PLM method detection limit = 0.1%
Trace = Less than 0.5% of the specified type of Fibrous Asbestos Content was detected in the sample.
ACM = Asbestos-Containing Material
MMVF = Man Made Vitreous Fibres such as Fibreglass, Mineral Wool, Rockwool and Glasswool.
Asbestos TremAct = A type of asbestos amphibole, termed Asbestos Tremolite / Actinolite.

Asbestos Anth= Anthophyllite. A type of asbestos amphibole

Laboratory Manag
German Leal

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e-mail: admin@lexscientific.com Website: www.lexscientific.com

Company: Thomas Contracting **Page 2 of 9** **08250492**

Client Sample / Description: WHS-1 12"x12" vinyl floor tile (beige/grey streaks) located under carpet withing Room 1 **LEX :1**

Layer :1.1 *Floor Tile (Homogenous, Compact, Grey)*

Asbestos Chrysotile:	2	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	98	%
Asbestos Detected:	**Yes**		ACM per Ontario Reg 278/05:	**Yes**	

Layer :1.2 *Mastic (Homogenous, Resinous, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

Client Sample / Description: WHS-1A 12"x12" vinyl floor tile (beige/grey streaks) located under carpet withing Room 1 **LEX :2**

Layer :2.1 *Floor Tile (Homogenous, ,) Sample Not Analyzed due to Positive Stop*

Layer :2.2 *Mastic (Homogenous, Resinous, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

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Company: Thomas Contracting	Page 3 of 9	08250492

Client Sample / Description: WHS1-B 12"x12" vinyl floor tile (beige/grey streaks) located under carpet withing Room 4 **LEX :3**

Layer :3.1 *Floor Tile (Homogenous, ,) Sample Not Analyzed due to Positive Stop*

Layer :3.2 *Mastic (Homogenous, Resinous, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

Client Sample / Description: WHS-2 Roll vinyl flooring (grey/blotchy) located within Room 5 **LEX :4**

Layer :4.1 *Flooring (Homogenous, Flexible, Brown)*

Asbestos Chrysotile:	0	%	Cellulose:	45	%
Asbestos Amosite:	0	%	MMVF:	1	%
Asbestos Crocidolite:	0	%	OtherFibres:	4	%
Asbestos TremAct:	0	%	NonFibrous:	50	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

Client Sample / Description: WHS-2A Roll vinyl flooring (grey/blotchy) located within Room 5 **LEX :5**

Layer :5.1 *Flooring (Homogenous, Flexible, Brown)*

Asbestos Chrysotile:	0	%	Cellulose:	45	%
Asbestos Amosite:	0	%	MMVF:	1	%
Asbestos Crocidolite:	0	%	OtherFibres:	4	%
Asbestos TremAct:	0	%	NonFibrous:	50	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

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Company: Thomas Contracting **Page 4 of 9** 08250492

Client Sample / Description: WHS-2B Roll vinyl flooring (grey/blotchy) located within Room 5 **LEX :6**

Layer :6.1 *Flooring (Homogenous, Flexible, Brown)*

Asbestos Chrysotile:	0	%	Cellulose:	45	%
Asbestos Amosite:	0	%	MMVF:	1	%
Asbestos Crocidolite:	0	%	OtherFibres:	4	%
Asbestos TremAct:	0	%	NonFibrous:	50	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

Client Sample / Description: WHS-3 Drywall joint compound (mud) on walls within Room 1 **LEX :7**

Layer :7.1 *Joint Compound (Homogenous, Brittle, White)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

Client Sample / Description: WHS-3A Drywall joint compound (mud) on walls within the Stairwell **LEX :8**

Layer :8.1 *Joint Compound (Homogenous, Brittle, White)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

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Client Sample / Description: WHS-3B Drywall joint compound (mud) on walls within the second floor of the building **LEX :9**

Layer :9.1 *Joint Compound (Homogenous, Brittle, White)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:	**No**	

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Client Sample / Description:	WHS-4 12"x12" vinyl floor tiles (red/black/purple/beige-all blotchy) located within the second floor of the building	LEX :10

Layer :10.1 *Floor Tile (Homogenous, Compact, Red)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :10.2 *Floor Tile (Homogenous, Compact, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :10.3 *Floor Tile (Homogenous, Compact, Purple)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :10.4 *Floor Tile (Homogenous, Compact, Grey)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

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Client Sample / Description: WHS-4A 12"x12" vinyl floor tiles (red/black/purple/beige-all blotchy) located within the second floor of the building **LEX :11**

Layer :11.1 *Floor Tile (Homogenous, Compact, Red)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :11.2 *Floor Tile (Homogenous, Compact, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :11.3 *Floor Tile (Homogenous, Compact, Purple)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :11.4 *Floor Tile (Homogenous, Compact, Grey)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

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Client Sample / Description: WHS-4B 12"x12" vinyl floor tiles (red/black/purple/beige-all blotchy) located within the second floor of the building **LEX :12**

Layer :12.1 *Floor Tile (Homogenous, Compact, Red)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :12.2 *Floor Tile (Homogenous, Compact, Black)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :12.3 *Floor Tile (Homogenous, Compact, Purple)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

Layer :12.4 *Floor Tile (Homogenous, Compact, Grey)*

Asbestos Chrysotile:	0	%	Cellulose:	0	%
Asbestos Amosite:	0	%	MMVF:	0	%
Asbestos Crocidolite:	0	%	OtherFibres:	0	%
Asbestos TremAct:	0	%	NonFibrous:	100	%
Asbestos Detected:	**No**		ACM per Ontario Reg 278/05:		**No**

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Client Sample / Description:	WHS-5 (grey)	Exterior window and door caulking	LEX :13

Layer :13.1	*Caulking (Homogenous, Flexible, White)*					
	Asbestos Chrysotile:	4	%	Cellulose:	0	%
	Asbestos Amosite:	0	%	MMVF:	0	%
	Asbestos Crocidolite:	0	%	OtherFibres:	0	%
	Asbestos TremAct:	0	%	NonFibrous:	96	%
	Asbestos Detected:	**Yes**		ACM per Ontario Reg 278/05:	**Yes**	

Client Sample / Description:	WHS-5A (grey)	Exterior window and door caulking	LEX :14

Layer :14.1	*Caulking (Homogenous, ,) Sample Not Analyzed due to Positive Stop*

Client Sample / Description:	WHS-5B (grey)	Exterior window and door caulking	LEX :15

Layer :15.1	*Caulking (Homogenous, ,) Sample Not Analyzed due to Positive Stop*

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PHOTO # 1
435 Whitson Street, North Bay, Ontario
(Street view / Front View)



PHOTO # 2
435 Whitson Street, North Bay, Ontario
(Parking Lot view / Back view)

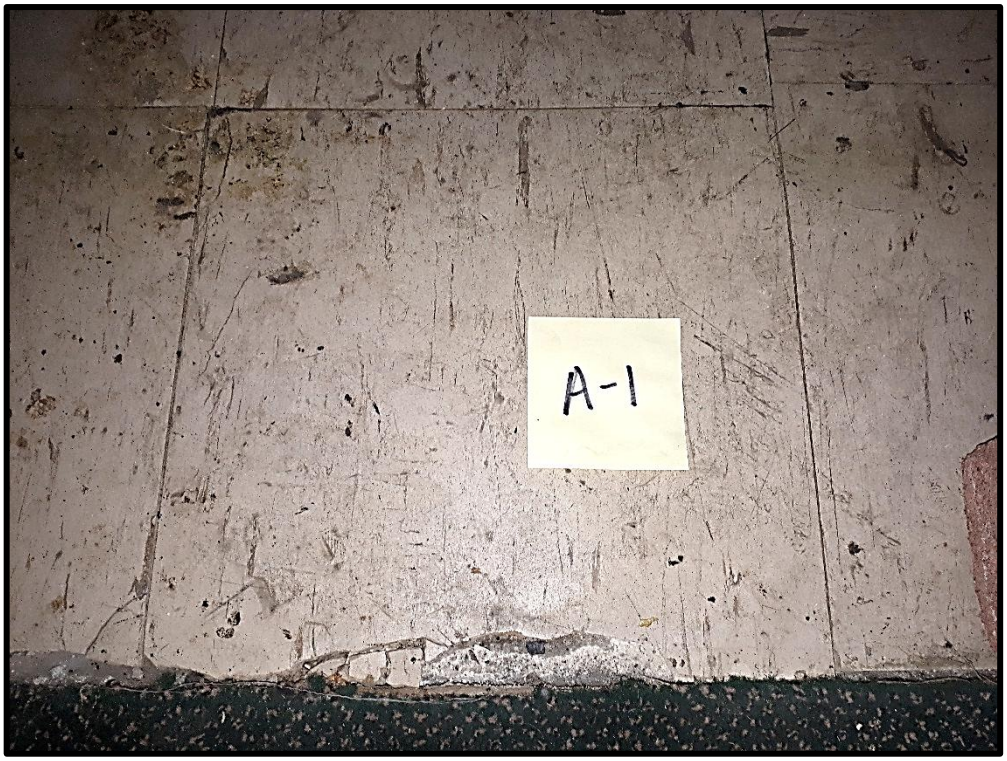


PHOTO # 3
Sample # WHS – 1 : Asbestos-containing 12" x 12" vinyl floor tiles (beige / grey streaks) located within Room 4 of the building. (non-friable)(2% chrysotile)

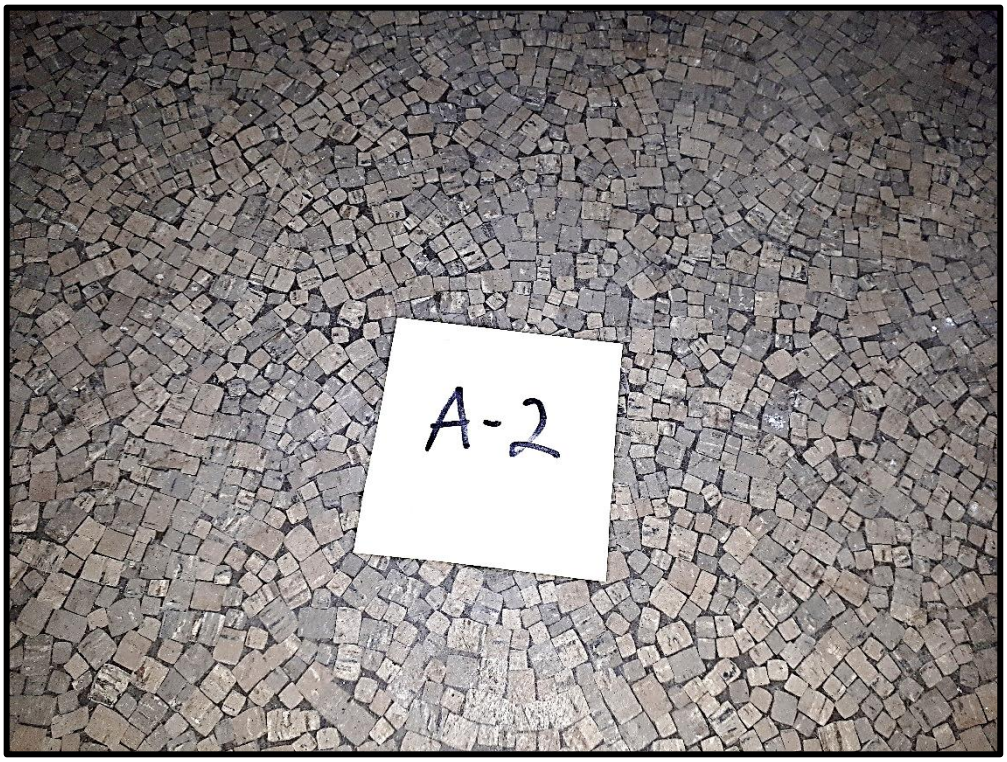


PHOTO # 4
Sample # WHS – 2 : Non-asbestos roll vinyl flooring (grey / blotchy) located within Room 5 of the building.

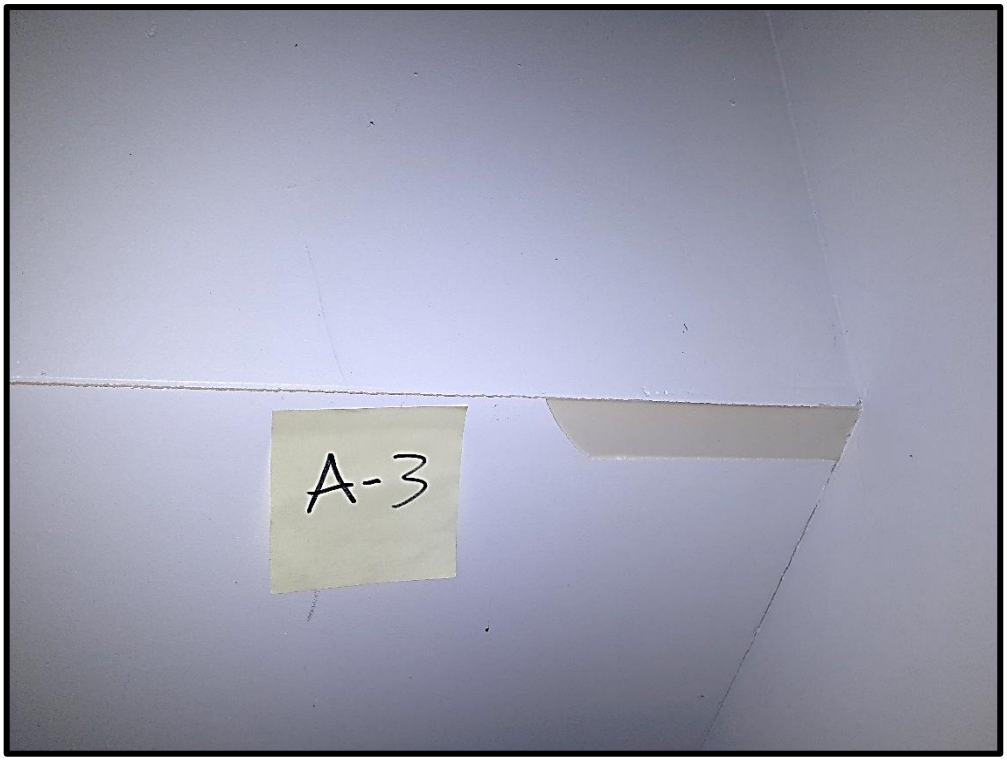


PHOTO # 5
Sample # WHS – 3 : Non-asbestos drywall joint compound (mud)l located on ceiling within the stairwell of the building.



PHOTO # 6
Sample # WHS – 4 : Non-asbestos 12" x 12" vinyl floor tiles (red/black/purple/beige) located within the second floor of the building.

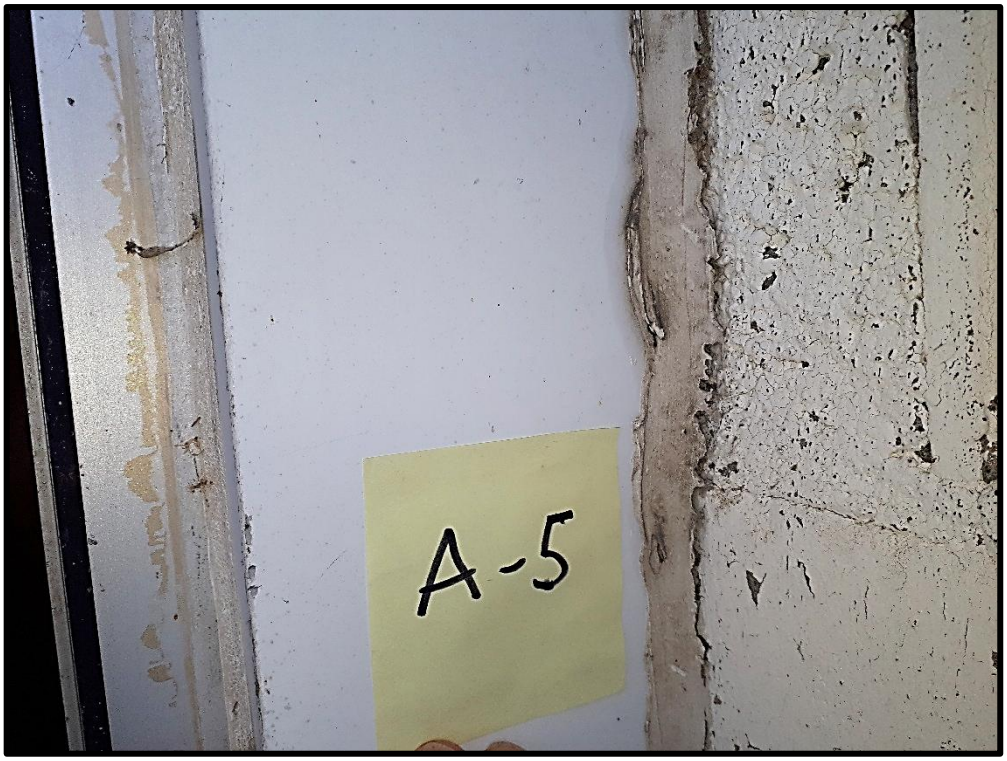


PHOTO # 7
Sample # WHS – 5 : Asbestos-containing window and door caulking (grey) located on the exterior of the building. (non-friable)(4% chrysotile)



PHOTO # 8
Asbestos-containing "transite" fibreboard (grey) located in wall openings for ductwork within Room 4 of the building. (>35% chrysotile)



PHOTO # 9
Asbestos-containing "transite" fibreboard (grey) located in wall openings for ductwork within Room 4 of the building. (>35% chrysotile)

APPENDIX 'B'

Lead Lab Transcripts
&
Sample Photos

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured. Proudly Canadian.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: **G00001** **REPORT No: 25-004353 - Rev. 0**

Report To:
Thomas Contracting
72 Ninovan Road
Callander, ON P0H 1H0

CADUCEON Environmental Laboratories
2378 Holly Lane
Ottawa, ON K1V 7P1

Attention: Grant Johnson

DATE RECEIVED: 2025-Feb-19
DATE REPORTED: 2025-Feb-20
SAMPLE MATRIX: Paint Chips

CUSTOMER PROJECT: 435 Whitson St. - DSS
P.O. NUMBER: TC-201677

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
ICP/OES (Solid)	2	OTTAWA	APRUDYVUS	2025-Feb-20	D-ICP-02	EPA 6010

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

		Parameter	Lead
		Units	ppm
		R.L.	5
Client I.D.	Sample I.D.	Date Collected	-
WHS - L1	25-004353-1	2025-Feb-13	6
WHS - L2	25-004353-2	2025-Feb-13	26

Michelle Dubien
Data Specialist

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Page 1 of 1



Photo # 10
Sample # WHS – L1 : Wall and ceiling paint located within the second floor of the building. Classed as Low-level lead paint. (surface colour = beige)



Photo # 11
Sample # WHS – L2 : Wall paint located behind wood siding within Room 1 of the building. Classed as Low-level lead paint. (surface colour = beige)

APPENDIX 'C'

Thermostatic Control Switch Photos
&
Light Ballast Photos



Photo # 12
"White Rogers" thermostatic control switch located within Room 1 of the building. (No mercury)

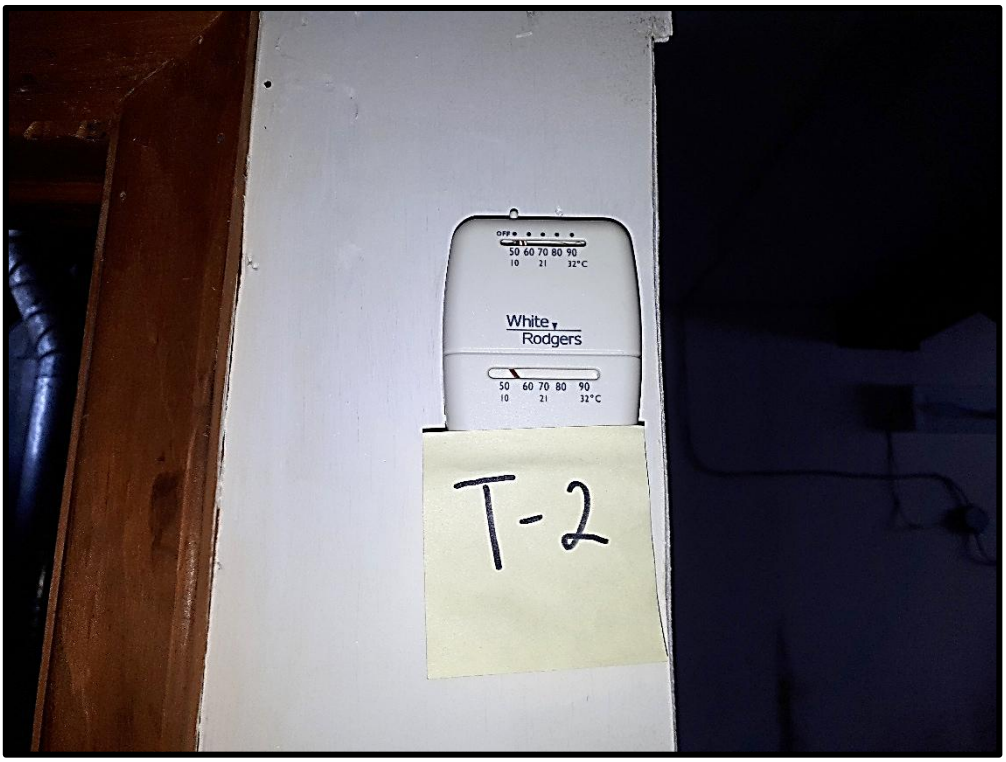


Photo # 13
"White Rogers" thermostatic control switch located within Room 6 of the building. (No mercury)



Photo # 14
"Sylvana Quicktronic" T8 fluorescent electronic ballast located within the building.
(label marked as non-PCB)



Photo # 15
"ACCUPRO" T8 fluorescent electronic ballast located within the building.
(label marked as non-PCB)

APPENDIX 'D'

Room by Room
DSS Assessment
&
Floor Plans

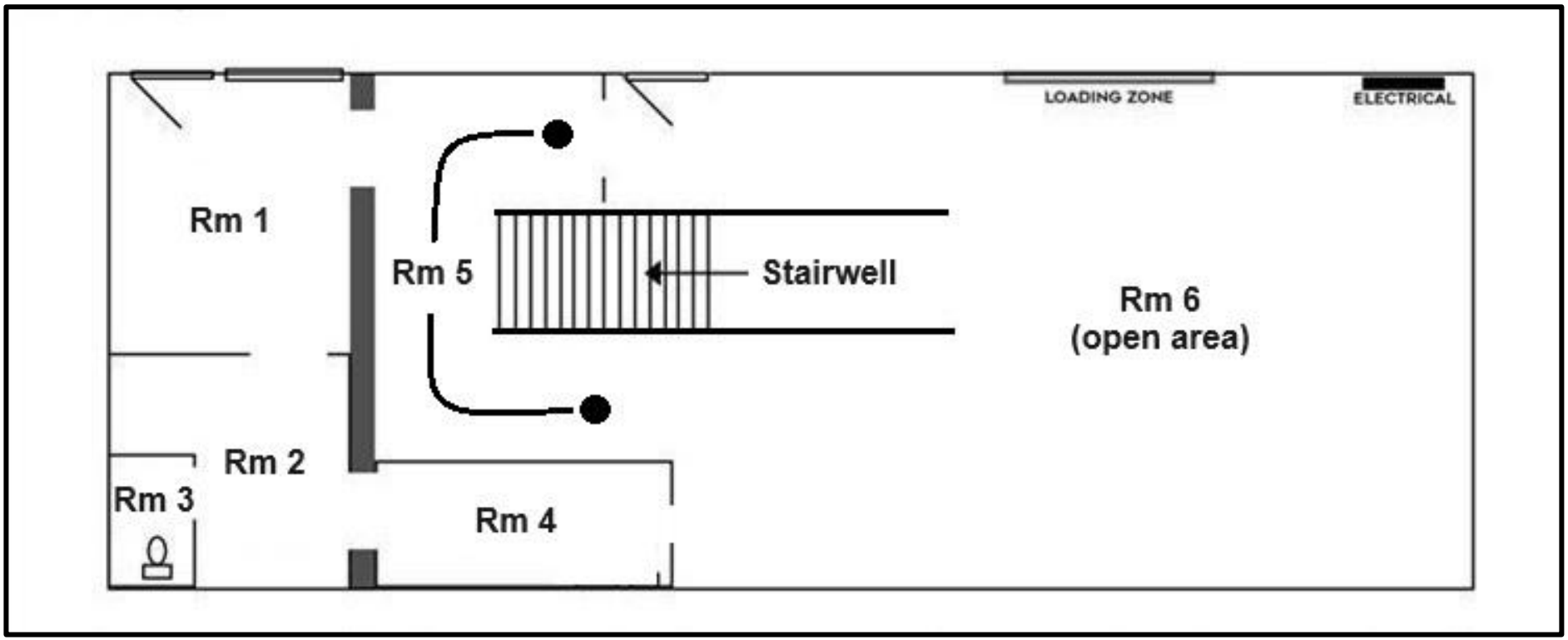
ROOM BY ROOM – DSS ASSESSMENT

435 Whitson Street

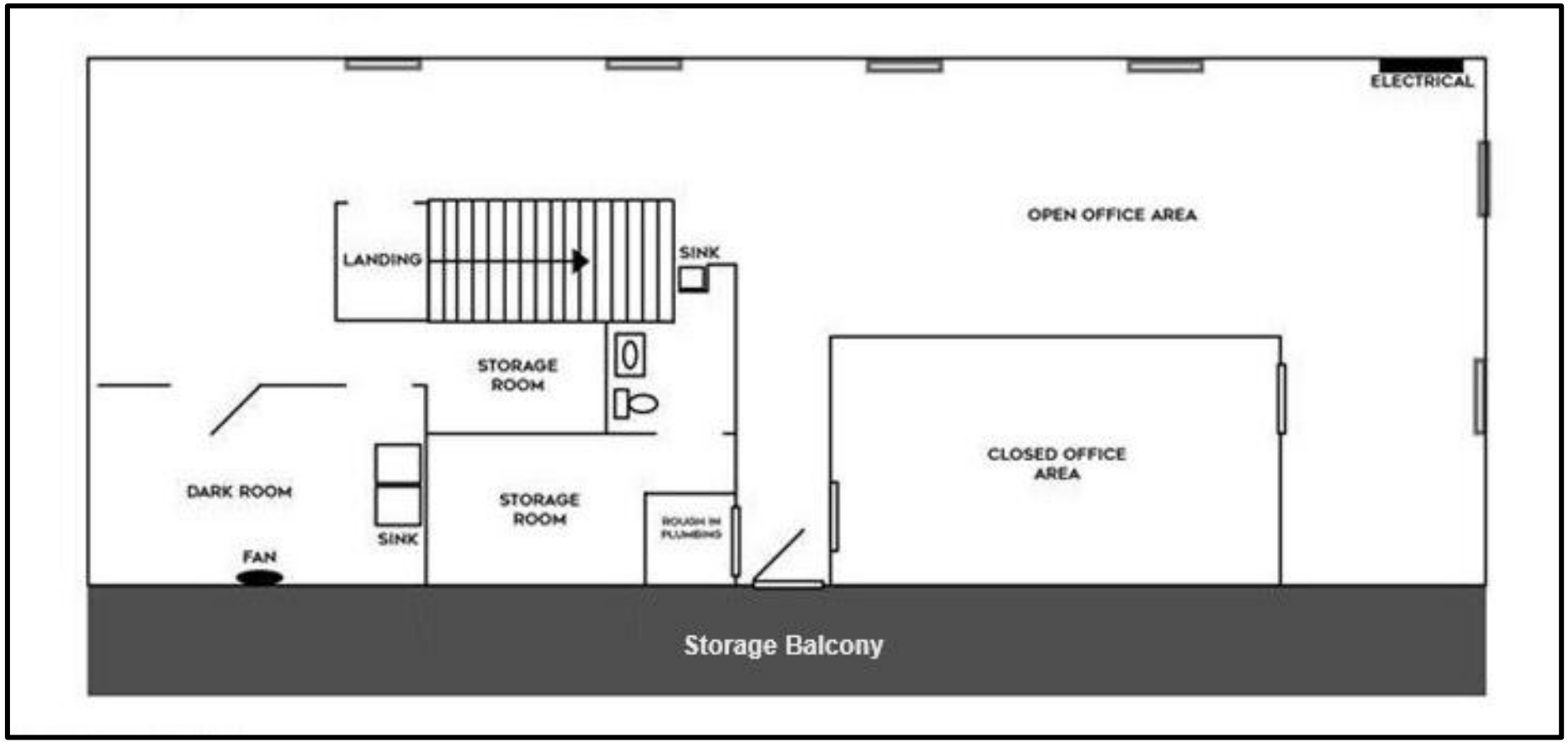
Room #	***Asbestos-Containing Materials (Est. Qty – Type – Representative Sample #)***	***Lead-Containing Materials***	***Silica***	***Mercury***
Main Level				
Room 1	• *Asbestos-containing 12" x 12" vinyl floor tile under carpet (white/black streaks). (130ft²) (2% chrysotile) (WHS-1)*	• *All paint is classed and/or presumed as low-level lead paint. (WHS-L2)*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Room 2	• *Asbestos-containing 12" x 12" vinyl floor tile under carpet (white/black streaks). (75ft²) (2% chrysotile) (WHS-1)*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Room 3	• *Asbestos-containing 12" x 12" vinyl floor tile under carpet (white/black streaks). (25ft²) (2% chrysotile) (WHS-1)*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Room 4	• *Asbestos-containing 12" x 12" vinyl floor tile (white/black streaks). (25ft²) (2% chrysotile) (WHS-1)* • *Asbestos-containing "transite" fibreboard (grey) located in wall openings for ductwork within Room 4 of the building. (4ft²) (<35% chrysotile)*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Room 5	• *None detected*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Room 6	• *None detected*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Stairwell	• *None detected*	• *All wall paint is presumed as low-level lead paint.*	• *Concrete floor* • *Concrete block*	• *None detected*

Room #	***Asbestos-Containing Materials (Est. Qty – Type – Representative Sample #)***	***Lead-Containing Materials***	***Silica***	***Mercury***
Second Floor				
All Rooms	• *None detected* • *All floor tiles and drywall mud are non-asbestos.*	• *All paint is classed and/or presumed as low-level lead paint. (WHS-L1)*	• *Concrete floor* • *Concrete block*	• *Fluorescent Light Tubes*
Storage Balcony	• *None detected*	• *None detected*	• *Concrete block*	• *Fluorescent Light Tubes*
Attic Space	• *None detected*	• *None detected*	• *None detected*	• *None detected*
Exterior of Building				
• *Asbestos-containing exterior window/door caulking (grey). (>125 ft) (4% chrysotile) (WHS-5)*		• *All wall paint is presumed as low-level lead paint.*	• *Concrete slab* • *Concrete block*	• *Fluorescent Light Tubes*

Note: This table is to be read in conjunction with Thomas Contracting Report TC - 201677, and requires interpretation assistance before use by others.



435 Whitson Street
Main Floor Plan



435 Whitson Street
Second Floor Plan

SURVEYOR'S REAL PROPERTY REPORT

PART 1, PLAN OF SURVEY OF

PART OF LOTS 41 AND 70

REGISTERED PLAN No. 47

CITY OF NORTH BAY

DISTRICT OF NIPISSING

SCALE 1 : 100

0 5m 10m

TULLOCH GEOMATICS INC.

2025

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-95968

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

METRIC

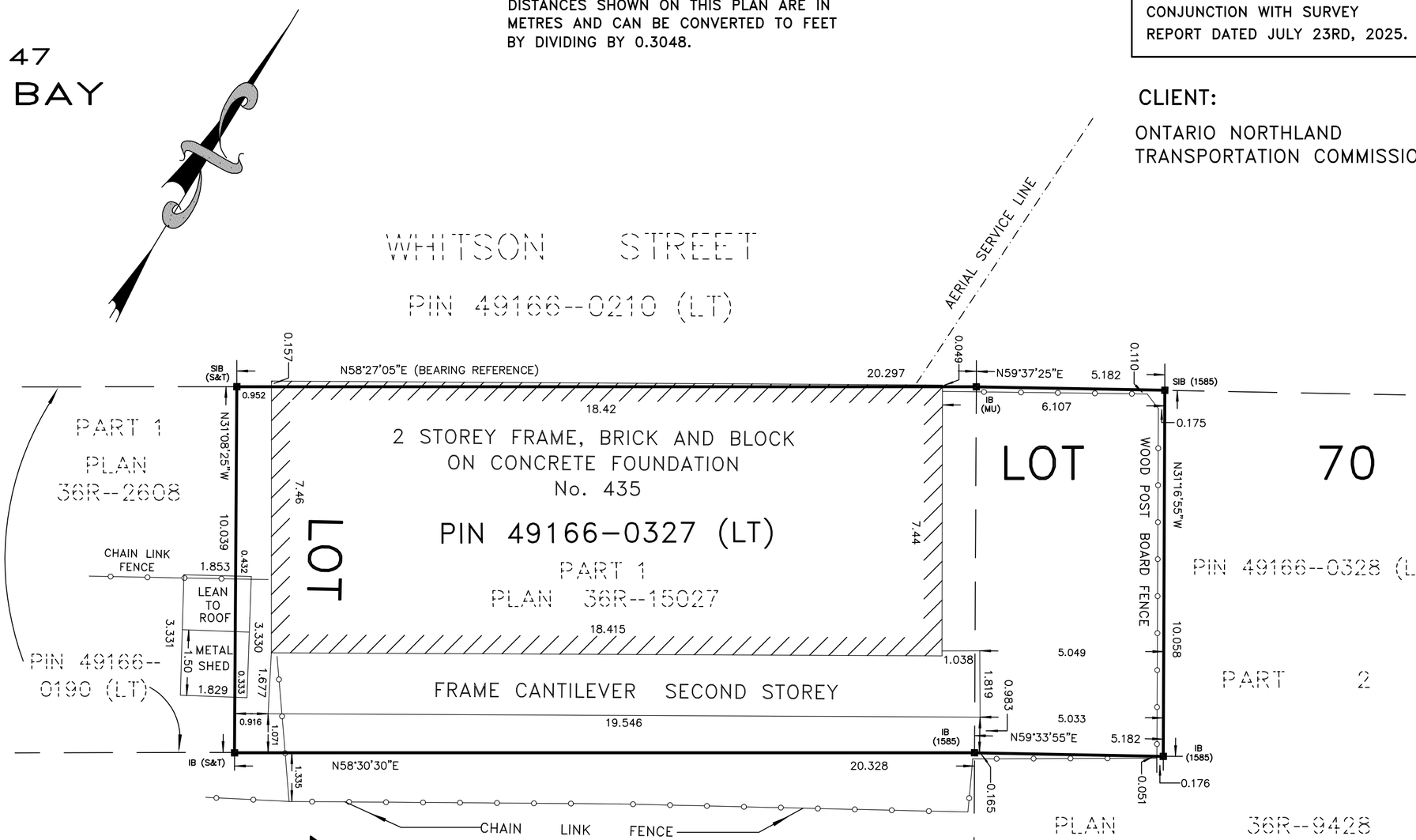
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

PART 2

THIS PLAN MUST BE READ IN CONJUNCTION WITH SURVEY REPORT DATED JULY 23RD, 2025.

CLIENT:

ONTARIO NORTHLAND TRANSPORTATION COMMISSION



LEGEND

■	DENOTES	FOUND MONUMENT
SIB	DENOTES	STANDARD IRON BAR
IB	DENOTES	IRON BAR
MU	DENOTES	MILLER & URSO SURVEYING INC.
1585	DENOTES	CLARKE DORLAND & MILLER LIMITED, O.L.S.
S&T	DENOTES	SIMPSON & TAYLOR LIMITED, O.L.S.
P	DENOTES	DEPOSITED PLAN 36R-15027

SURVEYOR'S CERTIFICATE

I CERTIFY THAT :

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 11th DAY OF JULY 2025.

JULY 23rd, 2025
DATE

R. D. MILLER
ONTARIO LAND SURVEYOR
FOR: TULLOCH GEOMATICS INC.

BEARING NOTE:

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO PART OF THE NORTH LIMIT OF PART 1 AS SHOWN ON DEPOSITED PLAN 36R-15027, HAVING A BEARING OF N58°27'05"E.

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RUUD

PART 3 - RFP SPECIFICATIONS
SCHEDULE 3-A-5
POLICIES AND PROCEDURES

The Successful Respondent will be required to adhere to the following ONTC Policies and Procedures while under contract with ONTC, and which are attached to this Schedule 3-A-5.

TITLE
ONTC Hot Work Program
ONTC Lockout / Tag Out Procedure
ONTC Contractor / Subcontractor

DATE FORMALIZED June 21, 2018 REVISED April 13, 2022	HOT WORK PROGRAM

POLICY STATEMENT

In keeping with our values of safety, accountability, and continuous improvement Ontario Northland Transportation Commission (ONTC) is committed to the safety and health of all its employees by ensuring that all hazards associated with hot work is properly recognized, assessed and controlled.

PURPOSE

To establish the minimum requirements for the safe performance of hot work when conducting hot work at any ONTC location, and to ensure that all measures are taken to eliminate any risk that is generated by welding, cutting, grinding, soldering, or blazing.

APPLICATION AND SCOPE

This policy applies to any ONTC division, department, and employee who is required to perform hot work at any time during their work.

POLICY

All hot work jobs or projects are to be authorized by a manager, supervisor, designate or identified in daily work schedules and/or job descriptions.

All hot work must be performed by a competent worker who has the knowledge and training in the work being performed as per the identified risks associated with the work.

A competent person will be designated to monitor all hot work activities ensuring all procedures are being followed, and to conduct a fire watch for dangerous sparks.

When hot work is required on a rail car that contains a commodity or residue that is either a flammable gas, flammable liquid, or a liquid with a flash point below the ambient temperature or the temperature in the rail car, the work is to be conducted outside (provide location) and is only permitted when all safety precautions outlined in this procedure have been met and adhered to by personnel who have been trained to assess and control the hazards associated with hot work.

DEFINITIONS

Flammable Commodity:
A commodity that is a flammable gas, a flammable liquid or a liquid that has a flash point below the ambient temperature or temperature inside the rail car.

Flammable Gas:
A gas that has an LEL of less than 13 percent by volume in air or flammable range of more than 12 percent.

Flammable Liquid:
A liquid having a flash point below 37.8^{o}C (100°F), also known as an NFPA Class I liquid.

Flash Point:
The temperature at which a liquid produces enough vapour to ignite in the presence of a suitable source of ignition.

Gas Tester:
Person assigned to perform required testing on/in a confined space, restricted space, railcar, etc. to ensure the area is safe to work on and/or identify control measures required to eliminate risk.

Hot Work:
For the purposes of this procedure, refers to any operation, process, or the use of anything that creates a source of ignition. Hot work includes, but is not limited to: welding, cutting torches, gouging, and the use of tools and equipment that are not intrinsically safe.

Lower Explosive Limit (LEL):
The minimum concentration of a flammable gas mixed with air, where an explosion or deflagration may occur in the presence of a suitable ignition. This concentration is expressed in percent by volume, where 1 percent represents 10,000 parts per million.

Tester:
A competent person who is responsible for making determinations of the conditions in or around the area of work, and has completed appropriate training on the measurement instruments and procedures used to perform the evaluation.

Vapour:
A gas given off by a substance that is normally a liquid at room temperature.

MATERIAL REQUIRED

Hot Work Hazard Assessment and Full task Observation Sheet
Norfalco Acid Tank Car Hazard Safety Inspection Sheet
Personal Protective Equipment
Fire Extinguisher
Testing Equipment – PH Test Paper, Gas Monitoring Equipment
Communication Devices

HAZARDS

This procedure describes some of the potential health hazards associated with welding fumes and gases. It also discusses the control and management of these hazards.

Welding produces metal fumes and gases that can make you sick. The risk depends on:

- The welding method (such as MIG, TIG, or stick)
- What the welding rod (electrode) is make of
- Filler metals and base metals (such as mild steel and stainless steel)
- Paints and other coatings on the metals being welded
- Ventilation

In confined spaces, welding can be much more dangerous. With less fresh air, toxic fumes and gases can be much stronger. Shielding gases, like argon, can displace the oxygen and kill you.

The two most common types of welding used are:

- The electric arc welding of metal using a flux-coated electrode (manual metal arc welding, MMAW, SMAW); and
- The electric arc welding of metal using a gas-shielded wire electrode (gas metal arc welding, GMAW).

Welding Fumes
Cadmium – may be present as a coating in certain materials being welded. Cadmium oxide fume on inhalation may cause acute irritation of the respiratory passages, bronchitis, chemical pneumonia or excessive fluid in the lung tissues (pulmonary oedema). There may be a latent period of several hours between exposure and onset of symptoms. The effects of overexposure to cadmium fumes may resemble metal fume fever initially. A single exposure to a very high concentration of cadmium oxide fume may be fatal. Chronic cadmium poisoning results in injury to lungs and kidneys.

Manganese – potential exposure to manganese occurs whenever this metal is used in electrode cores and coatings or in electrode wire. Acute poisoning from oxides of manganese is very rare in welders, although respiratory tract irritation from the fume may occur. Exposure to fume from welding on manganese steel may give rise to acute

inflammation of lungs. Metal fume fever is also a possibility after exposure to manganese fume. Chronic manganese poisoning, characterized by severe disorder of the nervous system, has been reported in welders working in confined spaces on high manganese steels.

Zinc – may be present as a surface coating on steel products, that is, galvanized steel. Exposure to freshly formed zinc oxide fume may produce a brief acute self-limiting illness known as metal fume fever, zinc chills or brass founder's ague. The symptoms, which resemble those of an acute attach of influenza, usually occur several hours after exposure to fume and usually with complete recovery within about 24 to 48 hours. Freshly formed oxide fume from several other metals has also been reported to cause metal fume fever. Leucocytosis, a transient increase in white blood cell counts, is reported to be a common finding in metal fume fever, but is not known to be common among welders.
Iron – most welding involves ferrous materials. The most abundant constituent of ferrous alloy welding fume is iron oxide. Long, continued exposure to such welding fume may lead to deposition of iron oxide particles in the lungs. When present in sufficient quantities, the deposition is demonstrable on chest x-ray films as numerous fine discrete opacities (nodulation and stripping) resembling silicosis. The technical name for this is sierosis and it is a benign form of pneumoconiosis. Siderosis tends to clear up when the exposure to metallic particles stops.

Molybdenum – Molybdenum is found in some steel alloys. Molybdenum fumes may produce bronchial irritation and moderate fatty changes in the liver and kidneys.

Fluorides – Welders may be exposed to fluoride dust, fume and vapours from certain MMAW and GMAW operations. Fluoride fumes may produce irritation of the eyes, throat, respiratory tract and skin. Chronic fluorosis is a syndrome characterized by an increased density of bones and ligaments due to fluoride deposition. However, no corroborating data are available which identify a relationship between exposure to fluoride-containing welding fumes and disorders of bones or ligaments.

Other Metals – Welding may produce fume from other metals, including aluminium, copper, magnesium, tin, titanium and tungsten. Within the confines of the current information available, no serious health disorders in welders are known to occur from exposure to fume from these metals but, under certain conditions, copper, aluminium and magnesium may give rise to metal fume fever and others to irritation of the respiratory tract.

Beryllium is a volatile and toxic component that may be present in many copper alloys being welded, that is, in the work piece itself. Beryllium oxide fume is very toxic to the respiratory tract, lungs and skin, and is quick acting. Beryllium is suspect human carcinogen. Note that beryllium may also be present in some aluminium or magnesium brazing alloys.

Gases
Oxides of nitrogen – The oxides of nitrogen, nitric oxide and nitrogen dioxide, are frequently formed by the direct combination of oxygen and nitrogen in the air surrounding

the arc or flame, as a result of heat from the electric arc or gas torch (oxidizing flames). In outdoor or open shop welding, hazardous abnormal concentrations are unlikely, except perhaps for short periods. In confined spaces, hazardous concentrations of nitrogen oxides may rapidly build up in welding operations. High concentrations of nitrogen oxides have also been found during gas tungsten-arc cutting of stainless steel.

Exposure to oxides of nitrogen may not always produce immediate effects but may result in fatal excessive fluid in the lung tissues (pulmonary oedema) some hours after the exposure stops.

Ozone – is formed only in small amounts in MMAW and in gas welding. It is however, produced in significant amounts in GMAW when welding with argon, especially when high amperages are used. High ozone concentrations are especially a problem when welding on reflective surfaces, such as aluminum and its alloys and stainless steel, and with high-energy processes such as plasma arc welding.

Phosphine – Phosphine is generated when steel coated with a rust proofing compound is welded. High concentrations of phosphine gas are irritating to the eyes, nose and skin. There may also be serious effects on the lungs and other organs.

Insufficient – oxygen in GMAW, the presence of inert gases (argon, helium) in confined work environments may reduce the oxygen content of the atmosphere to dangerous levels, with the threat of asphyxiation. See also the section on carbon dioxide in this procedure.

Pyrolytic products of resins used in primers / paints – the main products of thermal decomposition of resins used in primers and paints are carbon monoxide and carbon dioxide. Specific toxic or irritant chemicals given off from the resins used in priming materials include such hazardous substances as phenol, formaldehyde, acrolein, isocyanates and hydrogen cyanide. Usually, a very complex mixture of organic gases is formed.

HEALTH EFFECTS

SHORT TERM

Metal fume fever – Metal fume fever occurs in welders who inhale zinc oxide fumes, although other components, for example, copper, aluminum and magnesium, may also produce this condition. Symptoms of metal fume fever, which resemble influenza, usually occur several hours after exposure and include a metallic or sweet taste, chills, thirst, fever, muscle aches, chest soreness, fatigue, gastro-intestinal pain, headache, nausea and vomiting. The symptoms usually subside within one to three days of exposure with no residual effect.

Exposure to ozone – Exposure to ozone generated in GMAW and plasma arc welding may produce excessive mucus secretion, headache, lethargy, eye irritation and irritation and inflammation of the respiratory tract. In extreme cases, excess fluid and even hemorrhage may occur in the lungs. The irritant effects of the gas on the upper respiratory tract and the lungs may be delayed.

Exposure to nitrogen oxides – Nitrogen oxides produce somewhat similar respiratory tract effects to ozone. Inhalation of nitrogen oxides does not always produce immediate irritant effects but may result in excessive fluid in the lung tissues (pulmonary oedema) some hours after exposure ceases.

Control Measures

Where there is a likelihood of worker exposure to welding fumes and gases, steps should be taken to minimize that exposure. A thorough examination of work practices is essential. Procedures should be adopted to ensure that workers are not exposed to the hazard. Control measures include, but are not limited to the following, which are ranked in priority of their effectiveness:

Elimination/Substitution

- Remove the hazard from the workplace, or substitute (replace) hazardous materials or machines with less hazardous ones

Engineering Controls

- includes designs or modifications to equipment, ventilation systems, and processes that reduce the hazard at the source of exposure

Administrative Controls

- altering the way the work is done we can reduce the exposure along the path i.e. policies, and **work practices** such as standards and operating procedures (including training, housekeeping, equipment maintenance, and personal hygiene practices)Conduct pre-assessment of work to identify all hazards

Personal Protective Equipment

- Equipment worn by individuals to reduce exposure such as contact with chemicals or exposure to noise

The control measures in this procedure are intended to assist anyone conducting hot work with identifying and controlling all hazards associated with the nature of the work. All hazards identified in the hazard assessment not identified in the procedure shall be controlled using this hierarchy first always looking to eliminate.

PROCEDURE

Welding, cutting, grinding, soldering and brazing in construction, maintenance, and fabricating activities present a significant opportunity for fire and injury.

Hot work presents an increased risk of fire and explosion hazard when it is performed in a confined and enclosed space. If performing Hot Work in a confined space, please refer to the confined space policy and procedure.

The following procedures are the minimum standard that ONTC anticipates its workers and contractors to achieve for all hot work performed.

1. Inspect the work area and consider the following:
   - Ensure that all equipment is in good operating order before work starts.
   - Ensure that all appropriate personal protective devices are available at the site.
   - Look for combustible materials.
   - Move all flammable and combustible materials away from the work area.
   - Sweep clean any combustible materials on floors around the work zone.
   - Remove spilled grease, oil, or other combustible liquid.

If combustible materials can't be moved:

2. If combustibles cannot be moved, cover them with fire resistant blankets or shields. Protect gas lines and equipment from falling sparks, hot materials, and objects.
3. Secure, isolate, and vent pressurized vessels, piping and equipment as needed before beginning hot work.
4. Post a trained fire watch within the work area, including lower levels if sparks or slag fall during welding, including during breaks, and for at least 30 minutes after work has stopped. Depending on the work done, the area may need to be monitored for longer (up to 3 or more hours) after the end of the hot work until fire hazards no longer exist.
5. Inspect the area following work to ensure that wall surfaces, studs, wires, or dirt have not heated up.
6. When work is completed ensure all compressed gas valves are closed and the cylinders are properly stored and secured safely.

Hot Work on Residue/Loaded Rail Cars

Before performing any work on a rail car ensure the following:

Before performing any work on a car containing acid caution must be given to the following risks:

1) The tank is still under pressure – highest risk
2) The tank will release acid gases/mists when opened and previously checked for pressure

The first time the tank is opened workers should wear a full face shield and protective clothing (e.g. polycoated Tyvek and gloves), and a ½ mask respirator equipped with a stacked P100/acid gas cartridges (or a full face respirator in lieu of the face shield).

Subsequent access if necessary may be limited to respiratory protection for acid gases/mists and gloves, but should not occur unless necessary.

1. The Manager of Quality Assurance shall determine the last contents and, where possible, the paint system used on the car to be worked on. This shall include, as applicable, the review of shipping documents and/or any other documentation or information as appropriate to verify the last contents or the paint system used.

   Identification by the commodity stencilled on the car is not sufficient for content determination.

2. Where the car is found to contain an acid commodity a **Hazard/Safety Inspection Assessment Nor Falco Acid Tank Car** form must be completed by the Quality Assurance inspector to indicate if the car has passed or failed.

3. Prior to engaging in any hot work the person conducting the testing shall:
   a. Identify and record the contents of the tank on the **Hot Work Hazard Assessment and Task Observation** sheet.
   b. Test for oxygen and then LEL at and around the manways, valves, or other potential sources of flammable gases that are within the distances outline in Section 3.
   c. Stop any leaks as practicable prior to continuing and record this on the Hot Work Hazard Assessment and Task Observation form.
   d. Record the final results of the testing on the Hot Work Hazard Assessment and Task Observation sheet.
   e. Where a car's last commodity contains an acid perform PH testing on the car to ensure there is no acid residue remaining on or in the car

4. When a car contains a flammable commodity, no welding, gouging, flame cutting or similar operation is permitted within 15.4 meters (50 feet) and any other type of hot work is not permitted within 4.6 meters (15 feet) until the identified hazards on the **Hot Work Hazard Assessment and Task Observation** sheet have been controlled.

5. Once safe work condition is met, hot work may proceed only after the assigned worker(s):
   a. Examines the Hot Work Hazard Assessment and Task Observation sheet and identifies the following items before commencing work:

- Car Number: verify that the number on the car is the same as that identified on the Hot Work Hazard Assessment and Task Observation sheet
- Test results: verify that the air test meets the Hot Work Hazard Assessment and Task Observation sheet condition, also verify that the test results were conducted on the same shift and date the hot work is to be performed.

b. Ensure that no other processes or operations are being performed in the area that could contaminate the work area with a significant amount of flammable gas, or that continuous monitoring occurs.
c. Ensure that if a combustible insulation is present, a suitable means to extinguish a fire is immediately available.
d. Ensure that all equipment to be used is inspected, in good condition and properly used and this is documented on the **Hot Work Hazard Assessment and Task Observation** sheet.
e. Ensure that required personal protective equipment is inspected, in good condition, used properly and is documented on the **Hot Work Hazard Assessment and Task Observation** sheet.
f. Ensure you print your name and initials on the **Hot Work Hazard Assessment and Task Observation** sheet.
g. Ensure that continuous monitoring is in place.

6. Hot work may normally only proceed when the LEL is zero, except where the source of flammable gas is clearly known and continuous monitoring is performed to ensure that the levels do not exceed 10 percent of the LEL.

7. The tests conducted are valid for no more than the present shift, including overtime hours where applicable.

8. Welding on the tank car shell of an uncleaned car containing a flammable commodity or residue is strictly prohibited. Welding on reinforcing pads of rail cars which are directly attached to the shell is permitted providing:
   - The welder is qualified and certified
   - No part of the weld is deposited on the tank shell
   - Continuous monitoring in the location of the hot work

9. The ground connection for welding is to be attached directly to the part to be welded whenever practicable or as near as possible to the weld area

10. A fully charged 20lb ABC fire extinguisher shall be readily available to the hot work area. In remote locations where work will be performed on a car containing a flammable commodity or residue, it is mandatory to have two (2) fully charged 20lb ABC fire extinguishers. One (1) in close proximity to the hot work site and the other one in an easily accessible location close by.

11. Where individuals are performing hot work on an uncleaned railcar radios must be available to ensure an effective means of communicating during an emergency. This process must be included in the site emergency response plan.

12. If a combustible insulation is present, a suitable means to extinguish a fire must be immediately available when welding, gouging, flame cutting or a similar operation is being performed.

13. When welding, gouging, flame cutting or a similar operation is to be performed, significant quantities of highly combustible materials (paper, wood chips, textile fibres, grass, etc.) must not be within 10 meters (35 feet) of the welding operation. If you are unable to relocate the highly combustible materials, they must be covered with a flame resistant tarp.

14. When welding, cutting, gouging or a similar operation is to be performed on the surface that has a paint system applied to it, using the hierarchy of controls appropriate precautions shall be taken to ensure that the person is not exposed to airborne concentrations above the applicable exposure limits established by the ACGIH or Provincial Legislation, whichever is most restrictive. This may include, but is not limited to:
    - Blasting the area clean prior to the performance of the work
    - Using stripping products to remove coatings, making sure to remove any residue before welding
    - Use wet slurry vacuum removal techniques for removing very toxic coatings
    - Do not grind coatings. Grinding dust may be toxic.
    - The use of engineering controls (e.g., ventilation)
    - The use of appropriate respiratory protection

15. Prior to performing hot work on the jacket of a car containing flammable commodity or residue the following must be completed:
    a. Test the jacket space for any flammable gas local to the work area, through:
    b. an existing access point to in the jacket space
    c. or by creating an access point, local to the work area, into the interstitial space between the shell and jacket using a pneumatic or intrinsically safe drill and keeping the drill bit and work area cool with a suitable coolant.

16. Where any amount of flammable gas is found, the source shall be determined, and if the source is from inside the jacket space it shall be eliminated or controlled

prior to any hot work being performed. Record this on the **Hot Work Hazard Assessment and Task Observation** sheet.

17. If it is reasonably believed that the jacket space may become contaminated with a flammable gas during performance of the work (e.g. product leaks from a tank) then the jacket space shall be continuously monitored.

18. Where contamination is found in the jacket space other than a flammable gas (e.g. sulphur), an assessment of the hazards shall be made and appropriate precautions taken to protect the health and safety of the worker.

19. If the **Hot Work Hazard Assessment and Task Observation** condition is violated, or there is reasonable cause to believe that it may be violated during the performance of the work (e.g. product leaks from a tank into the area of hot work, leaks from a nearby process), the work shall stop immediately while the source is investigated. Retesting must be performed to ensure that the conditions are safe before continuing. The new findings shall be recorded on the **Hot Work Hazard Assessment and Task Observation** sheet.

RESPONSIBILITIES

Employer:

- Ensure that a written program for hot work is developed and maintained in accordance with all relevant legislation.
- Ensure that the hot work program is developed and maintained in consultation with the workplace health and safety committee and/or policy health and safety committee.
- Ensure that the hot work program and associated documentation is current and available to all workers and contractors (as required) performing any hot work.
- Ensure that an adequate assessment of the hazards related to the hot work being performed has been carried out before any worker begins hot work.
- Appoint a person with adequate knowledge, training, and experience to carry out the assessment and maintain a record containing details of the person's knowledge, training, and experience.
- Ensure all workers are given adequate training in recognition of hazards and safe work practices associated with hot work.
- Maintain adequate training records showing who provided the training, who received the training, and the date the training was provided.
- Provide all personal protective equipment (PPE) required to ensure safe work.

Site Supervisor:

- Ensure a full hazard assessment is completed and any hazards are identified and controlled before hot work begins.

- Where rail car contains a flammable commodity or acid base commodity ensure that the Hot Work Hazard Assessment and Task Observation sheet completed.
- Inspect and monitor all hot work jobs to ensure procedures are being followed, and adequate fire protection is provided for a fire watch on site
- Ensure that all work does not begin until all conditions identified have been met.
- Ensure that all personnel follow this policy and procedure.
- Assign an Observer to watch for dangerous sparks in the area above and below the work being completed.

Manager of Quality Assurance Department:

- When hot work is to be performed on a rail car determine the last contents of the rail car and if possible determine the paint system.
- Perform/delegate required testing on the car to ensure the car is safe to work on and/or identify control measures required to eliminate risk.
- Place an ONTC pass or fail sticker on the car to indicate quality assurance testing compete.

Observer:

- Ensure all conditions, precautions and controls are followed.
- Watch for sparks in the area above and below the work being completed.
- Conduct fire watch at all times including any coffee breaks or lunch breaks for 60 minutes after any hot work has been completed. Maintain a fire watch at thirty min intervals to monitor area for 4 hours after work has been completed, in case of flare ups.

Workers:

- Comply with this program and be fully aware of the contents of relevant assessments.
- Notify the site supervisor of any questions or concerns with the hot work being performed or the hot work program.
- Notify the site supervisor of any contraventions of Part 2 of the Canada Labour Code, H&S regulations, and or any ONTC policies and procedures.
- Ensure all required PPE is in worn when conducting hot work.
- Participate in all required training.
- Inspect all cutting torches, and welding equipment for wear, defective parts and any other safety hazard before beginning any hot work and as often as required by the manufactures instructions.

Workplace/Policy Health and Safety Committee:

- Conduct regular audits to ensure the hot work procedures are being adhered to.
- Participate in policy review and provide recommendations to the employer if required

SWITCHING

1. A car that has been dropped off by a switching company (CN, CP, Railserve, etc.) and contains a flammable commodity, is not to be moved with a Trackmobile or similar equipment until an assessment is made to ensure that it is not leaking excessively.
2. Where a car that is leaking to the point where the airborne concentration of gas is likely to exceed 10 percent of the LEL at the coupler, a buffer car shall be positioned between the leaking car and the Track mobile, or similar equipment.
3. The distance set out in Section 3 of Hot Work on Residue/Loaded Rail Cars shall be considered when a car is to be moved such that the car does not enter an area where the requirements of this procedure would be violated (e.g. welding)
4. A car that contains a flammable commodity shall not be brought indoors unless it is confirmed that it is not leaking and it is being brought into an area that meets the requirements of NFPA 497.

Hot Work Hazard Assessment and Task Observation – RECORD RETENTION

When the work has been completed on Residue/Loaded Rail Cars:

1. Quality Assurance Tags to be removed from the car and the hot work hazard assessment and task observation sheets are filed and maintained for a minimum of 2 years.
2. Records for the testing must be kept for a minimum of three years.

TESTING EQUIPMENT

1. The gas monitoring equipment used for this standard is the VENTIS MX4.
2. Where available, the unit is to be set in the PPM mode for all tests.
3. A functional (“bump”) test must be performed on every instrument prior to each day’s use. A functional test is defined as a brief exposure of the monitor to known concentration of gas(s) for the purpose of verifying sensor and alarm operation. It is not intended to be a measure of accuracy of the instrument. The bump test shall be recorded on the bump test form.
4. A full instrument calibration must be performed monthly using certified concentrations of calibration gas(s) and recorded. Each gas-monitoring unit must have a calibration form, which will be maintained with the unit. Record the unit’s model and serial number, date calibrated and the name of the individual performing the calibration. Enter the full span reading for each sensor and the calibration has used.
5. The recommended calibration gas for the LEL sensor is Pentane.
6. The unit shall have the alarm set at 10 percent for LEL.

TRAINING

Any personnel performing hot work on residue/loaded rail cars must receive applicable training including but not limited to Hazard Assessment, WHMIS, and in some

circumstances Transportation of Dangerous Goods. Employees performing the tasks described in the procedure must also be aware of the commodity present in the particular car they are working on.

Personnel performing calibrations, bump testing, or other gas testing must be trained on the specific use and limitations of the particular gas detection devices they are using.

REFERENCES

1. Canada Labour Code R.S.C., 1985, c. L-2, Part II – Occupational Health and Safety
2. Canada Occupational Health & Safety Regulations (SOR/86-304)
3. PSP-S-03 - PROCOR Limited Standard Responsible Care Standard for Hot Work On Residue/Loaded Rails Cars
4. NFPA 51B - Fire prevention in the use of cutting and welding Processes
5. CSA W117.2-12 Safety in Welding, cutting, and allied processes
6. ANSI Z49.1:2012 Safety in Welding, Cutting, and Allied Processes
7. Canadian Centre for Occupational Health & Safety http://www.ccohs.ca/oshanswers/safety_haz/welding/hotwork.html

Lockout Tag out Procedure

Procedure No. HSP-008 **Date Issued: February 9, 2017**		**Revision:** **Date:**
Approved By: **H&S Mgmt Co-chair**	**Approved By:** **H&S Union Co-chair**	**Approved By:** **Director of Operations**

PURPOSE AND SCOPE

To ensure that dangerous machines are properly shut off and not started up again prior to the completion of maintenance or servicing work. This must be followed to avoid the unexpected energization or start up of the machinery or equipment, or the release of stored energy, which could cause injury to employees.

RESPONSIBILITIES

The Supervisor is responsible for ensuring this procedure is adhered to. Employees are to follow the instructions included in this safe operating procedure as well as any additional instructions given by his or her supervisor.

PROCEDURE

The following SIX STEPS are a review of basic steps for safely de-energizing equipment:

1. Notify all "affected employees" that the equipment will be shut down.
2. Shut down the equipment by normal stopping procedures. Open the main disconnect switch or breaker.
   Note: Disconnect switches should never be pulled while they are under load. Shutdown everything you can at the point of operation, then pull the main switch with your LEFT hand while facing away from the switch box.
3. "Isolate" all the equipment's energy sources.
   a. **Electrical-** All Electrical lockouts must be done by designated qualified personnel the only acceptable electrical lock out is to lock the correct disconnect switch in the OFF position. Where possible, it is also advisable to remove the fuses. When an electrical lockout is necessary and the control is a breaker, lockout the breaker where possible or switch off the breaker and lock the panel door,
   b. **Steam/Air/Gas & Hydraulics-** These sources of power can be locked out by chains attached to the valves, by valves with built-in lockout devices or by designing special attachments for the valves. In pneumatic and hydraulic power systems, the pressure between the lock out and the machine must be reduced to zero before any work is begun. The pressure should be reduced slowly through a bleed-off valve. If the system does not incorporate a bleed-off valve, very slowly loosen a line fitting to reduce the pressure.
   c. **Confined Spaces** – Where work is to be done in the confined spaces such as tanks, bins, etc., the supply lines must be blanked off or disconnected. Valves alone must never be depended upon. Pumps or other related power equipment must be locked out and the person in the confined space must keep the key.
4. Lock out and/or tag out the energy isolating devices with assigned, individual locks. Every employee involved must also put their own lockout and tag on each source of power at this time.
5. Release or restrain any stored energy by grounding, blocking, bleeding down, etc.

6. Assure that no personnel are exposed, and then test the equipment to assure that it will not operate. (check the lockout cannot be operated, then try the machine controls to verify a proper disconnect)

Restoring Equipment to Service:

1. Check to Assure that all employees have been safely positioned or removed from the area.
2. Verify that equipment controls are in neutral.
3. Remove lockout devices and/or tags and re-energize the machine or equipment. (each employee involved is responsible for removal of their own lockout and tag)
4. Notify affected employees that servicing is complete and the equipment is ready for use.

REQUIREMENTS

1. Employee should have metal tag with name and number stamped on the tag for each lock out you use. The tag is to be placed on the shank of the lockout each time the lock out is used.
2. Disconnects should be clearly marked to identify the equipment they energize or control.
3. Never depend on a push button as a means of locking out the equipment. The only positive lock out is made at the disconnect or breaker.
4. If you are being reassigned or going off shift and someone else is going to finish the job, your relief must put on their lock out before you remove your lock out
5. Employees will be issued one key with each lock. A duplicate key will be kept in the Supervisor's office. Each lock and key shall be numbered for ease of identification. The duplicate key is to be used in case of emergency.
6. Uno circumstances should lockout be borrowed or loaned.

LOCK OUT REMOVAL PROCEDURE:

1. The area Supervisor shall be informed that a lock out needs to be removed and that the person assigned the lock out cannot be located.
2. The area supervisor will make every effort to contact the lock out owner and documents these attempts
3. If the area supervisor removing the lockout is not the supervisor of the lock out owner, that supervisor will be contacted if possible
4. If the above persons cannot be contacted and the area in question has been inspected and is clear of hazards to everyone, the lock out may be removed (cut-off).

REFERENCES

OSHA Standard: 29 CFR 1910.147
Canada Labour code – Part II

REVISION RECORD

Description of Change	*Date*
Original Issue	2/9/17

DATE FORMALIZED February 2019 REVISED September 17, 2024	CONTRACTOR/SUBCONTRACTOR HEALTH AND SAFETY POLICY

POLICY STATEMENT

In keeping with our values of Safety Full Stop, Go Beyond, Lead the Way, and Never Stop Caring, Ontario Northland Transportation Commission (ONTC) adheres to the requirements of the Canada Labour Code and all applicable Regulations by ensuring that all selected contractors and subcontractors meet the set health and safety standards associated with each project.

All work shall be done safely no matter how urgent the job is and ONTC will assure that all contractors and subcontractors working on any ONTC property and/or project will follow this policy, adhering to all health and safety legislation and working in a manner that puts the safety of each employee/worker and the environment as the top priority.

PURPOSE

The purposes of this policy are to:

- Ensure that the health and safety of all Ontario Northland Transportation Commission (ONTC) employees, equipment, property, and environment are protected when work is being performed by an outside agency.
- Ensure that all contractors retained by the ONTC are compliant with ONTC policies, procedures, standards, and applicable legislation.
- Ensure that all contractor employees and ONTC employees are provided with a safe and healthy work environment.
- Eliminate or minimize the risk of loss to employees, equipment, property, and environment.
- Minimize corporate liabilities.

APPLICATION AND SCOPE

This procedure applies to all ONTC divisions and departments that engage the services of an outside agency to perform work at any level.

DEFINITIONS

Adequate: in relation to a procedure, plan, material, device, object, or thing, means

a) Sufficient for both its intended use and actual use; and
b) Sufficient to protect a worker from occupational illness or occupational injury.

Competent Person: a person who is:

a) qualified because of knowledge, training, and experience to organize the work and its performance,
b) familiar with the Occupational Health and Safety Act and/or the Canada Labour Code and the regulations that apply to the work, and
c) has knowledge of any potential or actual danger to health or safety in the workplace.

Construction: includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project, but does not include any work or undertaking in a mine.

Constructor: a person who undertakes a project for an owner and includes an owner who undertakes all or part of a project by himself/herself or by more than one employer.

Consultant: a person who is retained by ONTC to provide professional non-construction services.

Contractor: any person or entity contracted to provide service to ONTC.

Employer: a person who employs one or more workers, or contracts for the services of one or more workers, and includes a contractor or subcontractor who performs work or supplies services and a contractor or subcontractor who undertakes with an owner, constructor, contractor, or subcontractor, to perform work or supply services.

Lead Employer: an employer who contracts for the services of one or more other employers or independent contractors in relation to one or more confined spaces that are located,
a) in the lead employer's own workplace, or
b) in another employer's workplace.

Prescribed: means established in a Regulation made under the Occupational Health and Safety Act or Canada Labour Code

Project: a construction project, whether public or private, including:
a) the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, watermain, service connection, telegraph, telephone or electrical cable, pipeline, duct or well, or any combination thereof,
b) the moving of a building or structure, and
c) any work or undertaking, or any lands or appurtenances, used in connection with construction.

Project Administrator: a person who leads/coordinates a project.

Regulation: the regulations made under the Occupational Health and Safety Act or the Canada Labour Code.

Subcontractor: a person or company that a contractor pays to do part of a job that the contractor has agreed to do and is responsible for.

SUPPORTING MATERIAL REQUIRED

Contractor Safety Checklist and Orientation Form
ONTC Contractor Health and Safety Responsibility Agreement
Project Hazard Assessment
Contractor Orientation Training Package

PROCEDURE

Once it has been determined that a contractor will be required, a lead must be immediately established regardless of the size of the project. That lead will become the Project Administrator for the purposes of this policy, ensuring that all requirements of this policy are met.

Before Contractors/Subcontractors begin work/project ensure the following are adhered to:

- All Contractors on the property are compliant and current with all legislative licensing requirements.
- All Contractors provide a valid WSIB Clearance Certificate and/or liability insurance before beginning any work on ONTC property.
- Orientation training is provided to contractors prior to commencement of work.
- Contractors understand their contractual obligations under this standard.
- Provide a designated ONTC contact person to ensure Contractors' compliance to ONTC policies, procedures and standards through ongoing work site inspections, communications and reported safety concerns.
- Ensure that application of this standard is delivered and used consistently throughout ONTC operations.
- Where the work/project is occurring in an area where there may be ONTC employees, inform those employees of potential risk and communicate all restrictions and responsibilities.

The Project Administrator shall establish practices so that all Contractors, subcontractors, or contract workers perform their work in a safe and effective manner and meet all the requirements of the Occupational Health and Safety Act, the Canada Labour Code, and the Construction Regulations. The Project Administrator must be adequately familiar with all applicable laws, codes and regulations and be capable of applying them.

Construction Work that meets Provincial "Project" Definition

Where ONTC retains a Contractor with provincial jurisdiction, and the work meets the definition of "project" per the Provincial Construction Regulations, the Contractor will assume the position of Constructor. Under these circumstances:

- ONTC is not responsible for ensuring that Contractors meet their provincial obligations as they relate to applicable Regulations.
- Contractors will assume control of all work at the construction site.
- ONTC will ensure that any Contractor is pre-qualified before awarding any contract and will monitor work activity to ensure work is being done safely and meets expectations.

ONTC will ensure that:

- all Contractors/Subcontractors are properly trained,
- contractors/Subcontractors are monitored and requirements for safety are observed, and

- procedures for safe conduct of the work are in place and known to Contractor's employees.

The Project Administrator shall direct the Contractor in completion of all applicable documentation, as described by the Contractor Safety Prequalification Procedure. The Project Administrator shall ensure that the Constructor maintains full responsibility for safety.

Where the Project Administrator identifies unsafe situations, they are responsible for bringing this forward to the Contractor and shall stop work if deemed necessary.

Non-Construction Work where ONTC is Acting as the "Employer"
The Project Administrator shall review the ONTC's applicable policies and procedures with the contractors/subcontractors. It is recommended that all contractor/subcontractor workers undergo this training orientation, but it is mandatory that at least the contractor's supervisor or site superintendent receive the orientation and then have a method to ensure that this information is passed on to all employees under their direct control.

NOTE: The requirement of "Lead Employer" must be fulfilled if the work is Confined Space Entry work.

It is the responsibility of the Project Administrator to ensure the contractor is aware that project specific training is to be conducted.

The Project Hazard Assessment form shall be completed by the Project Administrator and reviewed with all contractors prior to commencement of work.

Contractors/subcontractors who regularly perform services at ONTC must complete a Contractor Training Orientation on an annual basis or whenever there is a change in personnel or applicable and safety conditions which may affect the contractor's/subcontractor's workers. For project contracts, a Hazard Safety Assessment form will be completed each time the contractor performs a new project, unless the same contract personnel have performed project work of a similar nature within the previous 12 months.

Prequalification
Pre-Qualification of a contractor is designed to ensure that the contractor has:

- Appropriate current and sufficient insurance,
- WSIB Coverage,
- An appropriate and compliant health and safety policy,
- Competent supervisors, and
- A program to completely undertake and control the construction work being conducted at ONTC.

When pre-qualifying a contractor who will not act as "Constructor," ONTC shall determine whether the contractor has the specific policies, procedures, training, and supervision to perform the job safely and in compliance with all provisions of the Occupational Health and Safety Act and the applicable Regulations. Use the Contractor Safety Prequalification form to fulfill this policy obligation.

If the Procurement department is completing the prequalification procedure, input may be required from the Manager of Health and Safety or the Project Administrator if there are specific requirements for a project.

The following items must be submitted by the contractor for prequalification:

- Certificates of insurance – general liability insurance (Minor projects $2,000,000 minimum, Major Projects $5,000,000 minimum).
- WSIB Safety Record – submit a copy for the last 3 years or equivalent accident/injury data.
- Current Clearance certificate – Confirms Contractor has met reporting and payment obligations to WSIB. ONTC requires the Contractor to submit a copy of the clearance certificate every 2 months and before the final payment on the contract has been made.
- Contractor's Health and Safety Policy.
- Past environmental, Health and Safety Records – a copy for the last 2 years.
- Training and Certification Records – Documentation verifying all workers have received the necessary safety training required for the specific job.
- Hazardous material list – List of all hazardous materials that will be brought onto ONTC property.
- ONTC may require a separate work plan detailing higher hazard work activity or any tasks that may tend to produce adverse consequences.

Procurement or the Project Administrator will ensure that the Contractor Health and Safety Responsibility Agreement has been completed by the Contractor.

Procurement or the Project Administrator will ensure current copies of insurance, WSIB clearance certificates, and annual safety reviews are maintained for pre-qualified contractors.

Contractors who have already been prequalified should be reasonably favoured and used for OTNC projects.

Project Management

In all circumstances except where a Contractor has assumed the role of Constructor, the Project Administrator is responsible for health and safety on the project and must halt the project if there are health and safety concerns. The Project Administrator must maintain communication with the Contractor throughout the project.

The Project Administrator is responsible to ensure that all health and safety documentation for the project is completed and maintained.

The Project Administrator is responsible to create an ONTC Project Assessment Folder and complete it with Contractor prior to any work beginning. The folder includes the following documents:

- Signed Contractor Safety Responsibility Agreement,
- Certificates of Insurance – General Liability Insurance,
- WSIB Safety Record,
- Current Clearance Certificate,
- Contractor's health and safety policy and procedures applicable to the work being conducted,
- Training, licensing, and certification records,

- Hazardous materials list and current SDS for material brought onto ONTC property and already onsite that will be used during or encountered during the project,
- Completed Contractor Orientation Training Records,
- Copies of any applicable ONTC procedures that have been reviewed,
- Completed Contractor Prequalification form.

The Project Hazard Assessment form must be filed once the project has been completed and made available for review if required for auditing purposes.

The Project Administrator must ensure that the Contractor Orientation Training is completed for all workers on the project.

On-Site Safety: All ONTC safety procedures (Fall protection, Confined Space Entry, Lockout/Tagout, Ladder Safety, WHMIS, Personal Protection Equipment, Respiratory Protection, etc.) apply to all construction work on ONTC projects, unless the Contractor's procedures exceed ours.

The Project Administrator shall review all applicable safety procedures with contractors/subcontractors at the site. Copies of the ONTC procedures can be obtained through MyPolicies.

The Project Administrator will ensure that daily safety briefings are conducted prior to the beginning of each project workday, as well as regularly inspect the work site as the project requires.

If the Contractor or subcontractor has a question or concern regarding safety on the project, they should speak to the Project Administrator or their immediate supervisor.

All contractor(s) or subcontractor(s) supervisors must report to the Project Administrator:

- Any unsafe actions or conditions,
- Contraventions of the Occupational Health and Safety Act, Canada Labour Code and Regulations or any ONTC safety procedure, or
- Existence of any hazard at the project.

Any incident (first aid, near miss, etc.) on the project must be immediately reported to the Project Administrator.

NOTE: Workers and their supervisors shall be held accountable for violations of health and safety rules, regulations, and procedures. Disciplinary action, where necessary, will be dictated by the ONTC disciplinary procedure and will be based on the merits of the specific case.

RESPONSIBILITIES

To ensure clarity of responsibility, where a Contractor is hired to conduct work for ONTC and the provincial Occupational Health and Safety Act applies in respect of that work, the Contractor will assume the position of Constructor.

No ONTC employee will be assigned to work on the same project as the general contractor unless there is an agreement between the Contractor and ONTC determining the contractor as the Constructor.

Where a project requires more than one Employer, ONTC may enter into an agreement before the commencement of the project to determine control over the project identifying who will be the Constructor.

Employer

The Employer is responsible to:

- Ensure contractors, employees, supervisors, and managers are adequately aware of the provisions and requirements of the Purchasing Policy and Procedure.
- Ensure that contractors, subcontractors, and project worker companies are adequately prequalified in accordance with the Contractor Safety Prequalification Form for large projects or projects where the combined value of the project exceeds $50,000.00 and where ONTC is the Constructor.
- Ensure contractors, subcontractors and project worker companies have agreed with and endorsed in writing the terms of the Contractor Health and Safety Responsibility Agreement.
- Properly implement and periodically audit the Contractor prequalification and safety procedure.
- Ensure that authorized staff comply within the Contractor Prequalification and Safety Procedure.
- Discipline and or remove from the authorized contractors list any contractor that fails to comply with this procedure.

Procurement

The Procurement Department is responsible to:

- Conduct prequalification in conjunction with the Project Administrator for consultants and service providers and ensure completion of the Contractor Health and Safety Responsibility Agreement.
- Where required ensure the Contractor completes the Prequalification Form before any construction work is initiated on any of the ONTC properties.
- Maintain a list of all service agreements, memoranda of understanding, and service contracts.
- Obtain a current copy of WSIB Clearance Certificates and Insurance Certificate for pre-qualified consultants and service providers.

Project Administrator

The Project Administrator is responsible to:

- Contract a prequalified contractor.
- Ensure contractors, subcontractors and project worker companies are prequalified in accordance with the Contractor Safety Prequalification Form.
- Ensure the Contractor completes the Contractor Orientation Training with the Contractor's workers prior to the beginning of a project.
- Complete with the Contractor and maintain the Project Hazard Assessment.
- Request applicable training records, certificates, licenses, and written procedures and measures from the Contractor as required.
- Ensure the Contractor Health and Safety Responsibility Agreement is completed by the Contractor prior to the beginning of work.

- Conduct safety briefings with the Contractor(s) prior to the work beginning and as required by the project.
- Periodically view the work areas to ensure compliance with the Occupational Health and Safety Act, associated Regulations and the relevant ONTC safety procedures.
- Respond to safety concerns from contractors and others impacted by a project.
- Ensure all relevant ONTC safety procedures are being implemented at the project.
- Ensure all contractors have provided SDS for all hazardous product used and that the SDS are readily available if stored on ONTC property.
- Inform the supervisor and employees in the area where the work/project is occurring of potential risk, including restrictions and responsibilities needed to ensure their safety.

Where a Contractor is hired to perform work for ONTC and the work is subject to the requirements of the Occupational Health and Safety Act, the Contractor will assume the position of Constructor. The aforementioned duties or similar must then be completed by the Contractor.

Note: The Contractor – Constructor will be required to utilize their own prequalification and safety contract documents for any and all subcontractors hired to perform work on the project.

Contractors

Contractors are responsible to:

- Employ competent Supervisors and Workers.
- Comply with the Contractor Prequalification and Safety Procedure.
- Complete the ONTC Project Hazard Assessment and Contractor Health and Safety Responsibility Agreement.
- Furnish the ONTC with hard copies of applicable training records, certificates, licenses and written procedures and measures as required.
- Ensure that the Contractor Safety Checklist and Orientation form are completed and signed.
- Notify the Project Administrator of any questions or concerns with Contractor Prequalification and Safety Policies.
- Notify the Project Administrator of any contraventions of the Act or ONTC's Procedures.
- Participate in required safety training.
- Provide WSIB documentation and/or liability insurance confirming the Contractor is registered and their account is in good standing.
- Have all products used in their process evaluated by ONTC personnel prior to the products being brought onto ONTC property. This will be done through the evaluation of Safety Data Sheets (SDS) provided by the Contractor/subcontractor.
- Ensure copies of all SDS are readily available.
- Immediately inform designated ONTC contact person of there are any changes in their process or products used in their operation.
- Prior to entering ONTC property, register with Security, appropriate supervisor or designated ONTC contact person for direction.
- Ensure that all equipment and vehicles are properly maintained and meet prescribed safety standards, e.g., no loose pins on backhoe extensions or arms, safety pins and safety features are working properly.

Workplace/Policy Health and Safety Committees

The WHSC/PHSC are responsible to:

- Participate in the development and review of the Contractor/Subcontractor Health and Safety Policy, procedure, and applicable forms.
- Serve as a resource to employees regarding the Contractor/Subcontractor Health and Safety Policy, procedure, and applicable forms.

Manager Health and Safety

The Health and Safety Department is responsible to:

- Provide assistance if needed with prequalification process of contractors as required by the Procurement Department and/or the Project Administrator.
- Approve/disapprove exceptions to the Contractor Safety Prequalification process.
- Facilitate the development and review of the Contractor/Subcontractor Health and Safety Policy, procedure, and applicable forms.
- Apply and audit compliance, and discharge discipline when required, specific to the Contractor/ Subcontractor Health and Safety Policy, procedure, and applicable forms.

TRAINING

ONTC is responsible to ensure that those ONTC employees who have duties and responsibilities to act under this procedure are adequately trained in these duties as applicable.

The training shall reinforce the hazard control hierarchy as follows:

- **Elimination**: activities or practices that involve the complete removal of the hazard from the worker in the workplace.
- **Substitution**: involves the replacement of high hazard task or workplace circumstance with a lower hazard task or workplace circumstance.
- **Engineering Controls**: involves creating and using designed infrastructure or equipment to minimize a hazard.
- **Administrative Controls**: involves creating protocols involving stated obligations and prohibitions that change the way people work.
    - E.g., **Warning Signs**: postings and placards that communicate the presence of a hazard as well as hazard control directives.
- **Personal Protective Equipment (PPE)**: involves the use of gear that is worn by the worker to create a barrier between the hazard and the worker. PPE can include gloves, respirators, hard hats, safety glasses, high-visibility clothing, and safety footwear.

The Manager, Health and Safety will ensure that the training is refreshed at adequate frequency.

Retraining will be provided for all authorized workers or contractors whenever there is a change in their job assignments, a change in condition, equipment or processes that presents a new hazard, or when there is a change in the Contractor Safety Prequalification Process.

Additional retraining shall also be conducted whenever a periodic inspection reveals, or whenever there is reason to believe, that there are deviations from or inadequacies in workers' knowledge or use of the Contractor Safety Prequalification Process. The Project Hazard Assessment will be updated to add any additional hazards and corresponding controls, as required.

APPENDICES/EDUCATIONAL MATERIAL

- Contractor Safety Prequalification Form
- Contractor Health and Safety Responsibility Agreement
- Contractor Safety Checklist and Orientation
- Project Hazard Assessment

REFERENCES

- Ontario Occupational Health and Safety Act R.S.O 1990
- O.Reg 213/91 Construction Projects
- Canada Labour Code R.S.C., 1985 c L-2
- Canada Occupational Health and Safety Regulations SOR/86-304
- Contractors Subcontractors Safety NBRHC OH&S4-017

PART 4

REQUEST FOR PROPOSALS

FORM OF PROPOSAL

Note: Respondent is required to complete Part 4 in its entirety in order to be considered as having submitted a complete Proposal. Part 4 will be provided in Word format to Respondents who return Schedule 2-B - Participation Registration Form.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 1
PROPOSAL SUBMISSION FORM

RFP Number: RFP 2025 067
Description: RRC Whitson Office Renovation

Submitted To: ONTARIO NORTHLAND TRANSPORTATION COMMISSION

I/We,_____
(*Name of Respondent(s)*)

having carefully examined, understood, and completed the Request For Proposals Documents as described in Section 2 - The RFP Documents, and Addenda No. ___ to No.___, inclusive, and having familiarized ourselves thoroughly with local conditions, hereby agree to supply the services associated with the RRC Whitson Office Renovation as outlined on this Proposal Form 1-A.

The price set out in Proposal Form 1-A shall include any specified allowance, and all taxes (**excluding HST)** except as may be otherwise provided in the RFP Documents, and to furnish all materials, labour, equipment and transportation to perform the entire Work described in the RFP Documents, in the manner prescribed therein, and in accordance with the specifications.

Upon award, the Successful Respondent shall submit a detailed Cost Breakdown supporting the total price submitted.

PRICING FOR CHANGE ORDERS / CHANGE DIRECTIVES:

Please quote overhead and profit percentage based on the following project cost ranges:

Project Costs	Overhead %	Profit %
$0 up to $9,999		
$10,000 up to $49,999		
$50,000 up to $99,999		
$100,000 up to 149,999		
$150,000 up to $200,000		
$200,000 and higher		

Please note that these project cost ranges apply to the aggregate spend of all change orders and not on a per change order basis. Any OH&P applied shall be calculated against the subtotal of the applicable change order only. ONTC reserves the right to not accept the percentage values provided in the table above and any future change order markups will be reviewed and agreed upon by ONTC and contractor.

Hourly Rates
In the following table, enter the hourly rates in respect of all proposed Personnel that will perform the Services and/or provide the Deliverables. Personnel should include various positions required for support. Please add additional lines as required or attach the hourly rate breakdowns to this Proposal Form 1.

Role and Experience Level	Hourly Rate
Project Manager	**$**

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

Hourly Rates
In the following table, enter the hourly rates in respect of all proposed Personnel that will perform the Services and/or provide the Deliverables. Personnel should include various positions required for support. Please add additional lines as required or attach the hourly rate breakdowns to this Proposal Form 1.

Role and Experience Level	**Hourly Rate**
Site Supervisor	**$**
Estimator	**$**
Scheduler	**$**
Civil	**$**
Carpentry	**$**
Mechanical	**$**
Masonry/ Concrete	**$**
Electrician	**$**
Plumber	**$**

The award of the Contract is subject to budgetary approval.

ONTC reserves the right, in its sole discretion, to disqualify any Respondent that is a U.S. Business as defined in Proposal Form 2.

ONTC reserves the right in its sole discretion to sub-divide and/or bundle the Goods and/or Services which are the subject of this RFP and award one or any number of separate contracts for the Goods and/or Services.

Proposal Forms

The information contained in the Proposal Forms, as listed in the Request for Proposals and attached hereto, forms an integral part of this Proposal.

Declarations

We hereby declare that:

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

(a) We will execute the Agreement within ten (10) Working Days of receipt of the Final Agreement;

(b) We agree to perform and fully complete the Work on or before the agreed upon schedule;

(c) The Work is to start no later than the agreed upon start date in the schedule;

(d) Work is deemed to be complete when Work has achieved Substantial Performance as defined in the *Construction Act*;

(e) The statutory holdback pursuant to the Construction Act will be 10% and a warranty holdback of 2.5%;

(f) We will provide the required evidence of insurance, as specified in the ONTC - Supplementary Conditions - CCDC 2 - 2020 included in Part 5 of the RFP Documents, with our execution of the Agreement;

(g) For the General Liability Insurance, Ontario Northland Transportation Commission is to be included as an additional insured;

(h) Coverages and limits of insurances will be provided and maintained by all Subcontractors in accordance with subsection (f) above;

(i) No person, corporation or other legal entity other than the undersigned has any interest in this Proposal or in the proposed Contract for which this Proposal is made;

(j) This Proposal is irrevocable for a period of ninety (90) days from the Submission Deadline;

(k) It is understood and agreed that if this Proposal is accepted, we will not commence the Work until we have executed the Final Agreement and delivered it to ONTC and/or we are advised in writing by ONTC to proceed with the Work;

(l) All copies of plans and specifications and other said RFP Documents furnished to us for the purpose of this Proposal are the property of ONTC and shall be kept confidential and not divulged in any manner by us. They will not be used on other work by us and will be returned to the issuing office when requested or promptly when not bidding; and

(m) We have no right to reimbursement by ONTC for expenses, both direct and indirect, which may have been incurred by us in preparing this Proposal or otherwise participating in the RFP Process.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

Signed and submitted for and on behalf of:

Contractor: _____
(Company Name)

_____
(Street Address or Postal Box Number)

_____
(City, Province and Postal Code)

Signature: _____
I have authority to bind the corporation.

Name and Title: _____

_____

Email: _____

Dated at _____ this _____ day of _____, 2025.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 1-A
PROPOSAL SUBMISSION FORM
SCHEDULE OF PRICES

Please refer to the separate Schedule A - Schedule of Prices excel worksheet. This form must be completed as part of the Proposal.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 2
RESPONDENT'S GENERAL INFORMATION

The Respondent must complete this document and submit it as part of their Proposal.

Name *Please indicate the complete legal name of the firm*	
Tax Registration # (HST)	
Tax Registration # (GST)	
Tax Registration # (QST)	
Address	
Telephone Number	
Web Address	
Please indicate any other name(s) under which the firm operates *(if applicable)*	

Owner ☐ Partnership ☐ Corporation ☐

Relationship *(if applicable)*

Parent Company	
Subsidiaries	
Affiliates	

Ontario Business: Yes ☐ No ☐

"Ontario Business": A supplier, manufacturer or distributor of any business structure that conducts its activities on a permanent basis in Ontario. The business either has its headquarters or a main office in Ontario or has at least 250 full-time employees in Ontario at the time of this RFP.

Canadian Business: Yes ☐ No ☐

"Canadian Business": A supplier, manufacturer or distributor of any business structure that conducts its activities on a permanent basis in Canada. The business either has its headquarters or a main office in any province or territory within Canada or has at least 250 full-time employees in any one province or territory within Canada at the time of this RFP.

Canadian Trade Partner Country: Yes ☐ No ☐

"Canadian Trade Partner Country": A country that is signatory to one or more of the following trade agreements:

- Comprehensive Economic and Trade Agreement (CETA);
- World Trade Organization's Agreement on Government Procurement (WTO-GPA);
- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); or,
- Canada-UK Trade Continuity Agreement (Canada-UK TCA).

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 2 *cont'd*
RESPONDENT'S GENERAL INFORMATION

U.S. Business: Yes ☐ No ☐

"U.S. Business": A supplier, manufacturer or distributor of any business structure (including a sole proprietorship, partnership, corporation or other business structure) that (i) has its headquarters or main office located in the U.S., and (ii) has fewer than 250 full-time employees in Canada at the time of the applicable procurement process. If a Respondent is a subsidiary of another corporation, part 1 of the definition above is met if that Respondent is controlled by a corporation that has its headquarters or main office located in the U.S.

If the Respondent has not demonstrated eligibility with a "No" response to being a U.S. Business, ONTC reserves the right, in its sole discretion, to disqualify the Respondent.

Bill S-211

ONTC adheres to, and reports under the Government of Canada's Bill S-211 Fighting Against Forced Labour and Child Labour in Supply Chains Act.

1. Is your company required to report under the Government of Canada's Bill S-211 Fighting Against Forced Labour and Child Labour in Supply Chains Act? Yes ☐ No ☐

2. Is your company compliant with the Government of Canada's Bill S-211 Fighting Against Forced Labour and Child Labour in Supply Chains Act? Yes ☐ No ☐

3. Has your company been involved in forced and/or child labour in the past? Yes ☐ No ☐
   If yes, please provide details including date and action taken to mitigate.

_____
_____
_____
_____
_____

Main Contact Person *(for the purposes of this Proposal)*

Name	
Title	
Telephone #	Fax #
E-mail address	

Indicate below your company/business' invoice terms:

_____

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 2 *cont'd*
RESPONDENT'S GENERAL INFORMATION

Does your company/business have the capability to handle Electronic Funds Transfers?

YES_____ NO_____

If yes, please provide the necessary banking information as part of your submission.

If available, please provide your Dunn & Bradstreet Reference Number:

_____

How many years of experience does your company have in the provision of goods or services proposed herein? ☐

Subcontractors

The Respondent must indicate where they will use subcontractors for specific services.

Description of Services	Subcontractor's Name	% Contract Value	Telephone Number

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 3
ACKNOWLEDGMENT TO COMPLY WITH PART 3 - REQUEST FOR PROPOSALS SPECIFICATIONS

ONTC is committed to procuring goods and services through a process that is conducted in a fair and transparent manner, providing equal opportunity to vendors.

ONTC endeavors to provide specifications that meet the requirements of the procurement without naming specific brands. However, there may be instances where a third-party consultant prepares a specification on behalf of ONTC, and a specific brand is named. In these instances, alternates may be used if deemed equal by ONTC and/or the third-party consultant. Respondents shall submit proposed deemed equivalents as a clarification item to be considered while the procurement remains open in accordance with the requirements of Part 1, Section 3, item 3.2 Questions and Communications Related to the RFP Documents.

Respondent acknowledges that they can fully comply with Part 3 - Request for Proposals Specifications.

(Check one) YES_____; NO_____

If the Respondent indicates “NO”, they shall provide details as an attachment to this Proposal Form 3, indicating how they will deviate from the requirements identified in Part 3 - Requests for Proposals - Specifications.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 4
REFERENCES

The Respondent must supply here the reference information of three (3) relevant customers for which they have provided similar services within the last five (5) years. ONTC is **NOT** to be listed as a Reference.

Reference #1

Company name	
Location	
Description of services provided	
Start and end dates	
Value of the contract	
Contact person name and title	
Phone	E-mail

Reference #2

Company name	
Location	
Description of services provided	
Start and end dates	
Value of the contract	
Contact person name and title	
Phone	E-mail

Reference #3

Company name	
Location	
Description of services provided	
Start and end dates	
Value of the contract	
Contact person name and title	
Phone	E-mail

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 5
COMPLIANCE WITH CONTRACT DOCUMENTS

The Respondent may suggest changes to the Supplementary Conditions included in Part 5 of this RFP using the table below. ONTC does not have any obligation to accept any proposed changes to the Supplementary Conditions and will do so in its sole discretion. Significant material proposed changes to the Supplementary Conditions may impact the evaluation of the Respondent's proposal. ONTC will not accept any material changes to the clauses in the Supplementary Conditions relating to Confidentiality, Personal Information, Intellectual Property ownership and infringement, Indemnification, Limitation of Liability or rights of ONTC on termination. ONTC, as an Ontario Crown corporation, is unable to provide indemnities pursuant to s.28 of the *Financial Administration Act* (Ontario).

Exception	Supplementary Conditions, ONTC Schedule, Article, or Sub-Clause	Existing Wording	Respondent's Proposed Wording	Reason for Proposed Change
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 6
RESPONDENTS' SITE VISIT REGISTRATION FORM

Reference Number: RFP 2025 067

Title: RRC Whitson Office Renovation

Submitted To: ONTARIO NORTHLAND TRANSPORTATION COMMISSION

Please confirm that you plan to attend the **Non-Mandatory** Respondents' Meeting by emailing a completed copy of this **Registration Form** and **Release of Liability** to nicole.laplante@ontarionorthland.ca, prior to Wednesday, September 3, 2025 at 4:00 p.m.

Failure to submit this form by the time required may result in ONTC not being able to accommodate your attendance.

Date of Meeting: Thursday, September 4, 2025

Time of Meeting: 2:00 p.m.

Location: 435 Whitson Street, North Bay, ON

COMPANY NAME: _____

CONTACT NAME: _____

ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

NUMBER OF PERSONS ATTENDING: _____

PLEASE BRING THE FOLLOWING PERSONAL PROTECTIVE EQUIPMENT:
SAFETY BOOTS, REFLECTIVE VEST, HARD HAT, AND SAFETY GLASSES WITH SIDE SHIELDS

ACCOMMODATION: ONTARIO NORTHLAND IS AN EQUAL OPPORTUNITY ORGANIZATION. ACCOMMODATION IS AVAILABLE FOR RESPONDENT'S WITH DISABILITIES THROUGHOUT THE PROCUREMENT PROCESS. IF ACCOMMODATION IS REQUIRED, PLEASE CONTACT NICOLE LAPLANTE AT nicole.laplante@ontarionorthland.ca.

NOTE: THE ATTACHED RELEASE OF LIABILITY WILL BE REQUIRED TO BE EXECUTED BY ANY PERSONS ATTENDING THE SITE MEETING PRIOR TO ATTENDANCE.

RELEASE OF LIABILITY
IN RESPECT OF ENTERING AND WORKING UPON
ONTARIO NORTHLAND TRANSPORTATION COMMISSION PROPERTY

The undersigned applicant requests permission of Ontario Northland Transportation Commission (hereinafter referred to as "ONTC") to enter on ONTC property to attend a non-mandatory site meeting commencing at 2:00 p.m. on Thursday, September 4, 2025, in North Bay, Ontario, associated with RFP 2025 067.

In consideration of ONTC permitting the Applicant and his/her/its employees, servants and agents to enter ONTC property for the purpose of the site meeting, the Applicant agrees it shall:

1. follow all instructions and directions from ONTC representatives while on ONTC property;
2. be liable for any and all damages to persons or property which may arise out of or be connected with the Applicant's entry on ONTC property, and the Applicant agrees to indemnify ONTC against any and all actions, suits, claims, damages, costs, liability and expenses which may arise by reason of the Applicant's operations while on ONTC property.
3. fully indemnify and save harmless ONTC, its officers, directors, employees, consultants, sub consultants, contractors, and agents (collectively “ONTC Indemnitees”) from any kind of liability, suit, claim, demand, fine, action, loss, damage, legal cost and disbursement, or for which ONTC or ONTC Indemnities may become liable or suffer in connection with the Applicant’s entry on ONTC property. For the purposes of this indemnity, ONTC is acting as the trustee of the ONTC Indemnitees. This indemnity section will survive the expiry of this permission;
4. enter on ONTC property at the sole cost, risk and expense of the Applicant; and,
5. release and discharge ONTC, its employees, servants and agents of and from any and all claims and demands of whatever nature and howsoever caused by reason of any loss, damage or injury to person or property which the Applicant or its employees, servants and agents may sustain or suffer while on ONTC property.

DATED AT_____THIS _____ DAY OF_____, 2025.

Applicant_____Witness _____

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 7
HEALTH, SAFETY AND ENVIRONMENT

Respondents shall review the attached Health and Safety Policy Statement and include the following with their Proposal:

1. Submit a copy of the most recent version of your Health, Safety, and Environmental Protection Policy.

2. Provide evidence of compliance with the Occupational Health and Safety Act (OHSA), Construction Projects Regulation (O. Reg. 213/91), Environmental Protection Act (EPA), and ONTC's Technical Specifications. For example, include a comprehensive health and safety plan, provide Certificate of Recognition (COR) for the Infrastructure Health and Safety Association (IHSA) or equivalent, demonstrate experience and training in relevant areas, such as working at heights, confined space entry, etc. Include a plan for managing environmental impacts during the project, such as waste disposal, noise control, dust suppression, etc.

3. Submit the attached Contractor Health and Safety Responsibility Agreement.

4. Submit the attached Contractor Safety Pre-Qualification Form and associated supporting documents. The following items must be submitted by the contractor for prequalification:

    - **WSIB Safety Record**: Submit a copy for the last 3 years or equivalent accident/injury data.

    - **Current Clearance Certificate**: Confirms Contractor has met reporting and payment obligations to WSIB. ONTC requires the Contractor to submit a copy of the clearance certificate every 2 months and before the final payment on the contract has been made.

    - **Past environmental, Health and Safety Records**: Copies for the last 2 years.

    - **Training and Certification Records**: Documentation verifying all workers have received the necessary safety training required in relation to the scope of the RFP.

    - **Hazardous Material List**: List of all hazardous materials that will be brought onto ONTC property, if applicable.

    - ONTC may require a separate work plan detailing higher hazard work activity or any tasks that may tend to produce adverse consequences.

5. Respondents shall also provide copies of asbestos abatement training

    Respondents must pass the Contractor Safety Pre-Qualification. Failure to pass will result in disqualification from the procurement process.

DATE FORMALIZED April 2016 REVISED February 2023	**Health and Safety Policy**

POLICY STATEMENT

In keeping with our value of *Safety. Full Stop*. Ontario Northland Transportation Commission (ONTC) / Nipissing Central Railway (NCR) is committed to providing a safe and healthy work environment. Safety is core to everything we do. We don't settle for less, for our people or our customers, even when operating pressures make it difficult to do so.

As part of developing a safety culture, we will collectively strive to prevent accidents and incidents through a risk-based approach with the goal to continuously improve. Employees are required to report safety concerns immediately and can do so without fear of reprisal, while management ensures all employees receive quick follow-up.

We will adopt the latest in systems to improve the reporting, investigation, and implementation of corrective actions, close-out, and trend analysis of accidents and incidents. We will communicate safety and encourage engagement at all levels of the organization, such as during tailgates, briefings, and meetings.

The success of ONTC/NCR safety programs will be ensured through the collective and cooperative efforts of all, including management, employees, unions, and Workplace Health and Safety Committees. All ONTC/NCR members will jointly participate in safety, health and loss prevention initiatives to ensure a safe and healthy workplace for all employees.



Chad Evans
President and CEO

CONTRACTOR HEALTH AND SAFETY RESPONSIBILITY AGREEMENT

In submitting this Proposal, I/We, on behalf of, _____
(legal name of company)
certify the following:

(a) I/We have a health and safety policy and will maintain a program to implement such policy as required by clause 25(2) (j) of the *Occupational Health and Safety Act*, R.S.O. 1990, c.O.1, as amended, (the "OHSA").

The requirements in (a) do not apply to employers with five (5) or less employees.

(b) With respect to the Services being offered in this Proposal, I/We and on behalf of our proposed sub-consultants, acknowledge the responsibility to, and shall:

(i) fulfill all of the obligations under the OHSA and ensure that all work is carried out in accordance with the OHSA and its regulations;

(ii) ensure that adequate and competent supervision is provided as required under the OHSA to protect the health and safety of workers; and

(iii) provide information and instruction to all employees to ensure they are informed of the hazards inherent in the work and understand the procedures for minimizing the risk of injury or illness.

(c) I/We agree to take precautions reasonable in the circumstances for the protection of worker health and safety, as required under the OHSA.

Dated at _____ this ____ day of _____, 202__

An Authorized Signing Officer _____

(Key Contact)

(Title) _____

(Telephone Number) _____

(Firm's Name) _____

(Firm's Address) _____

Ontario Northland

Contractor Safety Pre-Qualification Form

1. Company Identification:				ONTC Use
Company Name:		Telephone:		
Mailing Address:		Fax:		
		E-mail:		
2. Form of Business:				
☐ Sole Proprietor	☐ Partnership:	☐ Corporation		
3. Officers:			Years with the Company	
President / CEO				
Vice President				
Treasurer				
Who is the manager most responsible for health and safety?				
Name:		Title:		
4. How many years has your business operated under its current name?				
5. Under Current Management Since (Date)				
6. Parent Company Information				
Parent Name:				
City:	Province / State:	Postal / Zip Code:		
Subsidiaries:				
7. Insurance Contact Information				
Title:	Telephone:	Fax:		
8. Insurance Carriers:	Type of Coverage:	Telephone		
9. Organization:				
Describe the nature of the work your company specialized in:				
☐		☐		
☐		☐		
☐		☐		
☐		☐		
☐		☐		
10. Are any of the above services that you perform normally subcontracted to others?		☐ Yes	☐No	

11. Health and Safety Performance			
a) Are any of the above services that you perform normally subcontracted to others?	☐ Yes	☐ No	
b) Can you provide a Workplace Safety & Insurance Clearance Certificate?	☐ Yes	☐ No	
c) Is your company experience rated (CAD-7, NEER)? If yes attach CAD-7 reports for the last 3 years and go to item e). If no, complete item d).	☐ Yes	☐ No	
d) Has an employee of your company suffered a fatal accident or "critical injury" as defined by the *Ontario Occupational Health & Safety Act*? Please provide for the last 3 years: i) total number of lost time accidents by rate group, ii) total number medical aid accidents, iii) total number of hours worked by each rate group	☐ Yes	☐ No	
e) Has your company ever been subjected to a Workwell Audit? If yes, what was your final score? _____	☐ Yes	☐ No	
f) Are there judgements, claims or suits pending or outstanding against your company?	☐ Yes	☐ No	
g) Have you received any regulatory (MOL, MOE, etc.) orders and/or prosecutions in the last 3 years? If yes, provide details of all prosecution and fines for the past 3 years on a separate sheet.	☐ Yes	☐ No	
h) Do you have involvement in provincial safety associations such as the Infrastructure Health & Safety Association (IHSA) and/or Workplace Safety & Prevention Services (WSPS)? If yes, please name:	☐ Yes	☐ No	
_____			
_____			

12. Health and Safety Program and Procedures:			
a) Do you have a written health and safety policy? If yes, include a copy.	☐ Yes	☐ No	
b) Do you have a written health and safety program?	☐ Yes	☐ No	
c) If so, are the following elements addressed?	☐ Yes	☐ No	
i. Participation by all levels in the organization	☐ Yes	☐ No	
ii. Accountabilities & responsibilities for managers, supervisors and employees	☐ Yes	☐ No	
iii. Adequate resourcing for meeting health and safety requirements	☐ Yes	☐ No	
iv. Hazard identification and control	☐ Yes	☐ No	
v. Health and safety performance measurement and evaluation	☐ Yes	☐ No	
vi. Corrective actions implementation	☐ Yes	☐ No	

13. Health and Safety Program: Does the health and safety program include procedures and practice documents such as:			
a) Hazardous Energy Control, Lock-out – Tag-out	☐ Yes	☐ No	

b) Confined Space Entry	☐ Yes	☐ No	
c) Working at Heights, Fall Protection	☐ Yes	☐ No	
d) Personal Protective Equipment (PPE)	☐ Yes	☐ No	
e) Portable / Electric Power Tools			
f) Vehicle Safety	☐ Yes	☐ No	
g) Compressed Gas Cylinders	☐ Yes	☐ No	
h) Electrical Equipment Grounding Assurance	☐ Yes	☐ No	
i) Powered Industrial Vehicles (forklifts, cranes, etc.)	☐ Yes	☐ No	
j) Heavy Construction Equipment (excavators, backhoes, bulldozers, etc.)	☐ Yes	☐ No	
k) Excavation and Trenching	☐ Yes	☐ No	
l) Housekeeping	☐ Yes	☐ No	
m) Accident / Incident Reporting and Investigation	☐ Yes	☐ No	
n) Hazard / Unsafe Condition Identification, Reporting and Communication	☐ Yes	☐ No	
o) Workplace Hazardous Materials information System (WHMIS)	☐ Yes	☐ No	
p) Emergency Action Plan / Evacuation Plan	☐ Yes	☐ No	
q) Spill Response / Reporting	☐ Yes	☐ No	
r) Respiratory Protection	☐ Yes	☐ No	
s) Designated Substances Management	☐ Yes	☐ No	
t) Waste Staging / Disposal	☐ Yes	☐ No	
u) Traffic Control	☐ Yes	☐ No	
v) Hearing Conservation	☐ Yes	☐ No	

14. Do you have a policy/procedure for terminating contracts of subcontractors who do not comply with the requirements of the *Occupational Health & Safety Act,* associated regulations and / or company safety rules?	☐ Yes	☐ No	
15. Do your employees read, write and understand English to the degree that they can safely perform their tasks without the aid of an interpreter? (*If no, provide a description of your plan to assure that they can safety perform their tasks*)	☐ Yes	☐ No	
16. Do you have personnel certified in Emergency First Aid and CPR on site? If yes, provide copies of certificates of training for site personnel proposed for the project?	☐ Yes	☐ No	
17. Do you have First Aid kits available to your staff?	☐ Yes	☐ No	
18. Does your company use a formalized Health and Safety Plan for conducting large projects?	☐ Yes	☐ No	
19. Does the company conduct pre-placement medical examinations?	☐ Yes	☐ No	
20. Is task-adequate PPE provided to workers?	☐ Yes	☐ No	

21. Are employees trained in PPE care, use and maintenance?	☐ Yes	☐ No	
22. Do you have a corrective actions process for addressing individual health and safety performance deficiencies	☐ Yes	☐ No	
23. Equipment and Manuals:			
a. Do you conduct inspections on operating equipment (e.g. excavators, cranes, forklifts, vehicles, etc.) as per regulatory requirements?	☐ Yes	☐ No	
b. Do you maintain operating equipment in compliance with regulatory requirements?	☐ Yes	☐ No	
c. Do you maintain applicable pre-use inspection and maintenance certification records for operating equipment?	☐ Yes	☐ No	
d. Are records available upon request	☐ Yes	☐ No	
24. Subcontractors			
a. Do you use health and safety performance criteria in the selection of contractors?	☐ Yes	☐ No	
b. Do you require your subcontractor to have a written health and safety program?	☐ Yes	☐ No	
c. Are your subcontractors included in	☐ Yes	☐ No	
i. health and safety orientation	☐ Yes	☐ No	
ii. health and safety meetings	☐ Yes	☐ No	
iii. workplace inspections	☐ Yes	☐ No	
iv. health and safety audits	☐ Yes	☐ No	
d. Does the company have a policy for the termination of contracts of subcontractors who do not comply with the Occupation Health and Safety Act, regulations under the Act, contractor rules, programs, protocols policies or procedures?	☐ Yes	☐ No	
e. Does the company have a progressive discipline policy for employees and subcontractors?	☐ Yes	☐ No	
25. Health and Safety Training			
a. Are you aware for the regulatory training requirements for your employees?	☐ Yes	☐ No	
b. Have your employees received the required health and safety training?	☐ Yes	☐ No	
c. Do you have specific health and safety training for supervisors?	☐ Yes	☐ No	
d. Do you keep records of health and safety training for employees?	☐ Yes	☐ No	
e. Are records of health and safety training available on request?	☐ Yes	☐ No	
26. Job Skills			
a. Have employees been trained in appropriate job skills?	☐ Yes	☐ No	
b. Are employee job skills certified where required by regulation or industry standard?	☐ Yes	☐ No	

c. Are certificates available upon request? ☐ Yes ☐ No

27. Health and Safety Supervision

a. Does the company have a health & safety coordinator? ☐ Yes ☐ No

b. Who is the highest ranking safety professional in the company ☐ Yes ☐ No

_____

I agree that the above information is true and correct to the best of my knowledge. I also agree to follow all terms and conditions of the Contractor Safety Program at all times while performing work for ONTC. I understand that supporting documentation may be requested for due diligence verification purposes.

Name: (Please print) _____ Title: _____

Signature: _____ Date: _____

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 8
SCHEDULE AND PROPOSED APPROACH

CONSTRUCTION SCHEDULE

Respondents shall include a schedule with their Proposal. The schedule shall be in Gantt chart format, showing all activities of the Work and the critical path. The schedule shall be designed to ensure conformity with the Contract Time. The Contractor shall ensure that the schedule adheres to all contractual requirements and technical submittal requirements. The construction schedule shall reflect the milestone dates listed below:

Request for Proposal Close	September 24, 2025
Construction Start Date	October 6, 2025
Substantial Completion Date	December 15, 2025
Final Completion Date	January 30, 2026

Do you agree to complete the Work required by January 30, 2026?

Respondent confirms that they will complete the Work required by January 30, 2026.

(Check one) YES_____; NO_____

ONTC has established the date for Completion of the Work with consideration for strict project timelines. As such, and subject to ONTC's sole discretion, a failure to confirm that the work will be completed by the identified date may result in disqualification of the Proposal.

PROPOSED APPROACH

Respondents shall provide a written narrative plan on their proposed approach for the project, demonstrating their ability to complete the project on budget and on schedule within the timelines identified. The Respondent should build in any anticipated delays, supply chain timelines and other factors to provide sufficient time in the schedule to meet provided timelines and mitigate potential delays.

Respondents shall also describe how they will provide an uninterrupted supply of the required goods and/or services to avoid any adverse impact on the project schedule. Respondents must identify any anticipated product delays and build this into the schedule

Evidence of a thorough review of the RFP Documents should be apparent in the Respondent's Schedule and Proposed Approach.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 9
LIST OF EQUIPMENT

List all Equipment, owned or controlled by the Respondent for use on the Work. Such list shall show for each Unit the description of the Unit, capacity, condition, age, present location, the owner's name and all-inclusive hourly rental rates. Such equipment shall be subject to inspection by ONTC to verify the stated information.

ONTC reserves the right to perform random site inspections in order to ensure the Successful Respondent's equipment used to perform the Work coincides with the information provided below. Any deviations may be subject to the terms of the Final Agreement. Any changes to this proposed list of equipment requires prior approval from ONTC.

Quantity	Description	Capacity	Condition	Age	Location	Owner	Hourly Rental Rate

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 10
LIST OF PERSONNEL AND RESUMES

List the names of the key personnel who will be assigned to the Work and **include their full detailed resumes.** This information shall be for the use of ONTC in assessing the Proposal. In the event of a Subcontractor(s) being listed as key personnel, the Respondent shall also include their resume(s).

Roles and Responsibilities of key personnel should include:

- A brief description identifying the role and responsibilities of each key personnel, with respect to the Services requested;
- A resume for each key personnel, including subcontractors, that includes name, role/title, education and qualifications, professional affiliations, professional certifications, years of experience, specialties, and list of relevant project experience.
- A statement indicating whether the key personnel is an employee of the Respondent or is a Subcontractor; and
- A statement of availability of key personnel identified for each role indicating that the individual is available for the required Contract Term.

The Respondent must designate named individuals for each of the following key personnel roles:

Role	Key Responsibilities	Qualifications and Experience	Name of Individual	Actual Years of Experience
Site Supervisor	- A Site Supervisor must be on-site at all times. - The Site Supervisor(s) will be directly overseeing all work, including subcontractors, safety, and quality control. - They are responsible for ensuring all labour and safety requirements are complied with and ensuring the work site is cleaned each workday. Will be the single point of contact for the site. - Shall communicate with ONTC Supervision as required to ensure work is completed safely with no impact on the operations of the facility	Experience: Shall have a minimum of ten (10) years' experience in general contracting.		

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 10 *cont'd*
LIST OF PERSONNEL

Please list all applicable key personnel that will be assigned to the Work in addition to those key personnel provided above:

Role	Key Responsibilities	Qualifications and Experience	Name of Individual	Actual Years of Experience

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 11
CONTRACTOR'S QUALIFICATION STATEMENT

1. The Respondent shall include a company profile that describes the company's core business and indicates the length of time (number of years) the company has been providing similar services. Include company history, the location of head office, other offices, number of employees per location, corporate philosophy and description of the specific services offered and specialties.

   In the event that the Respondent is using a subcontractor(s) for a portion(s) of the scope of work associated with this RFP, they shall also include with this Proposal Form 11, a company profile for each subcontractor.

2. The Respondent shall supply a minimum of three (3) relevant project descriptions for projects of a similar nature and scope that have been completed within the last five (5) years. Provide examples of similar projects where renovations of existing buildings were performed.

   The project descriptions shall include:

   a) Company/Client
   b) Name of contact and contact details
   c) Project Name
   d) The scheduled project start and end date
   e) The actual start and end date
   f) The project value of the Respondent's scope of work for the project at the beginning of the project
   g) The project value of the Respondent's scope of work for the project at the end of the project
   h) Detailed description of the Respondent's scope of work for the project. The description should detail if subcontractors were used to complete part of the scope.
   i) Outcomes of the project (i.e., completed on schedule and on budget etc.)

ONTC may, in its sole discretion, confirm the Respondent's experience in the projects identified by contacting the named contacts above, in addition to the references provided as part of Proposal Form 4.

3. The Respondent shall describe how and when you will use Ontario's local workforce, local vendors, local manufacturers, local contractors, and local apprentices/trainees to achieve the project goals and provide the requested services. Please list any local subcontractors or suppliers being used for the successful completion of this project.

ONTC will consider all information submitted in the Respondent's Proposal when evaluating the Respondent's experience.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 12
SCHEDULE OF MATERIALS

SCHEDULE OF MATERIALS - VARIATIONS (AND SOURCES)

VARIATIONS:

MATERIALS SOURCES:
(ADD WHERE REQUIRED)

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 13
SCHEDULE OF PROGRESS PAYMENTS

Indicate below, the estimate of the monthly progress billings (gross before holdback) for the duration of the Agreement.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 14
CURRENT LABOUR AGREEMENTS

List the current labour agreements the Respondent or each partner in a joint venture has in force covering this type of work in the Province in which the Work is to be performed.

PART 4 - FORM OF PROPOSAL
PROPOSAL FORM 15
CLAIMS

Submit an up to date list of outstanding, pending or anticipated claims, proceedings, liens or other legal claims, actions or proceedings.

PART 5

REQUEST FOR PROPOSALS

CCDC 2 - 2020 SUPPLEMENTARY CONDITIONS

ONTARIO NORTHLAND - SUPPLEMENTARY CONDITIONS – CCDC 2 – 2020 – REVISED 19 SEPT 2024

AMENDMENTS TO THE AGREEMENT BETWEEN *OWNER* AND *CONTRACTOR*

1. ARTICLE A-1 THE WORK

1.1 In paragraph 1.1, delete the words "and for which" and "is acting as and hereinafter called the "*Consultant*"".

1.2 Delete paragraph 1.3 in its entirety and replace it with the following:

"1.3 commence the *Work* by the __ day of _____ in the year 20__ and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents,* attain *Substantial Performance of the Work* by the __ day of _____ in the year 20__, and attain *Ready-for-Takeover* by the __ day of _____ in the year 20__."

2. ARTICLE A-4 CONTRACT PRICE

2.1 Delete paragraph 4.4 and replace it with the following:

"The *Contract Price* shall remain fixed for the duration of the *Contract Time*, subject only to adjustments as provided for in the *Contract Documents*. For certainty, the *Contractor* assumes all risks in connection with cost increases for *Products*, labour, and *Construction Equipment* prescribed by the *Contract Documents* for the performance of the *Work*, and the *Contractor* assumes all responsibility for liabilities and additional costs that may arise as a result of the *Contractor*'s inclusion of any *Product*, *Construction Equipment*, *Supplier*, or *Subcontractor* in its calculation of the *Contract Price*."

3. ARTICLE A-5 PAYMENT

3.1 Delete paragraph 5.1 in its entirety, including all subparagraphs thereunder and replace it with the following:

"5.1 Subject to the provisions of the *Contract Documents* and the *Construction Act*, the *Owner* shall:

.1 make progress payments to the *Contractor* on account of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payments,

.2 upon *Substantial Performance of the Work*, as jointly certified by the *Owner* and the *Contractor*, and upon the expiry of the holdback period that follows the publication of the certificate of *Substantial Performance of the Work*, as stipulated in the *Construction Act*, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* the unpaid balance of the holdback, together with such *Value Added Taxes* as may be applicable to such payment, less any amount stated in any Notice of Non-Payment that is published by the *Owner* in accordance with the *Construction Act*, and

.3 after *Ready-for-Takeover* has been achieved in accordance with the *Contract Documents* and the *Work* is complete, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* the unpaid balance of the *Contract Price* in accordance with GC 5.5. – FINAL PAYMENT, together with such *Value Added Taxes* as may be applicable to such payment."

3.2 Delete paragraph 5.2, including all subparagraphs thereunder in its entirety and replace it with the following:

"5.2 Interest on late payments, if any, will be in accordance with the *Construction Act*."

4. ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

4.1 Delete the text of ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING (retaining the provisions setting out the addresses of the Owner, Contractor and Consultant) and replace it with the following:

"6.1 *Notices in Writing* between the parties or between them shall be considered to have been received by the addressee on the date of receipt if delivered by hand or by commercial courier during normal business hours or if sent during normal business hours by e-mail during the transmission of which no indication of failure of receipt is communicated to the sender, and addressed as set out below. Such *Notices in Writing*

will be deemed to be received by the addressee on the next *Working Day* if sent by e-mail after normal business hours or if sent by overnight commercial courier. Such *Notices in Writing* will be deemed to be received by the addressee on the fifth *Working Day* following the date of mailing, if sent by pre-paid registered post, when addressed as set out below. An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this article."

5. ARTICLE A-9 CONFLICT OF INTEREST

5.1 Add new Article A-9 as follows:

"**ARTICLE A-9 CONFLICT OF INTEREST**

9.1 The *Contractor*, all of the *Subcontractors,* and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a *Conflict of Interest* (actually or potentially, in the sole opinion of the *Owner*) with the provision of the *Work* pursuant to the *Contract*.

9.2 The *Contractor* shall disclose to the *Owner*, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a *Conflict of Interest* or a potential *Conflict of Interest*, including the retention of any *Subcontractor* or *Supplier* that is directly or indirectly affiliated with or related to the *Contractor*."

6. ARTICLE A-10 TIME OF THE ESSENCE / LIQUIDATED DAMAGES

6.1 Add new Article A-10 as follows:

"**ARTICLE A-10 TIME OF THE ESSENCE/LIQUIDATED DAMAGES** as follows:

10.1 It is agreed that one of the reasons the *Contractor* was selected by the *Owner* for this *Contract* is the *Contractor*'s representation and warranty that it will attain *Substantial Performance of the Work* and *Ready-for-Takeover* within the *Contract Time* stated in Article A-1.3 of this *Contract.* The *Contractor* acknowledges that it has been advised by the *Owner* that it is critical to the *Owner* that *Substantial Performance of the Work* and *Ready-for-Takeover* is achieved within the *Contract Time*. The *Contractor* agrees that time is of the essence in the performance of the *Contractor*'s obligations under this *Contract*.

10.2 The *Contractor* further acknowledges its understanding that the *Owner* is responsible and must account to the Government of Ontario, its customers and passengers and the residents of Northern Ontario. A failure by the *Contractor* to attain *Substantial Performance of the Work* and *Ready-for-Takeover* within the *Contract Time* will result in damages to the *Owner* and to the Government of Ontario, its customers and passengers and the residents and businesses in Northern Ontario, which would be difficult or impractical to quantify but would nevertheless have a significant negative impact on the *Owner* and its ability to provide the services the *Owner* is obliged to provide to the residents and businesses in Northern Ontario.

10.3 Given the significance of the requirement for the *Contractor* to achieve *Substantial Performance of the Work* and *Ready-for-Takeover*, as described in Article A-10.2, the *Contractor* further acknowledges and agrees that, without limiting the *Owner*'s entitlement to any additional or other damages, if it fails to achieve *Substantial Performance of the Work* and *Ready-for-Takeover* within the *Contract Time*, the *Owner* will incur substantial damages and the extent of such damages shall be incapable or very difficult of accurate measurement. Nonetheless, the parties acknowledge that as of the effective date of this *Contract*, the amount of liquidated damages set forth in subparagraph 10.4 below represents a good faith estimate on the part of the parties as to the actual potential damages that the *Owner* would suffer because of late completion of the *Project*. It is expressly acknowledged and agreed by and between the parties that the amount of such liquidated damages does not include any penalty. Notwithstanding the foregoing, where the *Project* is delayed beyond the *Contract Time*, the *Owner* shall be entitled to (i) the liquidated damages as calculated pursuant to Article A-10.4, or (ii) in the event that the *Contractor* claims that this liquidated damages provision is invalid or unenforceable and the *Contractor* prevails on such a defence, the damages arising from the delay suffered by the *Owner* including, without limitation, consequential, special, incidental, and indirect damages, costs and other expenses incurred or suffered by the *Owner*.

10.4 The *Owner* shall require that the *Contractor* pay to the *Owner* (or have deducted from Contract payments) liquidated damages at the per diem rate set out in the *Contract Documents* for each calendar day of delay beyond the prescribed date for *Ready-for-Takeover* until *Ready-for-Takeover* is achieved and certified, pursuant to the terms of the *Contract*. If there is no per diem rate set out in the *Contract Documents*, the *Contractor* shall pay to the *Owner* the *Administration Costs* incurred by the *Owner* as a result of the delay.

10.5 Liquidated damages will be assessed as incurred and reflected as deductions from amounts that may be due under any applications for payment pending at the time that such liquidated damages are assessed. All liquidated damages not deducted from payments prior to final payment shall be deducted from the final payment to be made by the *Owner* to the *Contractor* pursuant to GC 5.5 FINAL PAYMENT and any amount of liquidated damages in excess of the final payment amount, shall be paid by the *Contractor* to the *Owner*, within 30 days following a written demand by the *Owner* for such payment.

10.6 The liquidated damages payable under this paragraph are in addition to and without prejudice to any other remedy, action or any other alternative claim that may be available to the *Owner*."

AMENDMENTS TO THE DEFINITIONS

7. DEFINITIONS

7.1 Add the following new definitions:

Acceptance and *Accepted* means the *Owner* and the *Consultant* acknowledges that the work for a *Submittal* has been completed and that the *Submittal* on its face conforms to the requirements of the *Contract Documents*. *Acceptance* does not mean confirmation by the *Owner* or the *Consultant* that the *Submittal* does not contain errors or omissions, defects, deficiencies or deviations from the *Contract Documents.* Wherever the words "acceptance" and "accepted" are used in the *Contract Documents*, they shall have the meaning set out in this definition even if the words are not capitalized.

Administration Costs means those costs and expenses incurred by the *Owner* as a result of carrying out a process or activity due to a delay in the performance of the *Work* by the *Contractor* and include:

(a) additional fees payable by the *Owner* to the *Consultant* on a per diem basis according to the *Consultant*'s personnel rates;

(b) the *Owner*'s personnel costs associated with the delay, in an amount solely determined by the *Owner*; and

(c) any additional costs or loss of revenue incurred by the *Owner* due to the delay."

Adjudication means construction dispute interim adjudication as defined under the *Construction Act*.

The *Arbitration Act* means the *Arbitration Act*, 1991, S.O. 1991, c. 17, as amended.

As-Built Drawings means a set of drawings that are marked-up during construction by the *Contractor* that show how the structures and other parts of the *Work* were actually constructed versus how the structures and other parts of the *Work* were originally designed and "*As-Built Record Drawings*" means the *As-Built Drawings* prepared by the *Contractor* following completion of the *Work* that are *Submitted* to the *Owner* with the *Close-Out Documentation.*

Authority Having Jurisdiction means the federal, provincial or municipal entity that is responsible for enforcing codes, standards and regulations relating to building construction, has the power to pass regulations to direct, specify and govern elements or activities of construction projects such as codes, safety, health or standards of manufacture or installation.

Close-out Documentation has the meaning given in GC 5.5.1.2.

Confidential Information means all information of the *Owner* that is confidential by its nature or in the circumstances in which it is received, including without limitation *Personal Information* and all confidential information in the custody or control of the *Contractor*, regardless of whether it is identified as confidential or not,

which comes into the knowledge, possession or control of the *Contractor* in connection with this *Contract*, but *Confidential Information* does not include information that:

.1 is or becomes generally available to the public without fault or breach by the *Contractor*, but only after that information becomes generally available to the public;

.2 the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* without any obligation of confidence from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence;

.3 the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor*, free of any obligation of confidence, when disclosed; or

.4 is independently developed by the *Contractor* without the use of any of the *Owner*'s *Confidential Information*.

Conflict of Interest includes, but is not limited to, any situation or circumstance where the interests, conduct, other commitments or relationships of a *Contractor*, a *Contractor*'s family member or an officer, director or employee of the *Contractor* could or could be perceived to, directly or indirectly, compromise, impair or be in conflict with the interests of the *Owner*.

Construction Act means the *Construction Act*, R.S.O. 1990, c. C.30, as amended, including all regulations passed under it that are enforceable as of the date of execution of this *Contract*. For certainty, the first procurement process for the *Project* (i.e., the "improvement" as that term is defined in the *Construction Act*) was commenced on or after October 1, 2019 and Parts I.1 (Prompt Payment) and II.1 (Construction Dispute Interim Adjudication) of the *Construction Act* apply to this *Contract.*

The *Construction Schedule* or construction schedule means the schedule for the performance of the *Work Submitted* by the *Contractor* and *Accepted* by the *Owner* pursuant to GC 3.4 – CONSTRUCTION SCHEDULE, including any amendments to the *Construction Schedule* made pursuant to the *Contract Documents*.

A *Dispute* means all unresolved claims, disputes or controversies of any kind arising out of or in connection with this *Contract* or the carrying out of the *Work*.

Environmental Contaminants means any substance, material or waste defined, regulated, listed or prohibited by *Environmental Laws*.

Environmental Laws means all applicable federal, provincial, territorial, municipal and local laws, statutes, ordinances, by-laws and regulations, judgments, decrees, common laws and principles thereof, and orders, directives and decisions rendered or issued by any *Authority Having Jurisdiction* relating to *Environmental Contaminants* or the protection of human health, natural resources or the environment.

Estimate means a calculation of the quantity or cost of the *Work* or part of it depending on the context.

Excess Soil means "excess soil" as that term is defined under section 3 of the *Excess Soil Regulation*.

Excess Soil Regulation means O. Reg. 406/19: On-Site and Excess Soil Management to the *Environmental Protection Act*, R.S.O. 1990, c. E.19., as amended.

Extended Warranty means the extended warranties described in the *Specifications* and *Extended Warranty Period* means the period or periods described in the *Specifications*;

Force Majeure means an event or a cause beyond the control of a party, which may include war, interference by civil or military authorities, civil insurrection, local or national emergency, blockade, seizure, riot, sabotage, vandalism, terrorism, earthquake, flood, act of God, accident, fire, nuclear or other explosion, disease, epidemic, pandemic, quarantine restriction, strike, lockout or other labour disturbance, governmental embargo, or changes to any acts, orders, legislation, regulations, directives, or priorities of any government or *Authority Having Jurisdiction*; provided such event is not caused by the affected party's negligence, default, failure to exercise reasonable diligence, bankruptcy or insolvency. A *Force Majeur*e event or cause does not include an inability to pay or a lack of financial resources unless it is due to a failure of the province to approve the appropriation from the Consolidated Revenue Fund for the *Project*.

Impact Assessment Reports means the impact assessment reports, if any, listed in the *RFP* related to the *Fisheries Act*; *Navigable Waters Act*; *Lakes and Rivers Improvement Act*; heritage reviews; *Endangered Species Act* and *Species at Risk Act*; terrestrial resources (vegetation, wildlife, other features); socio-economic impacts and Indigenous consultations.

Intellectual Property means any improvement, invention or discovery, whether or not patented or patentable, any technical data, know-how or trade secret, any design, any computer software or any work subject to copyright, whether or not such design or copyright is registered or registrable and all Intellectual Property Rights contained, embedded or disclosed in the *Work*.

Notice of Non-Payment means a notice of non-payment of holdback (Form 6) or a notice of non-payment (Form 1.1) under the *Construction Act*, as applicable to the circumstances.

Payment Period or payment period means the fixed segments of time for which the *Contractor* shall be entitled to claim payment for *Work* performed during such period, as agreed upon by the *Owner* and the *Contractor* at the first pre-construction meeting. To be effective, such agreement must be in writing or reflected in the final and approved pre-construction meeting minutes. In the event that the *Owner* and the *Contractor* do not fix the segment of time for each *Payment Period* at the first pre-construction meeting, then each *Payment Period* shall be a one (1) month period during which *Work* was performed, with the start and end dates of each *Payment Period* deemed to be the first (1st) calendar day of the applicable month and the last calendar day of the same month, respectively."

Personal Information means information that relates to an identifiable individual or that identifies or may identify an individual as defined in section 2 of the *Freedom of Information and Protection of Privacy Act,* R.S.O. 1990, *c.* F.31, as amended.

Pre-Invoice Submission Meeting has the definition given to it under GC 5.2.1.

Proper Invoice means a "proper invoice" as that term is defined in Section 6.1 of the *Construction Act* that complies with the minimum requirements set out in Schedule A to the Supplementary Conditions.

Proper Invoice Submission Date is the dated referenced in GC 5.2.2.

Restricted Period (Adjudication) means the (inclusive) period of time between November 15 in one calendar year to January 2 in the next calendar year, in any given year throughout the duration of the *Contract*.

Restricted Period (Proper Invoice) means the (inclusive) period of time between December 10 to December 28 in any given year throughout the duration of the *Contract*.

RFP means the procurement documents used by the *Owner* for the procurement of the *Contractor* for the *Project*.

Statutory Declaration means the "Ontario Northland Statutory Declaration of Progress Payment Distribution by Contractor" form, attached to the Supplementary Conditions as Schedule "B".

Submittal(s) means all documentation prepared by the *Contractor* and submitted to the *Owner* and/or the *Consultant* for review and *Acceptance* in accordance with the *Contract Documents*.

Third-Party Property Owner means the owner, tenant or other person having the right to use a property.

Warranty Period means the period during which the *Contractor* provides a warranty for the *Work* described in GC 12.3.

Waste Management Plan means the plan to be submitted by the *Contractor* to the *Owner* and the *Consultant* described in GC 3.11.1 and *Waste Management Report* has the meaning described in the *Specifications*."

7.2 Delete the definition of "*Consultant*" and replace it with the following:

"The *Consultant* is the *Owner*'s project manager designated by the *Owner* to be the *Owner*'s representative for the purposes of the *Contract*. All references to the *Consultant* in the *Contract Documents* shall mean the *Owner* and, unless otherwise provided in the *Contract Documents*, any requirement for a decision or opinion, in writing

or otherwise, by the *Consultant* shall mean a decision of the *Owner*. References to the "Engineer" in the *Specifications* or to the "Contract Administrator" in OPSS shall mean the *Consultant* as defined herein."

7.3 At the end of the definition of "*Drawings*", add the following words "and a Waste Management Plan".

7.4 Delete the definition of "*Contract Price*" and replace it with the following:

"*Contract Price* is the amount payable by the *Owner* to the *Contractor* for *Work* to be completed under the *Contract* in accordance with the method and manner of payment stipulated in the *Contract Documents* and the lump sum price submitted by the *Contractor* in its proposal as stipulated in Article A-4.1 as amended by any *Change Orders*."

7.5 Delete the definition of *Payment Legislation*.

7.6 Amend the definition of *Ready-for-Takeover* by deleting all the words after "as verified" and replacing them with "and *Accepted* by the *Owner*."

AMENDMENTS TO THE GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

8. GC 1.1 CONTRACT DOCUMENTS

8.1 Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the deleted item will be retained, unused.

8.2 Delete paragraph 1.1.3 and replace it with the following:

"1.1.3 "The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Owner* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.12.1 of the *Contract*. Except for its obligation to make such review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Owner* for the accuracy of the *Contract Documents*. Provided it has exercised the degree of care and skill described in this paragraph 1.1.3, the *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents* which the *Contractor* could not reasonably have discovered. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall immediately notify the *Owner* and shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Owner*. If the *Contractor* finds discrepancies in and/or omissions from the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, the *Contractor* must immediately notify the *Owner* by means of a written Request for Information ("RFI") and the *Consultant* will provide written instructions or explanations. The *Owner* shall not be responsible for oral instructions."

8.3 Delete paragraph 1.1.4 and replace it with the following:

"1.1.4 Notwithstanding the foregoing, errors, inconsistencies and/or omissions shall not include lack of reference on the *Drawings* or in the *Specifications* to labour and/or *Products* that are required or normally recognized within respective trade practices as being necessary for the complete execution of the *Work*. The Contractor shall not use RFIs, issued during execution of the *Work*, in and of themselves to establish a change and/or changes in the *Work* pursuant to Part 6 – CHANGES IN THE WORK. In the event an RFI or the cumulative effect of RFIs leads to what the *Contractor* considers to be a change in the *Work*, then the procedure under Part 6 – CHANGES IN THE WORK shall be followed."

8.4 Delete paragraph 1.1.5.1 in its entirety and replace it with new 1.1.5.1:

"the order of priority of documents, from highest to lowest, shall be:

- Special Provisions, if any
- ONTC Special Supplementary Conditions, if any
- ONTC Supplementary Conditions to CCDC 2
- Agreement between the Owner and the Contractor
- Definitions
- General Conditions
- Addenda to the Request for Proposals ("RFP")

- Schedule 2-A to the RFP – RFP Data Sheet
- Schedule 3-A-1 to the RFP – Scope of Work
- RFP Part 4 – Form 12 SCHEDULE OF MATERIALS, if accepted
- Schedule 3-A-2 to the RFP – Technical Specifications
- Schedule 3-A-3 to the RFP –Issue for Tender Drawings
- Schedule 3-A-4 to the RFP – Reference Reports
- Schedule 3-A-5 to the RFP – Policies and Procedures
- Contractor's Proposal in Part 4 of the RFP in response to the RFP"

8.5 Add a new subparagraph 1.1.5.6 as follows:

".6 Schedules of Division 01 - General Requirements of the Specifications shall form part of and be read in conjunction with the technical specification section."

8.6 Add a new sentence to the end of paragraph 1.1.9 as follows:

"The *Specifications* are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the *Contract Documents* will be construed to place responsibility on the *Owner* to settle *Disputes* among the *Subcontractors* and *Suppliers* in respect to such divisions."

8.7 Delete paragraph 1.1.10 in its entirety and replace it with new paragraph 1.1.10:

"All *Submittals* and *Intellectual Property* rights produced by or resulting from the *Work*, including all *Specifications, Drawings*, models and copies thereof, shall vest in the *Owner* and are the sole and absolute property of the *Owner* as and when created. The *Contractor* hereby irrevocably assigns and conveys and agrees to assign and convey, without further consideration, all right, title and interest in and to the *Intellectual Property* rights produced or resulting from the Work, in perpetuity and throughout the world, to the *Owner* and its successors and assigns. This paragraph 1.1.10 shall survive termination of the *Contract*."

8.8 Add new paragraphs 1.1.12, 1.1.13, 1.1.14, 1.1.15, 1.1.16 and 1.1.17 as follows:

"1.1.12 The *Owner* shall provide the *Contractor*, without charge, an electronic version of the *Contract Documents*."

1.1.13 If an item is shown on one document, and it can be reasonably inferred that it was intended to include work not shown on other related documents, the *Contract Price* shall nevertheless include for the cost of the item of work, unless the *Owner* agrees otherwise.

1.1.14 Where a provision in the *Contract* is made for the giving or issuing of any *Notice in Writing*, consent, Acceptance, approval, certificate or determination by any person, unless otherwise specified such *Notice in Writing*, consent, *Acceptance*, approval, certificate or determination shall be in writing and shall not unreasonably be withheld or delayed.

1.1.15 The *Contractor* shall keep one copy of the current *Contract Documents*, *Supplemental Instructions*, contemplated change orders, *Change Orders*, *Change Directives*, reviewed *Shop Drawings*, reports and records of meetings at the *Place of Work* in good order and available to the *Owner*.

1.1.16 The *Contractor* shall keep one copy of current standards and manufacturers' literature specified in the *Contract Documents* at the *Place of Work* in good order and available to the *Owner* for the duration of the *Work*.

1.1.17 The *Drawings* are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangement and sizes of materials. The *Contractor* shall obtain more accurate information about the locations, arrangement and sizes from study and coordination of the *Drawings* and shall become familiar with conditions and spaces affecting these matters before proceeding with the *Work*. Where site conditions require minor changes in indicated locations and arrangements, the *Contractor* shall make such changes at no additional cost to the *Owner*."

9. GC 1.2 LAW OF THE CONTRACT

9.1 Delete paragraph 1.2.1 in its entirety and replace it with new paragraph 1.2.1:

"This *Contract* shall be governed by and constituted in accordance with the laws in force in the Province of Ontario excluding any conflict of laws principles. The parties hereby irrevocably attorn to the exclusive jurisdiction of the courts of the Province of Ontario for any legal proceedings arising out of this *Contract* or the performance of the obligations hereunder."

10. GC 1.4 ASSIGNMENT

10.1 Delete paragraph 1.4.1 in its entirety and replace it with new paragraph 1.4.1:

"Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent, in the case of the *Owner*, is at the sole discretion of the *Owner*. In the event of an assignment of the *Contract* by the *Contractor*, such assignment shall require prior written consent of the *Owner* and shall not relieve the *Contractor* from its obligations and liabilities hereunder."

11. GC 2.1 AUTHORITY OF THE CONSULTANT

11.1 Delete paragraph 2.1.1 in its entirety and replace it with the following:

"2.1.1 The *Owner*'s project manager shall have the authority to act on behalf of the *Owner* for all matters arising under the *Contract*."

11.2 Delete paragraph 2.2.2 in its entirety.

12. GC 2.2 ROLE OF THE CONSULTANT

12.1 Delete paragraph 2.2.3 in its entirety.

12.2 Delete paragraph 2.2.4 in its entirety.

12.3 Delete paragraph 2.2.6 in its entirety and replace it with the following:

"2.2.6 If there is a *Dispute* between the *Owner* and the *Contractor* regarding the performance of the *Work* or the interpretation of the *Contract Documents*, the parties shall resolve the *Dispute* in accordance with PART 8 – DISPUTE RESOLUTION."

12.4 Delete paragraph 2.2.7 in its entirety.

12.5 Delete paragraph 2.2.8 in its entirety.

12.6 Delete paragraph 2.2.9 in its entirety.

12.7 Delete paragraph 2.2.10 in its entirety.

12.8 Amend paragraph 2.2.12 by adding the following to the end of that paragraph:

"The *Supplemental Instructions* are not a change in the *Contract Documents*. If, in the opinion of the *Contractor*, the *Supplemental Instruction* requires an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within three (3) *Working Days* after receipt of a *Supplemental Instruction* provide the *Consultant* and the *Owner* with *Notice in Writing* to that effect. Failure to provide *Notice in Writing* within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor* without adjustment in the *Contract Price* or *Contract Time*."

12.9 Delete paragraph 2.2.18 in its entirety.

13. GC 2.3 REVIEW AND INSPECTION OF THE WORK

13.1 Add new paragraph 2.3.8 as follows:

"Where inspection and testing services are specified, the service provider employed for such services shall be the service provider named by the *Owner*."

13.2 Add new paragraph 2.3.9 as follows:

"Where standards of performance are specified and the *Work* does not comply with the specified standard of performance, the deficiency in the *Work* shall be corrected as directed by the *Consultant*. Subsequent testing to ensure that the standard of performance has been attained (including re-testing by *Owner*), shall be carried out at the *Contractor*'s expense and shall not be paid from the cash allowances described in GC 4.1."

14. GC 2.4 DEFECTIVE WORK

14.1 Add new paragraphs 2.4.1.1, 2.4.1.2, 2.4.1.3 and 2.4.1.4 as follows:

".1 Without limiting the foregoing, the *Contractor* shall rectify, in a manner acceptable to the *Owner*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Owner*.

.2 The *Contractor* shall prioritize the correction of any *Defective* work which, in the sole discretion of the *Owner*, adversely affects the day to day operations of the *Owner*.

.3 All such corrections of defective work and deficiencies shall be at the *Contractor*'s expense.

.4 If the *Contractor* fails to do the work to correct the defective *Work* or deficiencies, the *Owner* may carry out such remediation work by its own forces or by other *Contractors* and the *Owner* shall be entitled to recover from the *Contractor* the costs thereof or may deduct the same from any monies due or that become due to the *Contractor*."

14.2 Amend paragraph 2.4.3 by deleting the last sentence and replacing it with the following:

"If the *Owner* and the *Contractor* do not agree in the difference in value, they shall resolve the disagreement pursuant to Part 8 – DISPUTE RESOLUTION."

14.3 Add new paragraph 2.4.4 as follows:

"2.4.4 Neither the *Acceptance* of the *Work* by the *Owner*, nor any failure by the *Owner* to identify, observe or warn of defective *Work* or any deficiency in the *Work* shall relieve the *Contractor* from the sole responsibility for rectifying such defect or deficiency at the *Contractor's* sole cost, even where such failure to identify, observe or warn is negligent."

15. GC 2.5 EMERGENCY SITUATIONS

15.1 Add new GC 2.5 EMERGENCY SITUATIONS as follows:

".1 The *Owner* has the right to determine the existence of an emergency situation and, when such an emergency situation is deemed to exist, the *Owner* may instruct the *Contractor* to take action to remedy the situation. If the *Contractor* does not take timely action or, if the *Contractor* is not available, the *Owner* may direct others to remedy the situation. Any such action or direction taken by the *Owner* shall not relieve the *Contractor* of its responsibilities as the "Constructor" pursuant to the *Occupational Health and Safety Act* (Ontario).

.2 If the emergency situation was the fault of the *Contractor*, the remedial work shall be completed at the cost of the *Contractor* and with no additional cost to the *Owner* and the *Owner* shall be entitled to seek reimbursements for all costs associated with the remedial work including the cost of work done by third parties.

.3 If the emergency situation was not the fault of the *Contractor*, the *Owner* shall pay for the remedial work."

16. GC 3.1 CONTROL OF THE WORK

16.1 Add new paragraph 3.1.3 as follows:

"Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of the Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not

apparent, the *Contractor* shall immediately notify the *Owner* in writing and obtain written clarification from the *Owner* before proceeding with any part of the affected *Work*."

16.2 Add new paragraph 3.1.4 as follows:

"The *Contractor* shall perform the work in a good and workmanlike manner, using new materials, in accordance with all applicable laws and current best practices and standards in the construction industry at the *Place of Work*. The *Contractor* acknowledges that both time and quality are of the essence and the *Contractor* will perform the *Work* or cause the *Subcontractors* and *Suppliers* to perform the *Work* in accordance with the *Construction Schedule*, as amended from time to time, and in an expeditious and professional manner."

17. GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

17.1 Add new paragraph 3.2.3.5 as follows:

"Subject to GC 9.4 – CONSTRUCTION SAFETY, for the *Owner's* own forces and for *Other Contractors*, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation of the *Place of the Work*, including all of the responsibilities of the "Constructor" under the *Occupational Health and Safety Act* (Ontario)."

18.2 Add new paragraph 3.2.3.6 as follows:

"provide for the co-ordination of the activities and work of *Other Contractors* and *Owner's* own forces with the *Work* of the *Contract.*"

18. GC 3.4 CONSTRUCTION SCHEDULE

18.1 Delete paragraph 3.4.1 in its entirety and replace it with the following:

"3.4.1 The *Contractor* shall:

.1 within 10 *Working Days* from the date of the *Contract* award, prepare for the *Owner*'s review and *Acceptance*, a construction schedule, including identification of the critical path of the *Work*, the schedule of operations, the proposed methods of construction and sequence of *Work*, and the time the *Contractor* proposes to complete the various items of *Work* within the *Contract Time*. The schedule shall be designed to ensure conformity with the *Contract Time*. The schedule will be in a Gannt chart format in either .pdf or excel format and include:

(a) activity sequences and durations;

(b) process for obtaining any required permits;

(c) work block planning and track protection requested;

(d) special allocation of labour and *Products*;

(e) processing of *Shop Drawings* and samples;

(f) delivery of *Products* involving long lead time procurement;

(g) usage and occupancy requirements of the *Owner* of those portions of the *Work* having usage or occupancy priority;

(h) *Substantial Performance of the Work*, and *Ready-for-Takeover* reflecting that such milestones will be achieved by no later than the dates specified in Article A-1.3; and

(i) any other schedule requirements set out in the *Contract Documents*.

If the construction schedule submitted by the *Contractor* is not *Accepted* by the *Owner*, the *Contractor* shall make revisions to the construction schedule until it is *Accepted* by the *Owner*.

Once *Accepte*d by the *Owner*, the schedule submitted by the *Contracto*r shall become the "*Construction Schedule*." Notwithstanding any other terms of this *Contact*, the *Contractor* shall not be entitled to receive any payment from the *Owner* until a construction schedule has been submitted by the *Contractor* and *Accepted* by the *Owner*. The *Owner* may, at its sole discretion, not issue an order to commence *Work* until the schedule has been received and *Accepted*.

.2 during performance of the *Work* and in accordance with the controls and reporting requirements in the *Contract Documents*, provide for the *Owner*'s review and *Acceptance*, progress reports updating the *Construction Schedule*, reporting on the progress achieved, percentage of completion, schedule status and financial status with areas of immediate concern highlighted. If the schedule is affected by approved *Change Orders*, the *Contractor* shall submit an updated *Construction Schedule*, if requested by the *Owner*, within 7 *Working Days* of the request. This updated schedule shall show how the *Contractor* proposes to perform the balance of the *Work*, so as to complete the *Work* within the *Contract Time*.

.3 provide progress reports with each application for payment, in the form provided by the *Owner* attached as Schedule C, for review and *Acceptance*, including an update of the *Construction Schedule* referred to in paragraph 3.4.1."

18.2 Add new paragraph 3.4.2 and 3.4.3 as follows:

"3.4.2 If,

.1 at any time it should reasonably appear to the *Owner* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, based on critical path methodology, and *Notice in Writing* of such opinion is given to the *Contractor*; or

.2 the *Contractor* becomes aware of or notices a slippage in the *Construction Schedule*,

then the *Contractor* shall take appropriate steps to cause the actual progress of the *Work* to conform to the *Construction Schedule* and shall produce and present to the *Owner* for its review and *Acceptance* within 5 *Working Days* after becoming aware of the schedule slippage a recovery plan demonstrating how the *Contractor* will achieve the recovery of the *Construction Schedule*.

3.4.3 The *Contractor* is responsible for performing the *Work* within the *Contract Time*. Any schedule submissions revised from the *Accepted* baseline *Construction Schedule* or *Accepted* revised *Construction Schedule* pursuant to GC 3.4 CONSTRUCTION SCHEDULE during construction are deemed NOT to be approved extensions to the *Contract Time.* Revisions to the *Construction Schedule* shall not be made without the prior written *Acceptance* of the *Owner*. All requests by the *Contractor* for a revision to the *Construction Schedule* that includes an extension to the *Contract Time* or adjustment to the date(s) for *Substantial Performance of the Work* or *Ready-for-Takeover* must be approved by the *Owner* through an executed *Change Order.*"

19. GC 3.5 SUPERVISION

19.1 Amend paragraph 3.5.1 by adding at the end of that paragraph:

"…, and upon the *Contractor* obtaining the *Owner*'s written consent, which consent will not be unreasonably withheld."

19.2 Add new paragraph 3.5.3 as follows:

"Notwithstanding paragraph 3.5.2, the representative of the *Contractor* attending a meeting with the *Owner* or the *Owner*'s representative shall be deemed to have authority to act on behalf of the *Contractor* and bind the *Contractor* in matters related to this *Contract*."

19.3 Add new paragraph 3.5.4 as follows:

"The *Owner* may, at any time during the course of the *Work*, request the replacement of the appointed *Contractor*'s representative(s), where the grounds for the request involve conduct on the part of the *Contractor*'s representative(s) which jeopardizes the safety of the *Owner*'s operations or the *Work* or the proper progress of the *Work*. Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an

Acceptable replacement. The *Contractor* shall indemnify and hold the *Owner* harmless from and against any damages, costs, expenses, claims, injuries and other liabilities suffered by the *Owner* arising from the conduct of the representative that is being replaced."

20. GC 3.6 SUBCONTRACTORS AND SUPPLIERS

20.1 Add new paragraph 3.6.1.4:

"ensure the *Subcontractors* and *Suppliers*, while working on the *Owner*'s property, are aware of and comply with the *Owner*'s policies, including its Fit for Duty Policy, and with the Ontario Northland Operating Manual, including the Current Summary Bulletin, the current Ontario Northland Time Table, C.R.O.R. 2022, Infrastructure Special Instructions, Dangerous Goods and Ontario Northland General Operating Instructions, as applicable."

20.2 Delete paragraph 3.6.2 in its entirety and replace it with a new paragraph 3.6.2

"The *Contractor* shall not change *Subcontractors* or *Suppliers* identified in the *Contract Documents* without the prior written approval of the *Owner* which approval will not be unreasonably withheld.

20.3 Delete paragraphs 3.6.3 and 3.6.4 in their entirety and replace them with "Intentionally Left Blank."

21.4 Add new paragraph 3.6.7 as follows:

"The responsibility as to which *Supplier* and/or *Subcontractor* provides the specific labour, *Products* and services for each item of work rests solely with the *Contractor*, within and in accordance with the requirements and limitations listed in the *Contract Documents* with respect to approval of *Suppliers* and/or *Subcontractors* permitted to perform work on the *Project*."

21. GC 3.7 LABOUR AND PRODUCTS

21.1 Amend paragraph 3.7.1 by adding the words, "..., agents, *Subcontractors* and *Suppliers* …" after the word "employees".

21.2 Amend paragraph 3.7.2 by adding the following words at the beginning of the paragraph: "Except as otherwise provided in the technical *Specifications*" and adding the following sentence at the end of that paragraph:

"The *Contractor* represents and warrants that the *Products* supplied by the *Contractor* in accordance with the *Contract* are not subject to any conditional sales contract and are not subject to any security rights obtained by any third party which may subject any of the *Products* to seizure and/or removal from the *Place of the Work*."

21.3 Add new paragraph 3.7.4 as follows:

"Upon receipt of a *Notice in Writing* from the *Owner*, the *Contractor* shall take action to rectify any situation involving its employee, agent, *Subcontractor* or *Supplier* whose work is unsatisfactory to the *Owner* or who are considered by the *Owner* to be unskilled or otherwise objectionable. If after giving sufficient warning the *Contractor* is not able to reasonably rectify such situation, then such employee, agent, *Subcontractor* or *Supplier* shall be dismissed from the *Place of the Work* and the *Contractor* shall indemnify and hold the *Owner* harmless from and against any damages, costs, expenses, claims, injuries and other liabilities suffered by the *Owner* arising from the dismissal of such employee, agent, *Subcontractor* or *Supplier*."

21.4 Add new paragraph 3.7.5 as follows:

"The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and *Other Contractors* to be installed under the *Contract)* in such ways as to avoid dangerous conditions or contamination to the *Products* or other persons or property and in locations at the *Place of the Work* identified by the *Contractor* and *Accepted* by of the *Owner*. The *Owner* shall provide all relevant information on the *Products* to be supplied by the *Owner* or *Other Contractors*."

21.5 Add new paragraph 3.7.6 as follows:

"The *Contractor* shall not employ any persons to perform *Work* whose labour affiliation, or lack thereof, is incompatible with other labour employed in connection with the *Work*. Any costs arising from labour disputes, as

a result of the employ of any such person by the *Contractor*, its *Subcontractors* or *Suppliers* shall be at the sole expense of the *Contractor*."

21.6 Add new paragraph 3.7.7 as follows:

"The *Contractor* and the *Owner* and its representatives shall cooperate and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the work at the *Place of the Work*, including cooperation to attempt to avoid work stoppages, trade union jurisdictional disputes and other labour disputes."

22. GC 3.8 SHOP DRAWINGS

22.1 Delete paragraph 3.8.7 and replace it with the following:

"3.8.7 The *Owner* will review and return *Shop Drawings* in accordance with the schedule agreed upon as described in paragraph 3.8.2, or, in the absence of such schedule, with reasonable promptness. If, for any reason, the *Owner* cannot process them within the agreed-upon schedule or with reasonable promptness, the *Owner* shall notify the *Contractor* and they shall meet to review and develop a revised schedule for processing such *Shop Drawings* that is *Acceptable* to the *Owner*. The *Contractor* shall update the *Shop Drawings* schedule to correspond to changes in the *Construction Schedule*. Changes in the *Contract Price* or *Contract Time* may be made only in accordance with GC 6.1, GC 6.2 or GC 6.3."

22.2 Add new paragraphs 3.8.8, 3.8.9, 3.8.10 and 3.8.11 and as follows:

"3.8.9 The *Contractor* shall provide *Shop Drawings* and *Submittals* in the form specified, or if not specified, as directed by the *Owner*. *Shop Drawings* provided by the *Contractor* to the *Owner* shall indicate by stamp, date and signature of the person responsible for the review that the *Contractor* has reviewed each one of them. Certain *Specifications* sections require the *Shop Drawings* to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the *Place of the Work* and shall have expertise in the area of practice reflected in the *Shop Drawings*.

3.8.10 *Shop Drawings* which require approval of any *Authority Having Jurisdiction* shall be provided to such authority by the *Contractor* for the authority's approval.

3.8.11 The *Contractor* shall provide revised *Shop Drawings* to correct those which the *Owner* rejects as inconsistent with the *Contract Documents*, unless otherwise directed by the *Owner*. The *Contractor* shall notify the *Owner* in writing of any revisions to the *Shop Drawings* other than those requested by the *Owner*.

3.8.12 Reviewed *Shop Drawings* shall not authorize a change in the *Contract Price* and/or the *Contract Time*."

23. GC 3.9 USE OF THE WORK

23.1 Add new GC 3.9 – USE OF THE WORK as follows:

"**GC 3.9 USE OF THE WORK**

3.9.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees and *Subcontractors* to limits indicated by laws, ordinances, permits, or the *Contract Documents* and shall not unreasonably encumber the *Place of the Work*.

3.9.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*.

3.9.3 The *Owner* shall have the right to enter or occupy the *Place of the Work* in whole or in part for the purpose of placing fittings and equipment, or for other use before *Ready-for-Takeover*, if, in the opinion of the *Owner*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract Time*. Such entry or occupation shall neither be considered as acceptance of the *Work* or in any way relieves the *Contractor* from its responsibility to complete the *Contract*."

24. GC 3.10 CUTTING AND REMEDIAL WORK

24.1 Add new GC 3.10 – CUTTING AND REMEDIAL WORK as follows:

"**GC 3.10 CUTTING AND REMEDIAL WORK**

3.10.1 The *Contractor* shall perform the cutting and remedial work required to make the affected parts of the *Work* come together properly. Such cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*.

3.10.2 The *Contractor* shall coordinate the *Work* to ensure all cutting and remedial work required is kept to a minimum."

25. GC 3.11 CLEANUP

25.1 Add new GC 3.11 – CLEANUP as follows:

"**GC 3.11 CLEANUP**

3.11.1 The *Contractor* shall comply with all requirements for cleanup at the *Place of the Work* as specified in the *Contract Documents*. The *Contractor* shall provide to the *Owner* for *Acceptance* a *Waste Management Plan*, and a waste reduction plan if required by *Environmental Laws*, for the waste products, debris and any *Excess Soils* generated by the Work, which plan shall comply with all *Environmental Laws* and the *Specifications*. The costs of disposing of all waste products and debris, including products and debris containing *Environmental Contaminants*, and *Excess Soil* resulting from the *Work* is included in the *Contract Price*.

3.11.2 Before applying for *Substantial Performance of the Work*, the *Contractor* shall remove waste products and debris and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. All products, tools, *Construction Equipment* and *Temporary Work* not required for the performance of any remaining *Work* shall be removed by the *Contractor*.

3.11.3 As a condition precedent to final payment, the *Contractor* shall remove any remaining products, tools, *Construction Equipment*, *Temporary Work*, waste products and debris from the *Place of the Work* to the satisfaction of the *Owner*.

3.11.4 In performing work to correct deficiencies or work under warranty following *Ready-for-Takeover* of the *Work*, the *Contractor* shall maintain the *Place of the Work* in a tidy condition and shall immediately remove waste products and debris.

3.11.5 The *Contractor* shall comply with all *Environmental Laws* in disposing of the waste products, debris and *Excess Soil* resulting from the *Work*. The *Contractor* shall assume all liability and responsibility for any waste products, debris and *Excess Soil*, including any such materials containing *Environmental Contaminants*, which are removed from the *Place of the Work* by the *Contractor* and during the transportation of the waste products, debris and *Excess Soils* to the appropriate waste disposal site. The *Contractor* shall submit landfill weigh bills from a waste disposal site as proof that all waste has been disposed of at a certified waste disposal site. The *Contractor* shall submit a *Waste Management Report* as part of the *Close-Out Documentation* described in paragraph 5.5.1.2. to be submitted with the application for verification of *Ready-for-Takeover*.

3.11.6 In the event that the *Contractor* fails to remove waste and debris as provided in this GC 3.11, then the *Owner* may give the *Contractor* twenty-four (24) hours' *Notice in Writing* to meet its obligations respecting clean up. Should the *Contractor* fail to meet its obligations pursuant to this GC 3.11 within the twenty-four (24) hour period next following delivery of the notice, the *Owner* may remove such waste and debris and deduct from payments otherwise due to the *Contractor*, the *Owner*'s costs for such clean up, including a reasonable mark-up for *Administration Costs*."

26. GC 3.12 PERFORMANCE BY CONTRACTOR

26.1 Add new GC 3.12 – PERFORMANCE BY CONTRACTOR as follows:

"**GC 3.12 PERFORMANCE BY CONTRACTOR**

3.12.1 In performing its obligations, duties and responsibilities under this *Contract*, the *Contractor* shall exercise the degree of care, skill and diligence that would normally be exercised by an experienced, skilled and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that, throughout this *Contract*, the *Contractor*'s obligations, duties and responsibilities shall be judged, evaluated and interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of care in respect of any *Products*, *Subcontractors*, *Suppliers*, personnel or procedures which it may recommend to the *Owner* or employ on the *Project*.

3.12.2 The *Contractor* further represents, covenants and warrants to the *Owner* that:

.1 The personnel and *Subcontractors* it assigns to the *Project* are appropriately experienced;

.2 It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the *Owner*'s approval, in the event of death, incapacity, removal or resignation; and

.3 there are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the *Contractor* to perform its work under the Contract."

3.12.3 The *Owner* has a Vendor Performance Policy which requires the *Owner* to complete an evaluation of the *Contractor*'s performance of its obligations under this *Contract*. The performance evaluation of the *Contractor* for the supply of the *Work* will be used in the assessment of the *Contractor*'s proposals in response to future procurements. The performance evaluation may also result in the *Contractor* being disqualified from submitting proposals in response to future procurements in accordance with the terms of the policy. The policy can be found at http://ontarionorthland.ca/en/requests-tenders."

27. 3.13 EXCESS SOIL MANAGEMENT

27.1 Add new GC 3.13 – EXCESS SOIL MANAGEMENT as follows:

"**GC 3.13 EXCESS SOIL MANAGEMENT**

3.13.1 The *Contractor* shall be solely responsible for the proper management of all *Excess Soil* at the *Place of the Work* and for performance of the *Work* in compliance with the rules, regulations and practices required by the *Excess Soil Regulation* until such time as *Ready-for-Takeover* is achieved. Without restricting the generality of the previous sentence, the *Contractor's* responsibility under this GC 3.13 includes the testing, designation, transportation, tracking, temporary and/or final placement, record keeping, and reporting of all *Excess Soil* in connection with the *Work* all in compliance with the *Excess Soil Regulation.*

3.13.2 The *Contractor* shall indemnify and save harmless the *Owner*, their agents, officers, directors, administrators, governors, employees, consultants, successors and assigns from and against the consequences of any and all infractions committed by the *Contractor,* or those for whom it is responsible at law, under the *Excess Soil Regulation*, or any environmental protection legislation, including the payment of legal fees and disbursements on a substantial indemnity basis."

27A GC 4.1 CASH ALLOWANCES

27A.1 Add the following at the end of paragraph 4.1.2:

"The maximum markup for the Contractor's overhead and profit on a cash allowance shall be five percent (5%)."

27A.2 Delete the last sentence in paragraph 4.1.4.

27A.3 Delete paragraph 4.1.5 in its entirety and replace it with the following:

"The *Contract Price* shall be adjusted by *Change Order* to provide for any difference in the total value of all cash allowances and the actual cost of the *Work* performed under all cash allowances."

27A.4 Add new paragraph 4.1.8:

"4.1.8 The *Owner* may require the *Contractor* to obtain competitive bids, at no additional cost to the *Owner*, for portions of the *Work* to be paid from cash allowances."

28. GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

28.1 Delete GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER in its entirety including all paragraphs thereunder and replace it with "Intentionally left blank."

28.2 GC 5.2 APPLICATIONS FOR PAYMENT

28.3 Delete paragraph 5.2.1 in its entirety and replace it with a new paragraph 5.2.1:

"5.2.1 On a *Working Day* that is not more than 10 calendar days after the end of each *Payment Period*, a representative of the *Contractor* and the *Owner* shall attend a meeting to discuss and review the *Work* completed during the *Payment Period*, including quantities, if applicable (the "**Pre-Invoice Submission Meeting**"). The *Contractor* shall bring with it to the *Pre-Invoice Submission Meeting* the following:

.1 a draft of its anticipated application for payment for the applicable *Payment Period*;

.2 the schedule of values submitted in accordance with GC 5.2.4, and *Accepted* by the *Owner* in accordance with GC 5.2.5;

.3 *Subcontractor* and *Supplier* invoices and supporting materials;

.4 receipts for reimbursable expenses (where expressly permitted by the *Contract*, if at all);

.5 accounts and records documenting the cost of performing the *Work* attributable to any *Change Order* or *Change Directive*;

.6 any visual documentation (photos, videos, diagrams) evidencing the progress of the *Work*; and

.7 any other documents reasonably required by the *Contract Documents* or the *Owner*."

28.4 Delete paragraph 5.2.2 in its entirety and replace it with a new paragraph 5.2.2:

"5.2.2 Within 5 calendar days following the *Pre-Invoice Submission Meeting*, the *Contractor* shall deliver to the *Owner* its application for payment that complies with the requirements of GC 5.2.6 for *Work* performed during a *Payment Period* (the "**Proper Invoice Submission Date**"), provided that if the fifth (5th) calendar day following the *Pre-Invoice Submission Meeting* falls on a calendar day that is not *Working Day*, the *Proper Invoice Submission Date* shall be deemed to fall on the next *Working Day*. However, the following shall apply to the delivery of all *Contractor* applications for payment:

.1 If the *Contractor* fails to deliver its application for payment, at the interval prescribed in GC 5.2.2, subject to written approval by the *Owner*, the *Contractor* shall not be entitled to submit its application for payment until the next prescribed interval. Should the *Owner* decide to accept an application for payment submitted after the applicable *Proper Invoice Submission Date* (which the *Owner* is under no obligation to do), such acceptance shall not be construed as a waiver of any of the *Owner*'s rights, or as a waiver or release of the *Contractor*'s obligations to strictly comply with the requirements prescribed in this GC 5.2 – APPLICATIONS FOR PAYMENT;

.2 If an application for payment is delivered by the *Contractor* to the *Owner* on a day that is prior to an eligible *Proper Invoice Submission Date*, the application for payment will not be considered or reviewed by the *Owner* until the earliest eligible *Proper Invoice Submission Date* as identified in GC 5.2.2, at which point the application for payment will be deemed to have been received by the *Owner* for the purpose of review and evaluation;

.3 Notwithstanding any other provision of this *Contract*, the *Contractor* shall not deliver an application for payment for consideration as a *Proper Invoice* by the *Owner*, during the *Restricted Period (Proper Invoice)*;

.4 The *Owner* and the *Contractor* hereby consent to the giving and receiving of *Proper Invoices* electronically and in accordance with the requirements of this GC 5.2 – APPLICATIONS FOR PAYMENTS."

28.5 Amend paragraph 5.2.3 by adding the following to the end of that paragraph:

"but no amount claimed shall include *Products* delivered to the *Place of the Work* unless the *Products* are free and clear of all security interests, liens, and other claims of third parties, subject to claims for lien pursuant to the *Construction Act*."

28.6 Amend paragraph 5.2.4 by deleting the words "the *Consultant*, at least 15 calendar days" and replacing them with "the *Owner* at least 30 calendar days"

- and -

add the words "in a form acceptable to the *Owner*," after the words "*Contract Price*".

29.7 Amend paragraph 5.2.5 by the deleting the word "*Consultant*" and replacing it with "*Owner*".

28.7 Delete paragraph 5.2.6 in its entirety and replace it with a new paragraph 5.2.6:

"5.2.6 Each application for payment submitted pursuant to GC 5.2.2 shall:

.1 be in a form prescribed, or otherwise approved in writing, by the *Owner*;

.2 include all the requirements for a *Proper Invoice* prescribed by the *Construction Act* and the *Contract Documents*;

.3 be delivered to the *Owner* in the same manner as a *Notice in Writing*; and

.4 unless otherwise directed in writing by the *Owner*, by email to pay.inv@ontarionorthland.ca and to the *Owner*'s representative listed in Article A-6."

28.8 Amend paragraph 5.2.8 by adding the following new sentence at the end of that paragraph:

"Any *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall remain at the risk of the *Contractor* notwithstanding the title has passed to the *Owner* pursuant to GC 13.1 – OWNERSHIP OF MATERIALS."

28.9 Add new paragraph 5.2.9 as follows:

"5.2.9 The *Contractor* shall prepare and maintain current *As-Built Drawings* which shall consist of the *Drawings* and *Specifications* revised by the *Contractor* during the *Work*, showing changes to the *Drawings* and *Specifications*, which current *As-Built Drawings* shall be maintained by the *Contractor* and made available to the *Owner* for review with each application for progress payment. The *Owner* reserves the right to retain a reasonable amount for the value of the *As-Built Drawings* not presented for review."

28.10 Add new paragraph 5.2.10 as follows:

"5.2.10 Upon receipt of an application for payment submitted for payment by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PAYMENT, the *Owner* will assess whether all of the requirements for a *Proper Invoice* are satisfied and, if the application for payment does not meet the requirements, the *Owner* will return the application for payment to the *Contractor* with reasons setting out why the application for payment does not meet the requirements for a *Proper Invoice* and the *Contractor* may resubmit the application for payment with all required information within three (3) *Working Days* of the *Contractor's* receipt of the *Owner's* reasons. For clarity,

.1 if an application for payment does not include all of the requirements for a *Proper Invoice* required by GC 5.2.6.2, it shall not be considered a "Proper Invoice" for the purposes of the *Construction Act* and the *Owner* shall have no obligation to make a payment and the time periods set out in GC 5.3 - PAYMENTS and in Section 6.4 of the *Construction Act* shall not apply until the *Contractor* has submitted an application for payment that includes all information required by GC 5.2.6.2;

.2 if the *Contractor* fails, refuses, or neglects to resubmits its application for payment within three (3) *Working Days* after it is returned in accordance with this GC 5.2.10, the *Contractor* shall be deemed to have failed to deliver its application for payment and GC 5.2.2.1 shall apply;

.3 where the *Contractor* disagrees with the *Owner's* assessment that some of the of the requirements for a *Proper Invoice* required by GC 5.2.6.2 are missing from its application for payment, nothing in this GC 5.2.10 shall prevent the *Contractor* from resubmitting the same application for payment without any additional or new information; and

.4 the *Owner* reserves the right, in its sole, absolute and unfettered discretion, to waive an error or minor irregularity in any application for payment delivered by the *Contractor* for the purposes of deeming an application for payment a "Proper Invoice" within the meaning of the *Construction Act*, but the *Owner* shall be under no obligation to exercise this right."

29. GC 5.3 PAYMENT

29.1 Delete paragraph 5.3.1 in its entirety and replace it with a new paragraph 5.3.1:

"5.3.1 After receipt by the *Owner* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 – APPLICATIONS FOR PAYMENT:

.1 the *Owner* will either:

(a) issue a certificate for payment, with a copy to the *Contractor,* in the amount applied for in the *Proper Invoice*, or

(b) issue a certificate for payment*,* with a copy to the *Contractor*, for an amount determined by the *Owner* to be properly due to the *Contractor* after applying any credits, withheld amounts*,* or other set-offs which the *Owner* is entitled to notwithstanding any notice of dispute or disagreement that the *Contractor* may have served, along with the *Owner's* reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to the *Owner* issuing a *Notice of Non-Payment*, if any, in accordance with GC 5.3.2;

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

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

(b) in the amount stated in the certificate for payment less such amount stated in the *Owner*'s *Notice of Non-Payment* issued pursuant to GC 5.3.2,

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

29.2 Add new paragraph 5.3.2 as follows:

"5.3.2 In the event that the application for payment delivered by the *Contractor* pursuant to GC 5.2 – APPLICATIONS FOR PAYMENT does not include the requirements for a *Proper Invoice* or if the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment* (Form 1.1)."

29.3 Add new paragraph 5.3.3 as follows:

"5.3.3 Where the *Owner* has delivered a *Notice of Non-Payment*, as specified under GC 5.3.2, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 10 calendar

days following the issuance of a *Notice of Non-Payment*, the *Owner* and the *Contractor* cannot resolve the dispute, either party may issue a notice of *Adjudication* in a form prescribed under the *Construction Act*, in which case the *Owner* and the *Contractor* will agree to submit the dispute to *Adjudication* as set out under PART 8 – DISPUTE RESOLUTION. The amounts disputed and described under the *Notice of Non-Payment* shall be held by the *Owner* until all disputed amounts of the relevant *Proper Invoice* have been resolved pursuant to PART 8 – DISPUTE RESOLUTION any portion of the *Proper Invoice* which is not the subject of the *Notice of Non-Payment* shall be payable within the time period set out in paragraph 5.3.1.2."

29.4 Add new paragraph 5.3.4 as follows:

"5.3.4 Without limitation, the *Owner* shall be entitled to deduct from or, set off against, any payment of the *Contract Price* and any other amounts payable by the *Owner* to the *Contractor* under the *Contract*:

.1 any amount expended by the *Owner* in exercising the *Owner*'s rights under this *Contract* to perform any of the *Contractor*'s obligations that the *Contractor* has failed to perform;

.2 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the *Owner* as a result of the failure of the *Contractor* to perform any of its obligations under the *Contract*; or

.3 any other amount owing from the *Contractor* to the *Owner* under this *Contract*."

29.5 Add new paragraph 5.3.5 as follows:

"5.3.5 The *Contractor* represents, warrants, and covenants to the *Owner* that it is familiar with its prompt payment and trust obligations under the *Construction Act* and will take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the *Construction Act* including, without limitation, section 8.1 of the *Construction Act*. Evidence of the *Contractor*'s compliance under this paragraph 5.3.5 will be made available to the *Owner* within 5 *Working Days* following receipt by the *Contractor* of a *Notice in Writing* making such request."

30. GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

30.1 Delete paragraph 5.4.1.2 in its entirety and replace it with the following:

".2 jointly with the *Contractor*, state the date of *Substantial Performance of the Work*, or a designated portion of the *Work*, in a certificate."

30.2 Delete paragraph 5.4.2 in its entirety and replace it with the following:

"5.4.2 After the date of *Substantial Performance of the Work* is established, the *Contractor* and all *Subcontractors* who have completed their subcontracts shall complete, on a commercially reasonable efforts basis, within thirty (30) days, all deficient work including providing the required *Close-Out Documentation*, unless the reasons for any delay is *Acceptable* to the *Owner*. All deficient work not completed within the above time may be completed by the *Owner* and the cost of this work may at the option of the *Owner* be deducted from the *Contractor*'s next application for payment, or otherwise recoverable upon written demand by the *Owner* to the *Contractor*."

30.3 Delete paragraph 5.4.3 and replace it with the following:

"5.4.3 Immediately following the issuance of a certificate of *Substantial Performance of the Work*, the *Contractor* shall publish the certificate referred to in paragraph 5.4.1.2 in the manner provided in the *Construction Act*. Failing valid publication by the *Contractor* within 3 *Working Days* following the issuance of the certificate, the *Owner* shall be at liberty to publish the certificate and back-charge the *Contractor* for its reasonable costs for doing so."

30.4 Delete paragraph 5.4.4 and replace it with the following:

"5.4.4 After publication of the certificate of the *Substantial Performance of the Work*, the *Contractor* shall submit an application for payment of the outstanding *Construction Act* holdback amount, which application for payment shall:

.1 include all of the requirements listed in Schedule A to these Supplementary Conditions, as applicable to the application for payment of the holdback amount; and

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

After the receipt of a complete application for payment of the holdback amount from the *Contractor*, the *Owner* will issue a certificate for payment of the holdback amount, provided that such amount is subject to and will only become due and payable in accordance with GC 5.4.5 and the *Construction Act*."

30.5 Delete paragraph 5.4.5 and replace it with the following:

"5.4.5 The *Construction Act* holdback amount shall become due and payable the day immediately following the expiration of the holdback period prescribed by the *Construction Act*, subject to the occurrence of any of the following:

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

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

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

30.6 Add new paragraph 5.4.7 as follows:

"5.4.7 Where the *Construction Act* allows for release of *Construction Act* holdback on subcontract work which is 100% complete prior to the release of holdback contemplated under GC 5.4.5, the *Contractor* may make application to the *Owner* and the *Consultant* by written request for a review by the *Consultant* to determine the date of completion of the subcontract and shall submit such supporting material as the *Consultant* may in its discretion require, including:

.1 Description of the scope of *Work* included in the subcontract.

.2 Declaration of Last Supply by the *Subcontractor* as prescribed in subsection 31(5) of *the Construction Act* (Form 7).

.3 Certificate of Completion of Subcontract as prescribed in subsection 33(1) of *the Construction Act* (Form 10).

.4 Workplace Safety & Insurance Board Clearance Certificate for the *Contractor*, the *Subcontractor* concerned, and any other *Subcontractors* and *Suppliers* who have provided any services to the *Subcontractor*.

.5 Statutory declaration by an officer of the *Subcontractor* in the form CCDC Document 9B - 2018.

.6 *Contractor's* written acknowledgement to the *Owner* that the requirements of the *Contract Documents* will not be altered by early release of the *Construction Act* holdback of the completed subcontracts.

.7 Confirmation by the bonding company that it has been notified of the intent to claim early release of holdback and does not object.

.8 Sufficient evidence to the *Owner's* reasonable satisfaction that, as of the date of the *Contractor*'s application, no claims for lien have been preserved against the *Place of the Work* that have not been vacated by the posting of security, discharged, or otherwise addressed in accordance with GC 5.8 – CONSTRUCTION LIENS."

31. GC 5.5 FINAL PAYMENT

31.1 Delete GC 5.5 – FINAL PAYMENT in its entirety and replace it with the following:

"5.5.1 When *Ready-for-Takeover* has been achieved in accordance with GC 12.1 – READY-FOR-TAKEOVER and the *Contractor* considers the *Work* is complete, and after the *Contractor* and the *Owner* have attended a *Pre-Invoice Submission Meeting* analogous to the requirement in GC 5.2.1, the *Contractor* may submit an application for final payment to the *Owner* and the *Contractor* shall:

.1 include all of the requirements set out in GC 5.2.1, including without limitation those requirements listed in Schedule A to these Supplementary Conditions that are specific to an application for final payment;

.2 ensure that all warranties, *Extended Warranties*, records, operation and maintenance manuals, data books, literature maintenance sheets, list of outstanding work and deficiency list, *Waste Management Report*, keys, Certificate of Clearance from WSIB, proof of publication of the certificate of *Substantial Performance of the Work* and the *As-Built Record Drawings* are submitted to the *Owner* (collectively, the "**Close-Out Documentation**"). Such submissions shall constituent requirements for the *Proper Invoice* for final payment; and

.3 if applicable, (a) written confirmation from the *Owner* that the deficiencies or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2 have been fully rectified as of the date of the *Contractor's* application for final payment, and/or (b) written confirmation, signed by the *Owner* and the *Contractor,* that the *Contract Price* has been reduced by a specified amount in exchange for the *Owner* releasing the *Contractor* of its obligation to rectify the certain outstanding deficiencies and/or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2, as detailed in such written confirmation."

5.5.2 After receipt by the *Owner* of an application for final payment submitted by the *Contractor* in accordance with paragraph 5.5.1:

.1 the *Owner* will either:

(a) issue, with a copy to the *Contractor*, a certificate for payment, in the amount applied for in the *Proper Invoice*, or

(b) issue*,* with a copy to the *Contractor,* a certificate for payment for an amount determined by the *Owner* to be properly due to the *Contractor* after applying any credits, withheld amounts*,* or other set-offs which the *Owner* is entitled to notwithstanding any notice of dispute or disagreement that the *Contractor* may have served, along with the *Owner's* reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to the *Owner* issuing a *Notice of Non-Payment*, if any, in accordance with GC 5.5.3;

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

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

(b) in the amount stated in the certificate for payment less such amount stated in the *Owner*'s *Notice of Non-Payment* issued pursuant to GC 5.3.2,

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

5.5.3 In the event that the application for final payment delivered by the *Contractor* does not include the requirements of GC 5.5.1 (including the requirements for a *Proper Invoice*) or where the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment*. Where the *Owner* has delivered a *Notice of Non-Payment*, as specified under this GC 5.5.3, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 10 calendar days following the issuance of a *Notice of Non-Payment*, the *Owner* and *Contractor* cannot resolve the dispute, either party may issue

a notice of *Adjudication* in a form prescribed under the *Construction Act*. The *Owner* and *Contractor* will then submit the dispute to *Adjudication* as set out under PART 8 – DISPUTE RESOLUTION.

5.5.4 The amounts disputed and described under the *Notice of Non-Payment* shall be held by the *Owner* until all disputed portions of the *Proper Invoice* for final payment have been resolved in accordance with PART 8 – DISPUTE RESOLUTION. Any portion of the *Proper Invoice* which is not the subject of a *Notice of Non-Payment* shall be payable within the time period set out in paragraph 5.5.2.2.

5.5.5 Subject to the provision of paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION, and any lien legislation applicable to the *Place of the Work*, the *Owner* shall make payment, to the *Contractor* in accordance with paragraph 5.5.2.2.

5.5.6 Notwithstanding anything else in this GC 5.5 – FINAL PAYMENT the *Owner* shall retain a finishing holdback as provided for in the *Construction Act*, which shall be released to the Contractor upon expiry of the lien period provided for under the *Construction Act*, provided no construction liens have been registered.

5.5.7 As additional requirements for release of finishing construction lien holdback, the *Contractor* shall submit the following documentation:

.1 a written declaration that no claims for lien or written notices of lien have been received by it;

.2 a *Statutory Declaration* in the form set out in Schedule B that all accounts for labour, subcontracts, *Products*, construction machinery and equipment, and other indebtedness which may have been incurred by the *Contractor* and for which the *Owner* might in any way be held responsible have been paid in full up to the previous progress payment, except for amounts properly retained as a holdback or as an identified amount in dispute; and

.3 a Workplace Safety & Insurance Board Clearance Certificate."

32. GC 5.8 WITHHOLDING OF PAYMENT

32.1 Add new paragraph GC 5.8 WITHHOLDING OF PAYMENT as follows:

"GC 5.8 WITHHOLDING OF PAYMENT

"5.8.1 Upon notice to the *Contractor*, the *Owner* may, subject to the *Owner*'s requirement to issue a *Notice of Non-Payment* under the *Construction Act,* withhold or retain all or any portion of any payment due to the *Contractor* under this *Contract* to ensure the performance of the *Work* or to protect the *Owner*'s rights in respect of the events set out in this paragraph 5.8.1, but only such portion of any payment as is reasonably necessary for such purpose. The *Owner* may make such withholding or retention upon the occurrence and continuance of any of the following events:

.1 the *Contractor* is in default of any of its material obligations under this *Contract*;

.2 all or any part of such payment is attributable to Work which is defective or not performed in accordance with the *Contract Documents*;

.3 the *Contractor* has improperly failed to make prompt payments to its *Subcontractors* and *Suppliers* respecting *Work* for which the *Owner* has made payment to the *Contractor*; or

.4 the amounts described in section 17(3) of the *Construction Act*.

5.8.2 In the event of deficiencies or delays in the *Work* that the *Contractor* fails or refuses to address upon receiving notice of same in accordance with the requirements of the *Contract*, the *Owner* may, without limiting the remedies available to it under this *Contract* and subject to the *Owner*'s requirement to issue a *Notice of Non-Payment* under the *Construction Act*, retain and set off as against any payments that would otherwise be owing to the *Contractor*, the reasonable costs of rectifying such deficiencies or delays as determined by the *Owner*.

5.8.3 In addition to any rights the *Owner* has pursuant to the *Construction Act* and subject to the *Owner*'s requirement to issue a *Notice of Non-Payment* under the *Construction Act*, if a lien is registered against

the *Place of the Work* or served upon the *Owner*, or an action commenced against the *Owner*, by any *Subcontractor*, the *Owner* having made all payments currently due in accordance with the payment terms of the *Contract Documents*, the *Owner* shall have the right to withhold from any money otherwise due to the *Contractor*, the full amount claimed in the lien action plus an additional amount sufficient to satisfy all of the *Owner* expenses relating to such lien action, including legal and consulting costs. These funds, less expenses incurred, shall be released to the *Contractor* upon the full discharge of all liens and dismissal of all actions against the *Owner*."

33. GC 5.9 CONSTRUCTION LIENS

33.1 Add new GC 5.9 – CONSTRUCTION LIENS as follows:

"**GC 5.9 – CONSTRUCTION LIENS**

5.9.1 Notwithstanding anything else in this PART 5 – PAYMENT, in the event a claim for lien is registered against title to the *Place of the Work* by the *Contractor*, a *Subcontractor* or a *Supplier*, or served on the *Owner* with regard to the *Project* by a *Subcontractor* or a *Supplier*, or the *Owner* receives a written notice of or claim for lien from a *Subcontractor* or a *Supplier*, the *Owner* shall be entitled to withhold any payment otherwise due to the *Contractor* until such time as such claims have been dealt with as provided below.

5.9.2 In the event that a claim for lien or a written notice of a lien is received by the *Owner* in relation to the *Project*, the *Contractor* shall, within ten (10) calendar days, at its sole expense, arrange for the vacating or the discharge of the claim for lien and/or the withdrawal of the written notice of lien or have the lien vacated pursuant to the *Construction Act*. If the *Contractor* commences an application to the Court to have the lien vacated, the *Contractor* shall provide the *Owner* with copies of all court documents submitted by the *Contractor* and the *Order* issued by the Court. If the lien is only vacated, the *Contractor* shall, if requested, undertake the *Owner*'s defence of any subsequent action commenced in the respect of the lien at the *Contractor*'s expense.

5.9.3 If the *Contractor* fails or refuses to take such steps as required under paragraph 5.9.2, the *Owner* shall, at its option, be entitled to take all steps necessary to vacate and/or discharge the claim for lien or the withdrawal of the written notice of lien, and all costs incurred by the *Owner* in doing so (including, without limitation, legal fees on a full indemnity basis and any payment which may ultimately be made out of or pursuant to security posted to vacate the lien) shall be the responsibility of the *Contractor*, and the *Owner* may deduct such amounts from the amounts otherwise due or owing to the *Contractor*.

5.9.4 Without limiting any of the foregoing, the *Contractor* shall satisfy all judgments and pay all costs resulting from any liens or any actions brought by a *Subcontractor* or *Supplier* in connection with any liens, or in connection with any other claim or lawsuit brought against the *Owner* by any person that provided services or materials to the *Project* which constituted part of the *Work*, and the *Contractor* shall indemnify the *Owner* for any and all costs (including, without limitation, legal fees on a solicitor and client basis) the *Owner* may incur in connection with such claims or actions.

5.9.5 Section 20(1) of the *Construction Act* does not apply to this *Contract* and no general lien arises under or in respect of the *Work*, such that all liens shall arise and expire on a lot-by-lot basis."

34. GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

34.1 Amend paragraph 6.1.2 by adding the following to the end of that paragraph:

"This requirement is of the essence and it is the express intention of the parties that any claims by the *Contractor* for a change in the *Contract Price* and/or *Contract Time* shall not be approved unless there has been compliance with PART 6 – CHANGES IN THE WORK. No course of conduct or dealing between the parties, no express or implied acceptance of alterations or additions to the *Work* and no claims that the *Owner* has been unjustly enriched by an alteration or addition to the *Work*, whether in fact there is any such unjust enrichment or not, should be the basis for a claim for additional payment under this *Contract* or a claim for any extension of the *Contract Time*."

34.2 Add new paragraph 6.1.3 as follows:

"The *Contractor* agrees that changes resulting from construction coordination, including but not limited to site surface conditions, site coordination, and *Subcontractor* and *Supplier* coordination, are included in the *Contract Price* and shall not entitle the *Contractor* to claim an addition to the *Contract Price* in relation to coordination."

35. GC 6.2 CHANGE ORDER

35.1 Add new paragraph 6.2.3 as follows:

"The *Contractor* shall not be entitled to any additional compensation arising out of changes to the Work aside from the amounts determined and agreed to under this GC 6.2, or as provided in GC 6.3 – CHANGE DIRECTIVE. The *Contractor*'s fee for overhead and profit related to a *Change Order* or *Change Directive* shall be as set out in the *Contract Documents*."

35.2 Add new paragraph 6.2.4 as follows:

"*Change Orders* are not valid and binding upon the *Owner* unless approved and executed in accordance with the *Owner*'s internal approval processes."

36. GC 6.3 CHANGE DIRECTIVE

36.1 Delete paragraph 6.3.6.3 in its entirety and replace it with the following:

".3 The *Contractor*'s fee shall be as specified in paragraphs 6.2.3 and the *Contractor*'s fee for overhead and profit shall be as set out in the *Contract Documents*."

36.2 Amend GC 6.3.7.10 by adding the following to the end of the paragraph:

", provided that such amounts are not caused by negligent acts, omissions, or default of the *Contractor* or *Subcontractor*;"

36.3 Delete GC 6.3.7.17 in its entirety including all subparagraphs.

36.4 Amend paragraph 6.3.12 by deleting the words "the adjustment shall be referred to the *Consultant* for determination" and replacing them with "the Dispute shall be resolved in accordance with Part 8 – DISPUTE RESOLUTION."

37. GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

37.1 Delete paragraph 6.4.2 in its entirety and replace it with the following:

"The *Owner* will promptly investigate such conditions. If the *Owner* determines that the conditions differ materially and would cause an increase or decrease in the *Contractor*'s cost or time to perform the *Work*, the *Owner* will issue instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE. If the *Owner* determines that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Owner* will provide its reasons for this determination to the *Contractor* in writing."

37.2 Delete paragraph 6.4.3 in its entirety and replace it with the following:

"If the *Contractor* disputes the *Owner*'s determination in paragraph 6.4.2, the *Dispute* shall be resolved in accordance with Part 8 – DISPUTE RESOLUTION."

37.3 Amend paragraph 6.4.4 by deleting the words "and GC 9.5 – MOULD" and substituting the words "GC 9.5 – MOULD and GC 9.6 – IMPACT ASSESSMENT."

37.4 Add new paragraph 6.4.5 as follows:

"The *Contractor* acknowledges that it has received the *Impact Assessment Reports* for the *Project* that are described in the *RFP* documents and that it has considered the mitigation measures described in the *Impact Assessment Reports* in the *Contract Price*. If the *Impact Assessment Reports* are not completed prior to the closing of the *RFP* submission deadline, any adjustments required to the *Contract Price* shall be determined in

accordance with GC 9.6.2.3. The *Impact Assessment Reports* are provided for information only and the *Owner* shall not be liable for any errors or omissions in the reports."

37.5 Add new paragraph 6.4.6 as follows:

"The *Contractor* confirms that, prior to submitting its response to the *RFP* for the *Project*, it had the opportunity to carefully investigate the *Place of the Work* and applied to that investigation the degree of care and skill described in paragraph 3.12.1, given the amount of time provided between the issue of the *RFP* documents and the actual submission deadline for the *RFP*, the degree of access provided to the *Contractor* prior to submission of the response, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such careful investigation undertaken prior to the submission of its response."

38. GC 6.5 DELAYS

38.1 Delete paragraph 6.5.1 in its entirety and replace it with the following:

"If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Owner* or anyone employed or engaged by the *Owner* directly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Owner* determines. *The Contractor* shall be reimbursed by the *Owner* for its reasonable direct costs directly flowing from the delay but excluding any indirect, consequential, or special damages."

38.2 Delete paragraph 6.5.2 in its entirety and replace it with the following:

"If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other *Authority Having Jurisdiction* on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes or the advice, recommendations and instructions of public health officials directly by the *Owner*, the *Owner*'s *Other Contractor*(s) and relating to the *Work* or the *Place of the Work* and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, then the *Contract Time* shall be extended for such reasonable time as the *Owner* determines in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for the reasonable direct costs directly flowing from the delay but excluding any indirect, consequential, or special damages."

38.3 Delete paragraph 6.5.3 in its entirety and replace it with the following :

"6.5.3.1 If the performance of the *Work* or the performance of any other obligation(s) of a party to this *Contract* is delayed by *Force Majeure*, then the *Contract Time* shall be extended for such reasonable time as the *Owner* and the *Contractor* shall agree. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the *Contractor* and the *Owner* agree to a shorter extension. Neither party shall be entitled to payment for its costs incurred by such delays. Upon reaching agreement on the extension of the *Contract Time* attributable to the *Force Majeure* event, the *Owner* and the *Contractor* shall execute a *Change Order* indicating the length of the extension to the *Contract Time* and confirming that there are no costs payable by either party to the other for the extension of *Contract Time*.

6.5.3.2 Notwithstanding the foregoing, the *Owner* may issue a *Change Directive* requiring the *Contractor* to undertake those specific actions identified in the *Change Directive* as the *Contractor* can reasonably and safely initiate to remove or relieve either the *Force Majeure* or its direct or indirect effects on the *Project*, in which case the *Contract Price* will be adjusted in accordance with paragraph 6.3.7. If the *Contractor* fails within the time period specified in the *Change Directive* to take such action, then the *Owner* may, at its sole and absolute discretion and after it has given *Notice in Writing* to the *Contractor*, take some or all of such actions to partially or wholly remove or relieve such *Force Majeure* or its direct or indirect effects, and thereafter require the *Contractor* to resume the performance of the *Work*."

38.4 Delete paragraph 6.5.4 in its entirety and replace it with a new paragraph 6.5.4:

"No extension of the *Contract Time* will be approved unless the *Contractor* provides *Notice in Writing* to the *Owner* within 3 *Working Days* of the date upon which the *Contractor* ought reasonably to have been aware of the delay contemplated in paragraphs 6.5.1, 6.5.2 or 6.5.3. For the *Notice in Writing* to be valid under this paragraph 6.5.4 it must include specific details about:

.1 the cause of the delay;

.2 the likely impact the delay will have on the *Contract Time* and details of the extension of time being requested; and

.3 mitigation efforts, if any, undertaken by the *Contractor* or, where no mitigation efforts have been undertaken by the *Contractor*, the reasons why mitigation is either not possible or has not been undertaken by the *Contractor*."

38.5 Add new paragraph 6.5.6 as follows:

"6.5.6 If the *Contractor* delays the performance of the *Work* and such delay is for a cause within the *Contractor*'s control, the *Contractor* shall pay to the *Owner* the per diem rate for liquidated damages specified in Article 10 of the *Contract* for each day of delay if *Ready-for-Takeover* is not achieved in accordance with the time specified in Article A-1.3. If the per diem rate for liquidated damages is not specified in the *Contract Documents*, the Contractor shall pay to the *Owner* the *Administration Costs* incurred by the Owner as a result of the delay."

38.6 Add new paragraph 6.5.7 as follows:

"6.5.7 If the *Contractor* is delayed in the performance of the *Work* due to the replacement of a representative, worker, *Subcontractor* or *Supplier* pursuant to GC 3.5.4, 3.6.3 or 3.7.4, the *Contractor* shall pay to the *Owner* the per diem rate for liquidated damages specified in Article 10 of the *Contract* for each day of delay if *Ready-for-Takeover* is not achieved in accordance with the time specified in Article A-1.3. If the per diem rate for liquidated damages is not specified in the *Contract Documents*, the *Contractor* shall pay to the *Owner* the *Administration Costs* incurred by the *Owner* as a result of the delay.

38.7 Add new paragraph 6.5.8 as follows:

"6.5.8 If the *Contractor* disputes the determination by the *Owner* in paragraph 6.5.1 or paragraph 6.5.2, the *Dispute* shall be resolved in accordance with Part 8 – DISPUTE RESOLUTION."

39. GC 6.6 CLAIMS FOR A CHANGE IN THE CONTRACT PRICE

39.1 Amend paragraph 6.6.1 by deleting the words "and to the *Consultant*."

39.2 Amend paragraphs 6.6.3 and 6.6.4 by deleting the word "*Consultant*" and replacing it with "other party."

39.3 Delete paragraphs 6.6.5 and 6.6.6 in their entirety and replace them with the following:

"The other party, with respect to a claim made by a party under paragraph 6.6.1, shall make a determination by providing *Notice in Writing* to the claiming party within 30 *Working Days* after receipt of the claim by the other party, or within such other time period as may be agreed by the parties. If such determination is not acceptable to the claiming party, the claim shall be resolved in accordance with Part 8 – DISPUTE RESOLUTION."

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

40.1 Delete paragraph 7.1.2 in its entirety and replace it with the following:

"If the *Contractor* neglects to prosecute the *Work* properly including failing or neglecting to comply with the requirements in GC 3.5 – CONSTRUCTION SCHEDULE or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and the *Owner* determines that sufficient cause exists to justify such action, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing* that the *Contractor* is in default of the *Contractor*'s contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.".

40.2 Amend paragraph 7.1.3.1 as follows:

Insert after the word "commences" the words "and is diligently proceeding with".

40.3 Revise paragraph 7.1.3.2 by substituting the words “an acceptable schedule” with “a schedule *Acceptable* to the *Owner*”.

40.4 Amend paragraph 7.1.4.1 by deleting the words “provided the *Consultant* has certified such cost to the *Owner* and *Contractor*”.

40.5 Amend paragraph 7.1.4.2 by adding to the end of the paragraph the words “and within 5 *Working Days* publish a notice of termination (form 8) in accordance with the *Construction Act*.”

40.6 Delete paragraph 7.1.5.3 in its entirety and replace it with the following:

“charge the *Contractor* the amount by which the full costs of finishing the *Work* as determined by the *Owner*, including compensation to the *Owner* for *Administration Costs* and a reasonable allowance to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 – WARRANTY, exceeds the unpaid balance of the *Contract Price*. If the cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* on the expiry of the warranty period specified in paragraph 12.3.1 for that portion of the *Work* performed by the *Contractor*, provided that such payment shall be made only in accordance with the requirements set out in GC 5.5 – FINAL PAYMENT and GC 5.8 - WITHOLDING FROM PAYMENT”.

40.7 Amend paragraph 7.1.5.4 by substituting the words “the difference” at the end of paragraph 7.1.5.4 with the words “for that portion of the *Work* performed by the *Contractor*, provided that such payment shall be made only in accordance with the requirements set out in GC 5.5 – FINAL PAYMENT and GC 5.8 - WITHOLDING FROM PAYMENT”.

40.8 Add new paragraph 7.1.7 as follows:

“The *Owner* may, if conditions arise which make it necessary for reasons other than as provided in paragraphs 7.1.1 and 7.1.4, suspend performance of the *Work* or terminate the *Contract* by giving *Notice in Writing* to that effect to the *Contractor* identifying the reason for the suspension and the expected length of the suspension. Such suspension or termination shall be effective in the manner specified in said notice and shall be without prejudice to any claims which either party may have against the other.”

40.9 Add new paragraph 7.1.8 as follows:

“The *Contractor* upon receiving notice of suspension or termination from the *Owner* shall suspend all operations as soon as reasonably possible except work which, in the *Contractor*’s opinion is necessary for the safety of personnel and for the care and preservation of the *Work*, the materials and plant. In the event of such suspension, the *Contractor* shall be reimbursed by the *Owne*r for the reasonable costs incurred by the *Contractor* for such protection. Subject to any directions in the notice of suspension or termination, the *Contractor* shall discontinue ordering materials, facilities and supplies and make every reasonable effort to delay delivery of existing orders and, in the event of termination, to cancel existing orders on the best terms available.”

40.10 Add new paragraph 7.1.9 as follows:

“During the period of suspension, the *Contractor* shall not remove from the *Place of the Work* any part of the *Work*, or any *Product* or materials without the consent of the *Owner*.”

40.11 Add new paragraph 7.1.10 as follows:

“If the *Work* should be suspended for a period of 30 days or less, the *Contractor*, upon the expiration of the period of suspension, shall resume the performance of the *Work* in accordance with the *Contract Documents*. If the suspension was not due to an act or an omission of the *Contractor*, there shall be an equitable adjustment to the *Contract Time* and the *Contract Price* as agreed upon by the *Owner* and the *Contractor*.”

40.12 Add new paragraph 7.1.11 as follows:

“If, after 30 days from the date of notice of suspension of the *Work* the *Owner* and the *Contractor* agree to continue with and complete the *Work*, the *Contractor* shall resume operations and complete the *Work* in accordance with the terms and conditions agreed upon by the *Owner* and the *Contractor*.”

40.13 Add new paragraph 7.1.12 as follows:

"The *Owner* may terminate this *Contract* at any time for any or no reason. Such termination shall be effective upon the date specified in the *Owner*'s *Notice in Writing* advising of the termination of the *Contract* pursuant to this paragraph 7.1.12. In such event, the *Owner* shall pay for the actual and verifiable *Work* performed up to the effective date of termination, including demobilization costs, and for such additional costs, if any, directly flowing from and which are a reasonable consequence of the termination, but excluding any consequential, indirect or special damages, termination fees, penalties or levies, and any claims for loss of profit, lost deposits, or lost opportunity. The *Owner* shall not be liable to the *Contractor* for any other claims, costs or damages whatsoever arising from such termination of the *Contract*. Within 3 *Working Days* of termination by the *Owner*, the *Contractor* shall deliver a *Notice in Writing* to each of its *Subcontractors* and *Suppliers* confirming the effective date of the termination."

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

41.1 Amend paragraph 7.2.1 by adding to the end of the paragraph the words "and within 5 *Working Days* publish a notice of termination (form 8) in accordance with the *Construction Act*."

41.2 Amend paragraph 7.2.2, by:

(i) adding the following after the words "public authority" in the second line:

"on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes of *Authorities Having Jurisdiction*, directly by the *Owner* or the *Owner*'s *Other Contractor(s)* and relating to the *Work* or the *Place of the Work*,"; and,

(ii) adding the following to the end of the paragraph:

"unless an acceptable arrangement for an extension of the *Contract Time* is agreed to by the *Contractor* and the *Owner*."

41.3 Delete paragraphs 7.2.3.1 and 7.2.3.2 in their entirety and replace them with "Intentionally left blank".

41.4 Delete paragraph 7.2.3.3 in its entirety and replace it with a new paragraph 7.2.3.3:

".3 the *Owner* fails to pay the *Contractor* when due the amount certified by the *Owner* or awarded by arbitration or a Court, except where the *Owner* has a bona fide claim for set off; or"

41.5 Amend paragraph 7.2.3.4 by deleting all the words after "degree" and replacing them with "and the *Contractor* confirms by a detailed *Notice in Writing* to the *Owner* that sufficient cause exists. Such detailed written statement must contain particulars, including references to the *Contract Documents*, and supporting documentation demonstrating the alleged default by the *Owner*."

41.6 Amend paragraph 7.2.4 by adding to the end of the paragraph the words "and within 5 *Working Days* publish a notice of termination (form 8) in accordance with the *Construction Act*."

41.7 Delete 7.2.5 in its entirety and replace it with the following:

"If the *Contractor* terminates the *Contrac*t under the conditions described in this GC 7.2, the Contractor shall be entitled to be paid for all *Work* performed to the date of termination. The *Contractor* shall also be entitled to recover the costs associated with termination, including the costs of demobilization, losses sustained on *Products* and construction machinery and equipment. The *Contractor* shall not be entitled to any recovery for any indirect, special or consequential losses."

42. GC 8.1 AUTHORITY OF THE CONSULTANT

42.1 Amend paragraph 8.1.1 by deleting the words "which are not resolved in the first instance by findings of the *Consultant* as provided in GC 2.2 – ROLE OF THE CONSULTANT."

42.2 Delete paragraph 8.1.2 in its entirety and replace it with "Intentionally left blank".

42.3 Amend paragraph 8.1.3 by deleting the word "*Consultant*" and replacing it with "*Owner*" in each instance where it occurs in the paragraph.

43. GC 8.2 ADJUDICATION

43.1 Delete GC 8.2 – ADJUDICATION in its entirety, including all subparagraphs thereunder.

44. GC 8.3 NEGOTIATION, MEDIATION, ARBITRATION AND ADJUDICATION

44.1 Delete GC 8.3 – NEGOTIATION, MEDIATION, AND ARBITRATION, including all paragraphs thereunder and replace it with the following:

"**GC 8.3 – NEGOTIATION, MEDIATION, ARBITRATION AND ADJUDICATION**

"8.3.1 Save and except where the *Contractor* has given an undertaking, in accordance with the *Construction Act*, to refer a dispute to *Adjudication*, prior to delivering a notice of *Adjudication* in a form prescribed by the *Construction Act*, the parties agree to first address all *Disputes* in a tiered approach as follows:

.1 A *Dispute* shall be referred to the *Owner*'s project manager for the *Project* and a representative of the *Contractor* of the equivalent seniority or position for resolution within a period not to exceed thirty (30) days.

.2 If unresolved, after following the process described in paragraph 8.3.1.1, the *Dispute* shall be referred to the *Owner*'s Director or Vice President who is responsible for the *Project* and an employee of the *Contractor* of the equivalent seniority or position for resolution within a period not to exceed thirty (30) days.

.3 If unresolved after following the process described in paragraph 8.3.1.2, and only at the election of the *Owner*, the *Dispute* shall be referred to the President and CEO of the *Owner* and the most senior executive employee of the *Contractor* for resolution within a period not to exceed thirty (30) days. If the *Owner* does not elect, at its sole option, to proceed under this paragraph 8.3.1.3, the *Dispute* may proceed to under either step as described in paragraphs 8.3.2 or 8.3.3.

8.3.2 If the *Dispute* remains unresolved despite the *Parties*' attempting to resolve it following the process in paragraph 8.3.1, a party may elect to proceed with the *Dispute* by way of an *Adjudication*. If a party elects to proceed by way of an *Adjudication*, the other party shall not be bound to proceed by way of an *Adjudication*, save and except where the parties are obliged under the *Construction Act*. The following procedures shall apply to any *Adjudications* the parties engage in under the *Construction Act*:

.1 any hearings shall be held in the offices of the *Owner*, or, if such offices are unavailable, another venue as the parties may agree and which is acceptable to the adjudicator;

.2 the *Adjudication* shall be conducted in English;

.3 each party may be represented by counsel throughout an *Adjudication*;

.4 there shall not be any oral communications with respect to issues in dispute that are the subject of an *Adjudication* between a party and the adjudicator unless it is made in the presence of both parties or their legal representatives; and

.5 a copy of all written communications between the adjudicator and a party shall be given to the other party at the same time.

8.3.3 Any documents or information disclosed by the parties during an *Adjudication* are confidential and the parties shall not use such documents or information for any purpose other than the *Adjudication* in which they are disclosed and shall not disclose such documents and information to any third party, unless otherwise required by law, save and except the adjudicator.

8.3.4 In respect of any claim or dispute, if the *Contractor* fails to comply with any of the notice requirements set out in the *Contract Documents* then the *Contractor* shall be barred from advancing such claim(s) or dispute(s) and shall have no entitlement whatsoever in respect of such claim(s) or dispute(s) (including to an increase in payment under the *Contract*, or an extension of *Contract Time*) and by failing to comply with the notice requirements waives the right to make any such claim(s) or dispute(s) in an *Adjudication*

or in any other form of dispute resolution available under this *Contract* or at law. This GC 8.3.4 shall operate conclusively as an estoppel and bar in the event such claims or disputes are brought in an *Adjudication* or other form of dispute resolution and the *Owner* may rely on this GC 8.3.4 as a complete defence to any such claims or disputes.

8.3.5 The parties hereby acknowledge and agree:

.1 that counterclaims, claims of set-off or the exercise or use of other contractual rights that permit the *Owner* to withhold, deduct or retain from monies otherwise owed to the *Contractor* under the *Contract* may be referred to, and included as part of, *Adjudications* under the *Construction Act*;

.2 that disputes related to the termination or abandonment of the *Contract*, as well as any disputes that arise or are advanced following the termination or abandonment of the *Contract*, shall not be referred to *Adjudication* under the *Construction Act*;

.3 that notice(s) of *Adjudication*, with respect to any dispute or claim relating to the *Project*, shall not be given, and no *Adjudication* shall be commenced following *Ready-for-Takeover*, abandonment, or termination of the *Contract*;

.4 that any *Adjudication* between the *Contractor* and a *Subcontractor* or a *Supplier* that relates to an *Adjudication* between the *Owner* and the *Contractor* shall be joined together to be adjudicated by a single adjudicator, provided that the adjudicator agrees to do so, and the *Contractor* shall include a provision in each of its subcontracts that contain an equivalent obligation to this GC 8.3.5.4; and

.5 that, other than where the *Contractor* is obliged to commence an *Adjudication* pursuant to an undertaking under the *Construction Act*, neither the *Owner* nor the *Contractor* shall commence an *Adjudication* during the *Restricted Period (Adjudication).*

8.3.6 If the *Dispute* remains unresolved despite the parties attempting to resolve it following the process in paragraph 8.3.1, or following a determination of the *Dispute* pursuant to an *Adjudication* under paragraph 8.3.2, a party may elect to proceed with the *Dispute* under a mediation model to be agreed upon by the parties. A party shall elect to proceed to mediation no later than: (i) ten (10) days following the expiry of the timeline set out in paragraphs 8.3.1.2 or 8.3.1.3, whichever is the later, or (ii) ten (10) days following the rendering of the adjudicator's determination following an *Adjudication*. Where a party elects to proceed with mediation within the timelines prescribed in this paragraph 8.3.6, the other party shall be bound to proceed to mediation. No later than ten (10) days after a party makes an election to proceed to mediation, or such longer period as may be mutually agreed between the parties, the parties shall enter into a mediation agreement which shall set out the mediation process and designate the mediator.

8.3.7 If neither party elects to proceed to mediation within the timelines outlined in paragraph 8.3.5 or 8.3.6, or the parties are unable to enter into a mediation agreement within the time limits, the matter shall proceed and be finally resolved by binding arbitration by a single arbitrator in accordance with the *Arbitration Act* by an arbitration agreement to be executed by the parties and the arbitrator. The parties shall mutually agree on the selection of the arbitrator, failing which the arbitrator shall be appointed in accordance with the *Arbitration Act*. The arbitration proceedings shall take place in Toronto, Ontario, Canada. The language of the arbitration shall be English. The parties agree that any arbitration award, including with respect to costs, shall be binding on the parties, may be enforced in any court of competent jurisdiction and shall be final and no appeals or judicial reviews shall be permitted as of right or by application to any court of competent jurisdiction, except on errors of law. The parties shall each bear their own costs and their proportionate share of any joint costs of arbitration, subject to any award of an arbitrator.

8.3.8 The timelines in GC 8.3. may be amended by mutual agreement of the parties."

45. GC 8.4 RETENTION OF RIGHTS

45.1 Amend paragraph 8.4.1 by deleting all the words after "the party has" and replacing them with "complied with the provisions of GC 8.3."

45.2 Amend paragraph 8.4.2 by replacing "paragraph 8.3.6" with "paragraph 8.3.7".

45.3 Add new paragraph 8.4.3 as follows:

"8.4.3 If the Parties proceed with an arbitration as described in paragraph 8.3.7, the *Contractor* agrees that this paragraph 8.4.3 shall be construed as a formal consent to the stay of any lien proceedings until an award is rendered in the arbitration or such dispute as otherwise resolved between the parties. In no event shall the *Contractor* be deprived of its right to enforce its lien against the *Project* should the *Owner* fail to satisfy any arbitral award against it in full on the dispute in respect of which the lien proceedings were commenced. Provided nothing in this paragraph 8.4.3 shall prevent the *Contractor* from taking the steps required by the *Construction Act* to preserve and/or perfect a lien to which it may be entitled."

46. GC 9.1 PROTECTION OF WORK AND PROPERTY

Amend paragraph 9.1.1.1 by adding the following words at the end of that paragraph:

"...which the *Contractor* could not reasonably have discovered applying the degree of care and skill described in paragraph 3.4.1 to its review of the *Contract Documents*."

46.1 Delete paragraph 9.1.2 in its entirety and replace it with the following new paragraph 9.1.2:

"Before commencing any work, the *Contractor* shall determine the locations of all underground utilities and structures indicated in the *Contract Documents* or that are discoverable by applying to an inspection of the *Place of Work* the degree of care and skill described in paragraph 3.12.1."

46.2 Add new paragraph 9.1.5 as follows:

"The *Contractor* shall neither undertake to repair and/or replace any damage whatsoever to the work of *Other Contractors*, or to adjoining property, nor acknowledge the same was caused or occasioned by the *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed from the *Owner*. However, where there is danger to life or public safety, the *Contractor* shall take such emergency action as it deems necessary to remove the danger."

47. GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

47.1 Amend paragraph 9.2.7.3 by deleting the words "*Consultant* may recommend in consultation with the *Contractor* and" and replacing them with the words "*Owner* may determine in consultation with".

47.2 Add new paragraph 9.2.10 as follows:

"The *Contractor* shall indemnify and hold harmless the *Owner*, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits or proceedings arising out of or resulting from exposure to, or the presence of, toxic or hazardous substances or materials which were either brought on to the *Place of the Work* by the *Contractor*, or anyone for whom the *Contractor* is in law responsible, and mishandled or handled negligently or improperly or which are otherwise mishandled or handled negligently or improperly by the *Contractor*, or anyone for whom the *Contractor* is in law responsible, thereby creating exposure to toxic or hazardous substances or materials. This obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity set out in GC 13.1 – INDEMNIFICATION or elsewhere in the *Contract* or which otherwise exist respecting a person or party described in this paragraph."

48. GC 9.4 CONSTRUCTION SAFETY

48.1 Delete paragraph 9.4.1 in its entirety and replace it with the following:

"9.4.1 The *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions

and programs in connection with the performance of the *Work*. Without limiting the generality of the foregoing, the *Contractor* shall comply with the occupational health and safety laws and regulations and any orders, recommendations and restrictions made by the federal, provincial or municipal governments and the advice, recommendations and instructions of public health officials, as they apply to the *Place of the Work*. If the *Place of the Work* is located on the *Owner*'s premises, the *Contractor* shall comply with all the *Owner*'s policies and directions to ensure the health and safety of the *Owner*'s employees and *Other Contractors* as well as the *Contractor*'s employees, *Subcontractors* and *Suppliers*. The *Contractor* shall submit its Health and Safety Plan to the *Owner* for *Acceptance* prior to commencing the *Work*, which Plan shall include all the elements required by the *Specifications* for a Health and Safety Plan. The *Contractor* shall indemnify and hold harmless the *Owner* for any fines, penalties or other costs imposed or assessed on or incurred by the *Owner* arising from the *Contractor*'s failure to comply with the applicable health and safety laws, any orders, recommendations and restrictions of the federal, provincial or municipal governments or the advice, recommendations and instructions of public health officials. *"*

48.2 Amend GC 9.4.2 by adding the following words after "and the Contractor":

", Subcontractors and Suppliers".

48.3 Amend GC 9.4.3 by adding the following words after "and the *Contractor*":

", *Subcontractors* and *Suppliers*".

48.4 Delete paragraph 9.4.4 in its entirety and replace it with the following:

"9.4.4 Prior to the commencement of the *Work*, the *Contractor* shall submit to the *Owner*:

.1 a current WSIB clearance certificate;

.2 copies of the *Contractor*'s insurance policies having application to the *Project* or certificates of insurance, at the option of the *Owner*;

.3 documentation of the *Contractor*'s in-house safety-related programs; and

.4 a copy of the Notice of Project filed with the Ministry of Labour naming itself as "Constructor" under the *Occupational Health and Safety Act*."

48.5 Delete paragraph 9.4.5 in its entirety and replace it with the following:

"9.4.5 The *Contractor* shall indemnify and save harmless the *Owner*, its agents, officers, directors, employees, consultants, successors and assigns from and against the consequences of any and all safety infractions committed by the *Contractor* under the *Occupational Health and Safety Act* and any breaches of the *Emergency Management and Civil Protection Act* and related orders, recommendations or regulations, including the payment of legal fees and disbursements on a full indemnity basis."

48.6 Add new paragraph 9.4.6 as follows:

"9.4.6 The *Contractor* shall ensure that it and its employees, *Subcontractors* and *Suppliers* are aware of and, while being on the *Owner*'s property, comply with the *Owner*'s policies, including its Fit for Duty Policy, and with the Ontario Northland Operating Manual, including the Current Summary Bulletin, current Ontario Northland Time Table, C.R.O.R. 2022, Infrastructure Special Instructions, Dangerous Goods and Ontario Northland General Operating Instructions, as applicable."

48.7 Add new paragraph 9.4.7 as follows:

"9.4.7 In the event of an emergency threatening health, life or property, the *Contractor* shall take such action as may be necessary to save lives and protect persons from injury and to protect and preserve the property. The *Contractor* shall notify the *Owner* of such emergency as promptly as is practical under the circumstances."

49. GC 9.5 MOULD

49.1 Amend paragraph 9.5.3.3 by deleting the words "*Consultant* may recommend in consultation with the *Contractor* and" and replacing them with the words "*Owner* may determine in consultation with".

50. GC 9.6 IMPACT ASSESSMENT

50.1 Add new GC 9.6 – IMPACT ASSESSMENT as follows:

"**GC 9.6 IMPACT ASSESSMENT**

9.6.1 The *Contractor* shall be responsible for:

.1 ensuring that any potential impacts and areas of concern identified in the *Contract Documents* or *Impact Assessment Reports*, if provided, are mitigated during the *Work*; and,

.2 identifying any previously unknown impacts relating to fish, navigable waters, species at risk, vegetation, wildlife, socio-economic and heritage that arise prior to commencing the *Work* and during the *Work*.

9.6.2 If the *Contractor* or *Owner* observes or reasonably suspects the presence of any impacts described in paragraph 9.6.1.2 that are not mentioned or accounted for in the *Contract Documents* or *Impact Assessment Reports*, if any, and related mitigation plans,

.1 the observing party shall immediately report the circumstances to the other party;

.3 the *Contractor* shall immediately take reasonable steps, including stopping the *Work* if necessary, to ensure that any potential impacts are mitigated; and,

.4 if the *Owner* and *Contractor* do not agree on the existence, significance or mitigation measures for the impact, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine the issue and the parties will enter into a *Change Order* if the mitigation measures will cause an increase or decrease in the *Contractor*'s cost or time to perform the *Work*.

9.6.3 If the *Contractor* fails to comply with the requirements in paragraph 9.6.2, the *Contractor* shall:

.1 be responsible for all costs incurred by the *Owner* or the *Contractor* to mitigate the damage caused due to the failure;

.5 not be entitled to request a *Change Order* relating to the failure to comply; and

.6 indemnify the *Owner* and hold it harmless from any claims, damages, costs, fines or other expenses, including reasonable legal fees and expenses, relating to or arising from the *Contractor*'s failure to comply with paragraph 9.6.2."

51. GC 9.7 ENVIRONMENTAL PROTECTION FOR CONSTRUCTION IN AND AROUND WATERBODIES

51.1 Add new GC 9.7 – ENVIRONMENTAL PROTECTION FOR CONSTRUCTION IN AND AROUND WATERBODIES as follows:

"**GC 9.7 ENVIRONMENTAL PROTECTION FOR CONSTRUCTION IN AND AROUND WATERBODIES**

9.7.1 The *Contractor* shall comply with the environmental protection requirements and mitigation measures that apply to construction involving work in and around waterbodies and on waterbody banks as set out in OPSS.PROV 182.

9.7.2 Pursuant to section 38(4) of the *Fisheries Act,* the *Contractor* has an obligation to notify the Department of Fisheries & Oceans("DFO") when the *Work* results in the unauthorized death of fish or a harmful alteration, disruption or destruction ("HADD") of fish habitat or where there is imminent danger that the death of fish or HADD of fish habitat could occur. The notification shall be done using the form attached

as Schedule D. The *Contractor* shall also notify the *Owner* of any such incidents. Failure to notify DFO of such incidents is a federal offence.

9.7.3 In accordance with the *Fisheries Act*, notification must be made without delay to DFO after the *Contractor* ensures the immediate health and safety risks are managed at the *Place of the Work*. Updates to DFO may be provided at a later time, if required.

9.7.4 All spills and sediment releases into a waterbody during the *Work* must be immediately reported by the *Contractor* to the *Consultant* and the *Owner* who must report the release to the Spills Action Centre ("SAC") operated by the Ministry of Environment, Conservation and Parks ("MECP") at 800-288-6060. If the *Owner* is not available, the *Contractor* shall report the incident to SAC. The *Contractor* shall take all reasonable measures to mitigate or remedy any adverse effects that result from the occurrence or might reasonably be expected to result from it."

52. GC 9.8 ENVIRONMENTAL SPILLS AND RELEASES

52.1 Add new GC 9.8 – ENVIRONMENTAL SPILLS AND RELEASES as follows:

"**GC 9.8 ENVIRONMENTAL SPILLS AND RELEASES**

9.8.1 All spills and releases of hazardous substances in the course of the *Work* must be immediately reported by the *Contractor* to the *Owner* who will report the spill or release to the MOECP SAC. If the the *Owner* is not available, the *Contractor* shall report the incident to the MOECP SAC and the ONTC RTC at 800-558-4129 or EXT 141.

9.8.2 The *Contractor* shall take immediate steps to mitigate the damage to the environment and contain the spill or release. If the *Contractor* does not take timely action or, if the *Contractor* is not available, the *Owner* may direct others to remedy the situation.

9.8.3 If the spill or release was the fault of the *Contractor*, the remedial work shall be completed at the cost of the *Contractor* and with no additional cost to the *Owner* and the *Owner* shall be entitled to seek reimbursements for all costs associated with the remedial work including the cost of work done by third parties.

9.8.4 If the spill or release was not the fault of the *Contractor*, the *Owner* shall pay for the remedial work."

53. GC 10.1 TAXES AND DUTIES

53.1 Amend paragraph 10.1.2 by adding the following sentence at the end of that paragraph:

"For greater certainty, the *Contractor* shall not be entitled to any mark up for overhead or profit on any increase in such taxes and duties and the *Owner* shall not be entitled to any credit relating to mark up for overhead or profit on any decrease in such taxes."

53.2 Add new paragraph 10.1.3 as follows:

"Where an exemption or a recovery of sales taxes, customs duties, excise taxes or *Value Added Taxes*, rebates, or monies from incentive programs is applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner*, assist, join in, or make application for any exemption, recovery or refund of all such taxes, duties, rebates and incentives and all amounts recovered or exemptions obtained shall be for the sole benefit of the *Owner*. The *Contractor* agrees to endorse over the *Owner* any cheques received from the federal or provincial governments, or any other *Authority Having Jurisdiction*, as may be required to give effect to this paragraph 10.1.3."

53.3 Add new paragraph 10.1.4 as follows:

"The *Contractor* shall maintain accurate records tabulating equipment, material and component costs reflecting the taxes, customs duties, excise taxes and *Value Added Taxes paid*."

53.4 Add new paragraph 10.1.5 as follows:

"Any refund of taxes, including without limitation, any government sales tax, customs duty, excise tax or *Value Added Tax*, whether or not paid, which is found to be inapplicable or for which exemption may be obtained, is the sole and exclusive property of the *Owner*."

53.5 Add new paragraph 10.1.6 as follows:

"The *Contractor* agrees to cooperate with the *Owner* and to obtain from all *Subcontractors* and *Suppliers* cooperation with the *Owner* in the application for any rebates, incentives or refund or exemption of any taxes, which cooperation shall include, but not be limited to, making or concurring in the making of an application for any such rebates, incentives, refund or exemption and providing to the *Owner* copies, or where required, originals of records, invoices, purchase orders and other documentation necessary to support such applications. All such rebates, incentives or refunds shall either be paid to the *Owner*, or shall be a credit to the *Owner* against the *Contract Price*, in the *Owner*'s discretion."

53.6 Add new paragraph 10.1.7 as follows:

"Customs duties penalties, or any other penalty, fine or assessment levied against the *Contractor* shall not be treated as a tax or customs duty for purposes of this GC 10.1."

54. GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

54.1 Delete paragraph 10.2.2 in its entirety and replace it with the following:

"The *Owner* has Crown immunity from the *Building Code Act* and the *Planning Act* and may not be obtaining building permits or development approvals. The *Owner* shall obtain and pay for any permanent easements over Third Party Property required for the completion of the Work. The *Contractor* shall be responsible for all other permissions for access to Third Party Property."

54.2 Add to the end of paragraph 10.2.4. the following:

"Whenever standards of law, ordinances, rules, regulations, codes and orders relating to the *Work* differ, the most stringent standards shall govern."

54.3 Amend paragraph 10.2.5 by adding the words, "Subject to paragraph 3.4.1" to the beginning of the paragraph.

- and -

Substitute the word "*Owner*" for the word "*Consultant*"

-and-

Add the following to the end of the second sentence:

"...and no further *Work* on the affected components of the *Contract* shall proceed until these changes to the *Contract Documents* have been obtained by the *Contractor* from the *Owner*."

54.4 Amend paragraph 10.2.6 by adding the following sentence at the end of that paragraph:

"In the event the *Owner* suffers loss or damage as a result of the *Contractor*'s failure to comply with paragraph 10.2.5, and notwithstanding any limitations described in paragraph 13.1.1, the *Contractor* agrees to indemnify and to hold harmless the *Owner* from and against any claims, demands, losses, costs, damages, actions, suits or proceedings resulting from such failure by the *Contractor*."

54.5 Amend paragraph 10.2.7 by adding the words "which changes were not, or could not have reasonably been known to the *Owner* or the *Contractor*, as applicable, at the time of deadline for submission of responses to the *RFP* and which changes did not arise as a result of a public emergency or other *Force Majeure* event" to the second line, after the words "authorities having jurisdiction".

54.6 Add new paragraph 10.2.8 as follows:

"The *Contractor* shall furnish necessary certificates as evidence that the *Work* installed conforms with laws and regulations of authorities having jurisdiction, including certificates of compliance for *Owner*'s occupancy or partial occupancy. These certificates are to be final certificates giving complete clearance of the *Work*."

55. GC 10.3 PATENT FEES

41.1 Delete paragraph 10.3.2 in its entirety.

56. GC 10.4 WORKERS' COMPENSATION

56.1 Add new paragraph 10.4.2 as follows:

"10.4.2 The *Contractor* shall be solely responsible for its employees and officers and for its *Subcontractors* and their officers and employees, including ensuring that all required employer filings, contributions, deductions, and payments are made or remitted, as the case may be, with respect to applicable employer health taxes and under the *Employment Insurance Act*, the Canada Pension Plan, the Ontario *Workplace Safety and Insurance Act, 1997*, and all equivalent legislation in any other applicable jurisdiction. Without limiting the generality of the foregoing, the *Contractor* shall indemnify, defend and hold harmless the *Owner*, its directors, officers, and employees from all claims, demands, actions, suits or proceedings arising from any health, medical, disability or similar claims which *Contractor*'s employees or officers or any of its Subcontractors or their officers or employees may make against the *Owner*, its directors, officers, or employees during or after the *Contract Time*, whether or not such claims are attributable to the *Contractor*'s or *Subcontractor*'s performance of the *Work* or related to the *Contractor*'s obligations under this *Contract*."

57. GC 11.1 INSURANCE

57.1 Delete all references to "the *Consultant*" in GC 11.1.

57.2 Amend the title of GC 11 to add the words "CONTRACT SECURITY" at the end of the title.

57.3 Delete items 1 to 8 in paragraph 11.1.1 and in CCDC 41 and replace with the following:

1. General Liability insurance shall be with limits of not less than $10,000,000 per occurrence, an aggregate limit of not less than $10,000,000 within any policy year with respect to completed operations, and a deductible not exceeding $50,000. To achieve the desired limit, umbrella or excess liability insurance may be used. Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320 including but not limited to:
   - .1 Bodily injury, death, and property damage including loss of use thereof.
   - .2 Premises and operations liability.
   - .3 Products and completed operations liability.
   - .4 Blanket contractual liability.
   - .5 Cross liability and severability of interest clauses.
   - .6 Contingent employer's liability.
   - .7 Personal injury liability.
   - .8 Owner's and Contractor's protective coverage.
   - .9 Broad form property damage.
   - .10 Elevator and hoist liability.
   - .11 Liability for attached machinery, including loading and unloading.
   - .12 Extension of coverage shoring; blasting; excavation; underpinning; demolition; on work; below ground surface work, including tunneling and grading, if applicable to the *Project*.

   The General Liability Insurance shall not include any exclusion relating to working in the vicinity of railway operations."

2. Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death, and damage to property, covering all vehicles owned or leased by the *Contractor*.

3. Manned Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*),including use of additional premises, shall have limits of not less than $10,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than $10,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*.

4. Unmanned aerial vehicle liability insurance with respect to owned or non-owned aircraft (if used directly or indirectly in the performance of the Work), shall have limits of not less than $5,000,000 per occurrence or accident for bodily injury, death and damage to property or such amounts as required by any applicable law or regulation.

5. Contractors' equipment insurance coverage written on an “all risks” basis covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form Acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.

6. ***INTENTIONALLY DELETED***.

7. ***INTENTIONALLY DELETED***.

8. “All Risks" Builders Risk and Boiler & Machinery Insurance shall have limits of not less than the sum of 1.1 times *Contract Price,* plus any property, including design services, the *Owner* provides for incorporation into the *Work*. This policy shall cover all risks of direct physical loss or damage to the *Project*, including but not limited to the perils of earthquake and flood, subject to policy sub limits, warranties and exclusions and shall not be less than the insurance provided by IBC Forms 4042 and 4047 or their equivalent replacement. This insurance shall cover all property forming part of the *Project*, and goods and materials to be incorporated in the *Project* while at the *Place of the Work*, in transit, or while in off-site storage. It shall not provide coverage for the *Contractor’s* or *Subcontractors’* equipment other than scaffolding, formwork, fences, shoring, hoarding, falsework, tarpaulins and temporary buildings in connection with the *Work*. The insurance shall not have a deductible greater than $50,000.

9. Pollution Liability Insurance for an amount not less than $5,000,000 per occurrence and in the aggregate and a deductible of not more than $50,000. This policy shall be written on either an Occurrence or Claims Made Form and will provide coverage on a sudden and accidental, and gradual pollution events basis for on-site cleanup and remediation as well as on-site and off-site third party claims for bodily injury and property damage, cleanup and remediation.

58. GC 11.2 CONTRACT SECURITY

58.1 Add new GC 11.2 – CONTRACT SECURITY as follows:

“**GC 11.2 CONTRACT SECURITY**

11.2.1 If required by the *RFP*, the *Contractor* shall provide a performance bond and a labour and materials payment bond, each issued by a bonding company acceptable to *Owner* and licensed to issue such instruments in the *Place of the Work*, in the amounts and forms as follows:

.1 Amount of performance bond shall be equal to not less than 50% of the *Contract Price* in the form prescribed by the *Construction Act.*

.2 Amount of labour and material payment bond shall be equal to not less than 50% of the *Contract Price* in the form prescribed by the *Construction Act*.

11.2.2 The bonds provided in accordance with paragraph 11.2.1 shall guarantee the faithful performance of the *Contract* in accordance with the *Contract Documents*, including the requirements for warranties provided for the GC 12.3 – WARRANTY, and the payment of all obligations incurred in the event of the *Contractor*’s default, including but not limited to the following:

.1 the payment of legal, accounting, architectural, engineering and other professional services expenses incurred by the *Owner* in determining the extent of Work executed and any additional Work required as a result of the interruption of the *Work*, and its completion; and

.2 the payment of additional expenses to the *Owner* in the form of security guard services, light, heat, power, loss of use of premises, and other related costs, payable over the period between the default of the *Contract* and completion of the *Work*.

11.2.3 Without limiting the foregoing in any way, the bonds shall indemnify and hold harmless the *Owner* for and against costs and expenses (including legal and consultant services and court costs) arising out of or as a consequence of any default of the *Contractor* under this *Contract*.

11.2.4 The *Contractor* shall be responsible for notifying the surety company of any changes made to the *Contract Documents* or the *Contract Price* during the course of the *Work*.

11.2.5 The premiums for bonds required by the *Contract Documents* shall be included in the *Contract Price*.

11.2.6 Should the *Owner* require additional bonds by the *Contractor* or any of his *Subcontractors*, after the receipt of bids for the *Work*, the *Contract Price* shall be increased by the actual costs attributable to providing such bonds. The *Contractor* shall promptly provide the *Owner* with any such bonds that may be required."

59. GC 12.1 READY-FOR-TAKEOVER

59.1 Delete GC 12.1.1 in its entirety and replace it with the following:

"12.1.1 *Ready-for-Takeover* shall be achieved when all of the following has occurred, as verified and *Accepted* by the *Owner*:

.1 *Substantial Performance of the Work* has been achieved, as verified by the *Owner*;

.2 the appropriate permits (if any) for the *Place of the Work* have been obtained from the authorities having jurisdiction;

.3 the *Work* to be performed under the *Contract* has satisfied the requirements for deemed completion in accordance with Section 2(3) of the *Construction Act*,

.4 final cleaning and waste removal, as required by the *Contract Documents*;

.5 the *Contractor* has delivered to the *Owner* all inspection certificates from authorities having jurisdiction with respect to any component of the *Work* which has been completed;

.6 subject only to GC 12.1.2, the entire *Work* has been completed to the requirements of the *Contract Documents*, including completion of all items on the punch list prepared at the time of *Substantial Performance of the Work* and the *Work* is being used for its intended purpose, and is so certified by the *Consultant*;

.7 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* in a collated and organized matter, all *Close-Out Documentation* and any other materials or documentation required by the *Contract Documents*;

.8 subject only to GC 12.1.2, all *Products*, systems and components of the *Project* have been commissioned and certified for operation and accepted by the *Owner*, and

.9 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* full and complete *As-built Record Drawings* and *Specifications* revised by the *Contractor* to reflect the as-built state of the *Work*, clearly showing changes to the *Drawings* and *Specifications* from the original *Contract Documents*, all of which have been *Accepted* by the *Owner* acting reasonably."

59.2 Delete GC 12.1.2 in its entirety and replace it with the following:

"12.1.2 The *Owner* may, in its sole, absolute, and unfettered discretion, waive compliance with a requirement, or a part thereof, for achieving *Ready-for-Takeover* set out in GC 12.1.1.6 to 12.1.1.9 (inclusive). Where the

Owner exercises the discretion afforded under this GC 12.1.2, the *Contractor* shall be required to comply with GC 5.5.1.3 as part of its application for final payment and the *Owner* and the *Contractor* shall establish a reasonable date for completing the *Work*."

59.3 Delete GC 12.1.3 in its entirety and replace it with the following:

"12.1.3 When the *Contractor* considers the *Work* has attained *Ready-for-Takeover*, it shall submit a written application to the *Owner* for review."

59.4 In GC 12.1.4, delete the words "list and" from the second line.

59.5 Delete GC 12.1.5 in its entirety and replace it with the following:

"12.1.5 Following the confirmation of the date of *Ready-for-Takeover* by the *Owner*, the *Contractor* may submit a final application for payment in accordance with GC 5.5 – FINAL PAYMENT."

59.6 Delete GC 12.1.6 in its entirety.

60. GC 12.2 EARLY OCCUPANCY BY THE OWNER

60.1 Delete GC 12.2 – EARLY OCCUPANCY BY THE OWNER in its entirety.

61. GC 12.3 WARRANTY

61.1 Amend paragraph 12.3.2 by adding the words, "Subject to paragraph 1.1.3...." at the beginning of that paragraph.

61.2 Delete paragraphs 12.3.4, and 12.3.5 and replace it with the following paragraphs:

"12.3.4 The *Contractor* shall correct, at no additional cost to the *Owner*, defects or deficiencies in the *Work* that appear, prior to and during the *Warranty Period*. Any *Work* repaired or replaced during the *Warranty Period* shall be re-warranted for an additional 12 months from the date of completion of the repair or replacement. Notwithstanding the expiration of the *Warranty Period*, the *Contractor* shall not be relieved of its obligations to correct any defects or deficiencies in the *Work* of which *Notice in Writing* has been given to the *Contractor* prior to the expiration of the *Warranty Period*.

12.3.5 The *Owner* shall provide *Notice in Writing* to the *Contractor* of defects and deficiencies in the *Work* discovered during the *Warranty Period*. The Contractor shall submit a remediation plan for the permanent rectification of the defects and deficiencies within 2 *Working Days* after delivery of the *Notice in Writing*, including the schedule for the remediation work to be completed. Upon *Acceptance* by the *Owner* of the remediation plan, the *Contractor* shall remediate the defects and deficiencies in accordance with the schedule set out in the *Accepted* plan. *Acceptance* by the *Owner* of a remediation plan does not prohibit the *Owner* from pursuing other remedies it may have against the *Contractor* arising from the defects and deficiencies in the *Work*.

61.3 Amend paragraph 12.3.6 by adding at the end of the paragraph the following:

"The *Extended Warranty Period* for each *Extended Warranty* described in the *Specifications* shall commence on the expiry of the *Warranty Period* described in paragraph 12.3.1. The *Extended Warranties* shall be submitted to the *Owner* as part of the *Close-Out Documentation*."

61.4 Add the following new paragraphs 12.3.7 to 12.3.12

12.3.7 The decision of the *Owner* shall be final as to the existence of such defects or deficiencies in the *Work*, the necessity of remedying same, and the remedial measures required.

12.3.8 If the *Contractor* fails to do the work to correct the defects or deficiencies, the *Owner* shall be entitled to carry out such work by its own forces or by *Other Contractors*. If such work is work which the *Contractor* should have carried out at the *Contractor's* own expense, the *Owner* shall be entitled to recover from the *Contractor* the cost thereof or may deduct the same from any monies due or that become due to the *Contractor*, including the warranty holdback, if any.

12.3.9 Any insurance, contract security, surety or deposit required by the *Contract Documents* shall remain in full effect at the expense of the *Contractor* during the *Warranty Period*.

12.3.10 The *Contractor* shall be responsible for the costs for inspection and testing for the correction of defects or deficiencies. The *Owner* shall have the right to deduct the cost of the inspection and testing from any monies owed to the *Contractor.*

12.3.11 The *Owner* may hold back, if set out in the *Contract Documents*, on each application for payment, advance payment or progress draw, 2.5% of the total amount payable under each such application for payment, advance payment or progress draw as security for the *Contractor*'s performance of its warranty obligations. In the event the *Contractor* fails to correct a defect or deficiency during the warranty period within the required time and/or fails to pay for the redesign, reconstruction and other costs related to damages arising from a defect or deficiency, the *Owner* shall have the right to use the warranty holdback, or such part of it still being held by the *Owner* to pay for the costs of remedying the defect or deficiency and any redesign, reconstruction or other costs relating to the defect or deficiency. If the costs are greater than the amount of the warranty holdback, the *Contractor* shall pay the additional costs upon receipt of an invoice from the *Owner*. The *Contractor* shall have the right to invoice the *Owner* for the balance of the warranty holdback at the end of the *Warranty Period* or *Extended Warranty Period* as described in paragraph 12.3.4.

12.3.12 The *Contractor* shall assign to the *Owner* all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other person in connection with the *Work* and such assignment shall be with the consent of the assigning party where required by law or by the terms of that party's contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the *Owner* under the *Contract Documents*. Until the expiry of the relevant *Warranty Periods* enforceable against the *Contractor*, the *Owner* shall have in its custody all warranties, guarantees and other obligations to third parties respecting the *Work*.

12.3.13 The *Contractor's* obligations under this GC 12.3 shall continue notwithstanding any withholding of payment made by the *Owner* under GC 5.8 **–** WITHOLDING OF PAYMENT or by performance by the *Owner* directly or through other forces of the *Contractor's* obligations under this *Contract,* where the *Contractor* is in default in the performance of such obligations."

62. GC 13.1 INDEMNIFICATION

62.1 Delete GC 13.1 – INDEMNIFICATION in its entirety and replace it with the following:

"13.1.1 The *Contractor* shall indemnify and hold harmless the *Owner* and its directors, officers, employees, contractors and agents (collectively the "*Owner's Indemnitees*") from and against all loss, liability, damage, fines, cost, legal cost and disbursement whatsoever arising out of or related to the *Work* or the *Contract Documents* ("*Loss*"), by whomever made, sustained, incurred, brought or prosecuted, arising out of, or in connection with, anything done or omitted to be done by the *Contractor* in the course of the performance of the *Contractor*'s obligations under the *Contract Documents* or otherwise in connection with the Work. The *Contractor* shall, at the *Owner*'s election, either assume the defence of every proceeding brought in respect of such *Loss*, or cooperate with the *Owner* in the defence, including providing *Owner* with prompt Notice of any possible *Loss* and providing the *Owner* with all information and material relevant to the possible *Loss*.

13.1.2 GC 13.1 – INDEMNIFICATION shall govern over the provisions of paragraph 1.3.1 of GC 1.3 – RIGHTS AND REMEDIES.

13.1.3 The *Contractor* shall make full and complete compensation for any bodily injury or death to any person and for any damage caused to the *Owner*'s or a third party's physical property by the *Contractor*'s act or omission.

13.1.4 The *Contractor* shall be liable for any claims arising from any personal injuries to or death of any of the *Contractor*'s employees, *Subcontractors* or *Suppliers* or from any *Loss* of or damage to any property belonging to the *Contractor* or its employees, *Subcontractors* or *Suppliers* during the performance of the *Work* unless caused by the negligent act or omission of *Owner*.

13.1.5 Notwithstanding any other provision of the *Contract Documents*:

(a) The *Owner* shall not be responsible for indirect, consequential, special, incidental or contingent damages of any nature whatsoever, including loss or revenue or profit or damages resulting from interruption of service or transmission. This limitation shall apply regardless of the form of action, damage, claim, liability, cost, expense or loss, whether in contract (including fundamental breach), statute, tort (including negligence), or otherwise, and regardless of whether the *Owner* has been advised of the possibility of such damages; and,

(b) Any express or implied reference to the *Owner* providing an indemnity or any other form of indebtedness or contingent liability that would directly or indirectly increase the indebtedness or contingent liabilities of the *Owner* or the Province of Ontario, whether at the time of execution of this *Contract* or at any time during the performance of the *Work* and the *Warranty Period*, shall be void and of no legal effect in accordance with s.28 of the *Financial Administration Act*, R.S.O. 1990, c. F.12.

13.1.6 The *Contractor* shall indemnify the *Owner* and the *Owner Indemnitees* and save them harmless from and against all Loss incurred by the *Owner* arising from:

(a) any decision or interpretation by any court or *Authority Having Jurisdiction* that: (i) any of the *Contractor*'s employees are an employee of the *Owner*; or (ii) the *Owner* is liable to pay statutory contributions or deductions in respect of any of the *Contractor*'s employees under any laws, including employment insurance, provincial health insurance, income tax or other employment matters;

(b) any health, medical disability or similar claims which the *Contractor* or *Contractor*'s employees may have during or after the term of this *Contract*;

(c) a claim by any third party against the *Owner* alleging that the *Submittals* and their use by the *Owner*, infringes any *Intellectual Property* rights;

(d) safety infractions committed by the *Contractor* under the *Occupational Health and Safety Act* or any other laws, guidelines or public health orders regulating health and safety at the Work Site;

(e) any claims against the *Owner* for the failure of the *Contractor* to protect the confidentiality of *Confidential Information;*

(f) exposure to, or the presence of, toxic or hazardous substances or materials which were either brought on to the *Work Site* by the *Contractor* or the *Contractor* mishandled or handled negligently or improperly the substances or materials;

(g) a claim from adjacent landowners or other third parties regarding damage to their property due to the *Work*; and

(h) the release into the environment of materials resulting from the *Work* that contain *Environmental Contaminants* during the transportation of such materials from the *Work Site* to the approved waste disposal site.

63. GC 13.2 WAIVER OF CLAIMS

63.1 Delete GC 13.2 – WAIVER OF CLAIMS in its entirety and replace it with the following:

"13.2.1 WAIVER OF CLAIMS BY OWNER

As of the date of the final certificate for payment, the *Owner* expressly waives and releases the *Contractor* from all claims against the *Contractor* including without limitation those that might arise from the negligence or breach of contract by the *Contractor* except one or more of the following:

.1 those made in writing prior to the date of the final certificate for payment and still unsettled;

.2 those arising from the provisions of GC 13.1 – INDEMNIFICATION or GC 12.3 – WARRANTY;

.3 those arising from the provisions of paragraph 9.6.1 of GC 9.6 – IMPACT ASSESSMENTS and arising from the *Contractor* failing to comply with the mitigation plans in the *Impact Assessment Reports* or failing to assess impacts and implement mitigation plans for impacts that arise during the Work;

.4 those arising from the provisions of paragraph 9.2.5 of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES and arising from the *Contractor* bringing or introducing any toxic or hazardous substances and materials to the *Place of the Work* after the *Contractor* commences the *Work*;

.5 those arising from the provisions of paragraph 9.5.1 of GC 9.5 – MOULD and arising from the *Contractor* bringing or introducing mould to the *Place of the Work*; or

.6 those made in writing within a period of six (6) years from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, arising from the *Contractor*'s performance of the *Contract* with respect to material defects or deficiencies in the *Work*.

13.2.2 WAIVER OF CLAIMS BY CONTRACTOR

As of the date of the final certificate for payment, the *Contractor* expressly waives and releases the *Owner* from all claims against the *Owner* including without limitation those that might arise from the negligence or breach of contract by the *Owner* except:

.1 those made in writing prior to the *Contractor*'s application for final payment and still unsettled; and

.2 those arising from the provisions of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, GC 9.5 – MOULD, or GC 10.3 – PATENT FEES.

13.2.3 GC 13.2 – WAIVER OF CLAIMS shall govern over the provisions of paragraph 1.3.1 of GC 1.3 – RIGHTS AND REMEDIES."

62. **PART 14 OTHER PROVISIONS**

62.1 Add new PART 14 as follows:

"**PART 14 OTHER PROVISIONS**

GC 14.1 OWNERSHIP OF MATERIALS

14.1.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All work and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner*. The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Owner*.

GC 14.2 CONTRACTOR DISCHARGE OF LIABILITIES

14.2.1 In addition to the obligations assumed by the *Contractor* pursuant to GC 3.6 – SUBCONTRACTORS AND SUPPLIERS, the *Contractor* agrees to discharge all liabilities incurred by it for labour, materials, services, *Subcontractors* and *Products*, used or reasonably required for use in the performance of the *Work*, except for amounts withheld by reason of legitimate dispute which have been identified to the party or parties, from whom payment has been withheld.

GC 14.3 DAILY REPORTS/DAILY LOGS

14.3.1 The *Contractor* shall cause its supervisor, or such competent person as it may delegate, to prepare a daily log or diary reporting on weather conditions, work force of the *Contractor*, *Subcontractors*, *Suppliers* and any other forces on site and also record the general nature of *Project* activities. Such log or diary shall also include any extraordinary or emergency events which may occur and also the identities of any persons who visit the *Place of the Work* who are not part of the day-to-day work force.

14.3.2 The *Contractor* shall also maintain records, either at its head office or at the *Place of the Work*, recording manpower and material resourcing on the *Project*, including records which document the activities of the *Contractor* in connection with GC 3.4 – CONSTRUCTION SCHEDULE, and comparing that resourcing to the resourcing anticipated when the most recent version of the schedule was prepared pursuant to GC 3.4 – CONSTRUCTION SCHEDULE.

GC 14.4 CONFIDENTIAL INFORMATION

14.4.1 The *Contractor* must not advertise or issue any information, publication, document or article (including photographs or film) for publication or media releases or other publicity relating to the *Work* or the *Owner*'s *Confidential Information* without the prior written approval of the *Owner*.

14.4.2 The *Contractor* must not, and must ensure that the *Contractor*'s personnel do not, without the prior written approval of ONTC:

.1 use *Confidential Information* other than as necessary for the purposes of fulfilling the *Contractor*'s obligations under this *Contract*; or

.2 disclose the *Confidential Information*, other than to the *Contractor*'s personnel who need the information to enable the *Contractor* to perform its obligations under this *Contract*, to the *Contractor*'s legal advisors, accountants or auditors, or where disclosure is required by law (including disclosure to any stock exchange).

14.4.3 The *Contractor* must, within 10 *Working Days* (or any other period agreed in writing by ONTC) after a direction by the *Owner* to do so, return or destroy all *Confidential Information* in the *Contractor*'s possession, custody or control.

14.4.4 If the *Owner* or the *Contractor* is required by law to disclose *Confidential Information*, it shall promptly notify the other party so that that party may intervene to prevent the disclosure.

14.4.5 The *Contractor* specifically acknowledges that *Owner* is subject to the *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F. 4, and that the *Owner* may be compelled by law to disclose certain *Confidential Information*.

14.4.6 The rights and obligations under this Part continue after the termination of this *Contract*.

GC 14.5 CORRUPTION, FORCED LABOUR, SANCTIONS

14.5.1 The *Contractor* warrants that:

.1 no bribe, gift or other inducement has been paid, promised or offered to any official or employee of the *Owner*, the Ministry of Transportation, the Government of Ontario or any other government official relating to the *Owner* entering into this *Contract* with the *Contractor*.

.2 it will take reasonable steps to ensure that its officials and employees do not extort, accept or pay bribes or illicit payments, charge or accept fees that are not legally due or are in excess of those legally due, or unreasonably delay or obstruct the granting of permits, licences, or other such approvals in relation to the project. If the *Contractor* becomes aware of an actual or attempted bribe, extortion, delay or obstruction relating to this *Contract,* the *Contractor* shall report the incident to the *Owner* immediately.

.3 it is unaware of any forced labour or child labour being used at any step of the production of goods produced, purchased or distributed by it in Canada or elsewhere or for the production of goods imported by the *Contractor*.

.4 it has undertaken the appropriate due diligence to ensure its business and its supply chains do not use forced labour or child labour, including an assessment of its business and supply chains that may carry a risk of forced labour or child labour being used and the management of the risk. If applicable, the *Contractor* shall comply with the reporting requirements under the *Fighting Against Forced Labour and Child Labour in Supply Chains Act,* S.C. 2023 c.9.

14.5.2 In compliance with its international obligations or with United Nations obligations, Canada imposes restrictions on trade, financial transactions or other dealings with a foreign country or its nationals. These sanctions may be implemented by regulation under such acts as the *United Nations Act*, the *Special Economic Measures Act (SEMA),* or the *Export and Import Permits Act*. The text of any such regulations is published in the Canada Gazette, Part II. It is the only text which is authoritative. The *Contractor* shall comply with any such regulations that are in force on the effective date of the *Contract* and will require such compliance by its first-tier *Subcontractor*s. The *Owner* relies on such undertaking from the

Contractor to enter into this *Contract*, and any breach of such undertaking shall entitle the *Owner* to terminate this *Contract* for default and to recover damages from the *Contractor,* including excess re-procurement costs.

GC 14.6 COMMUNICATIONS

14.6 The *Owner* or the Government of Ontario will lead and make any announcements relating to this *Contract* and the *Work*. The *Contractor* shall not make any announcement of any kind, including press releases, social media posts, public declarations, or any form of publication or announcement, in relation to this *Contract* or the *Work* unless prior written consent is given by the *Owner*. Should the *Contractor* be contacted by any media outlet or other person or entity wishing to make any form of publication or announcement, or seeking any information, in relation to this *Contract* or the Work, the *Contractor* shall provide no comment and shall immediately notify the *Owner*. The *Contractor* shall immediately notify the *Owner* if it becomes aware of any publication or announcement relating to the *Contract* or the Work

GC 14.7 AUDIT

14.7 The *Contractor* shall keep proper and accurate financial accounts and records, including but not limited to its contracts, invoices, statements, receipts, and vouchers in respect of the *Project* for a least six (6) years after the date that *Ready-for-Takeover of the Project* was achieved (the "*Audit Period*"). The *Owner* has the right to audit all such financial accounts and records associated with the Project and the *Contract Documents*, including *Submittals*, timesheets, reimbursable out of pocket expenses, materials, goods and *Construction Equipment* claimed by the *Contractor*, at all reasonable times during the term of the *Contract* and the *Audit Period* by providing *Notice in Writing* of its intention to conduct the audit. The *Contractor* shall provide full access to the records to the *Owner* for the purpose of the audit.

GC 14.8 GENERAL

14.8.1 Nothing contained in this *Contract* shall be deemed or construed by the parties nor by any third party as creating the relationship of principal and agent, landlord and tenant, or of partnership or of joint venture between the parties.

14.8.2 In addition to those provisions which are expressly stated to survive the termination or expiration of this *Contract*, the provisions of this *Contract* that are by their nature intended to survive termination or expiration of this *Contract* shall continue in full force and effect subsequent to and notwithstanding termination or expiration until or unless they are satisfied.

14.8.3 This *Contract* may be executed with electronic signatures or may be executed and delivered by electronic transmission and the parties may rely upon all such signatures as though they were original signatures. This *Contract* may be executed in counterpart and all such counterparts shall, for all purposes, constitute one agreement binding on the parties."

Schedule A to the Supplementary Conditions

Requirements for a "*Proper Invoice*"

To satisfy the requirements for a *Proper Invoice*, the *Contractor*'s application for payment must satisfy the following criteria:

.1 is in the form of a written bill, invoice, application for payment, or request for payment;

.2 is in writing;

.3 contains the *Contractor*'s name, telephone number and mailing address and contact information of the *Contractor*'s project manager;

.4 contains the title of the *Project* and the *Owner*'s contract number or purchase order number under which the work was performed and the related request for qualification, tender, or request for proposal number, as applicable;

.5 contains the date the written bill, invoice, application for payment, or request for payment is being issued by the *Contractor*;

.6 identifies the period of time in which the Work, labour, services, *Products* and/or materials were supplied to the *Owner*;

.7 reference to the provisions of the *Contract* under which payment is being sought (e.g. progress payment / milestone, holdback, final payment, etc.);

.8 a description, including quantities where appropriate, of the labour, services, *Products*, or materials, or a portion thereof, that were supplied and form the basis of the *Contractor*'s request for payment;

.9 the amount the *Contractor* is requesting to be paid by the *Owner*, set out in a statement, based on the schedule of values *Accepted* under paragraph 5.2.5, separating out any statutory or other holdbacks, set-offs and HST;

.10 with each application for payment after the first, a written statement that all accounts for labour, services, subcontracts, materials, equipment, *Products*, and other indebtedness which may have been incurred by the *Contractor* and for which the *Owner* might in any way be held responsible have been paid in full up to the previous application for payment, except for amounts properly retained as a holdback or as an identified amount in dispute;

.11 with the applications for payment of holdback and for final payment, a *Statutory Declaration* in the form provided by the *Owner* attached as Schedule B stating that all accounts for labour, services, subcontracts, materials, equipment, *Products*, and other indebtedness which may have been incurred by the *Contractor* and for which the *Owner* might in any way be held responsible have been paid in full up to the previous application for payment, except for amounts properly retained as a holdback or as an identified amount in dispute;

.12 a current Workplace Safety Insurance Board Clearance Certificate;

.13 the progress report required under GC 3.4 CONSTRUCTION SCHEDULE, in the form provided by the *Owner* attached as Schedule C;

.14 an updated *Construction Schedule* in native and .pdf formats;

.15 if requested by the *Owner*, a current and valid certificate(s) of insurance for the insurance required under GC 11.1 – INSURANCE;

.16 the following statement: "Provided this *Proper Invoi*ce complies with the requirements of the *Contract* and provided no *Notice of Non-Payment* is issued by the *Owner*, payment is due within 28 days from the date this *Proper Invoice* is received by the *Owner*.";

.17 the name, title, telephone number and mailing address of the person at the place of business of the *Contractor* to whom payment is to be directed;

.18 in the case of the *Contractor*'s application for final payment;

(a) sufficient evidence that the *Contractor* has delivered all warranties to the *Owner*;

(b) sufficient evidence that the *Place of the Work* has been left in a clean and tidy condition, including evidence that any remaining materials, tools, equipment, temporary work, and waste products and debris have been removed from the *Place of the Work*;

(c) landfill waybills for the disposal of the waste products, debris and excess soil removed from the *Place of Work* in accordance with the *Waste Management Plan*; and

(d) an executed, original, full and final release of all claims that may arise as a result of the *Work*, which full and final release executed by the *Contractor* shall be in a form approved by the *Owner*;

.19 information identifying the authority, whether in the *Contract Documents* or otherwise, under which the services or materials were supplied;

.20 any other information that is prescribed in Article A-3, if any, or identified by the *Owner* as required;

.21 the amount invoiced to date;

.22 the percentage of the *Contract Price* invoiced; and

.23 the individual value of *Change Orders* approved during the invoice period and the cumulative value of *Change Orders* for the *Project*.

Ontario Northland

Statutory Declaration of Progress Payment Distribution by Contractor

To be made by the Contractor **prior to payment** as a condition for release of holdback.	The last application for progress payment for which the Declarant has received payment is No. _____ dated _____.

Identification of Contract:

Name of Contract (Location and description of the Work as it appears in the Contract Documents)

Date of Contract : Day : _____ Month : _____ Year : _____

Name of Owner: Ontario Northland Transportation Commission

Name of Contractor:

Name of Declarant: **Position or Title:** (of office held with Contractor)

Declaration

I solemnly declare that, as of the date of this declaration, I am an authorized signing officer, partner or sole proprietor of the Contractor named in the Contract identified above, and as such have the authority to bind the Contractor, and have personal knowledge of the fact that all accounts for labour, subcontracts, products, services, and construction machinery and equipment which have been incurred directly by the Contractor in the performance of the work as required by the Contract, and for which the Owner might in any way be held responsible, have been paid in full as required by the Contract up to and including the latest progress payment received, as identified above, except for:

Holdback monies properly retained,

Payments deferred by agreement, or

Amounts withheld by reason of legitimate dispute which have been identified to the party or parties, from who payment has been withheld.

I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

Declared before me in _____

City/Town Province

on _____.

Date

_____ _____

Signature of Declarant A Commissioner for Oaths or Notary Public

Schedule “C” to the Supplementary Conditions

Project Status Report	
Project Title:	
Reporting Period:	Date:
Project Details:	
Planned Budget: Indicate the original contract value	Current Approved Budget: Indicate the original contract value plus approved change orders
Planned Completion: Indicate the contract schedule completion date	Current Project Completion: Fill in revised date if schedule extension approved through change order
Planned Project Percent Complete: How far should they have progressed by this date?	Actual Project Percent Complete: What is their actual percent complete?
Executive Summary	
Provide a summary of what happened during the period, any concerns, risks or wins and plans for the upcoming period.	
Work Completed in the Period	
List List List List List	
Work Planned for Next Period	
List List List List	
Issues and Concerns	
Use this area to identify any concerns related to the project.	
Status of Progress	

Include a graph to show progress or eliminate this section.

SCHEDULE D

DUTY TO NOTIFY/EMERGENCY WORKS NOTIFICATION FORM

ONTC DUTY TO NOTIFY / EMERGENCY WORKS NOTIFICATION FORM	
SUBMISSION REQUIREMENTS Contact DFO By Phone 1-855-852-8320 **AND** submit this form to fisheriesprotection@dfo-mpo.gc.ca Submit this form to the consultant and the ONTC Project Manager: Esmail Zougari, esmail.zougari@ontarionorthland.ca and to ONTC Legal : legal@ontarionorthland.ca MNRF Office: Contact Area MNRF Office	
PART 1: NOTIFICATION DETAILS	
Type of Notification: □ DUTY TO NOTIFY □ EMERGENCY WORK	
Date of Notification:	Time of Notification:
ONTC Contract #:	DFO PATH File # (if applicable):
PART 2: REPORTING INFORMATION	
Name of Person Reporting:	Name of Field Contact:
Telephone #:	Telephone #:
Email:	Email:
PART 3: INCIDENT INFORMATION	
Bank failure □ Culvert failure Erosion and Sediment Control Measures Failure □ Beaver dam breach Other (specify): □ Hwy shoulder failure	
Date of Incident:	Time of Incident:
Location of Site:	Geographic Coordinates (Lat/Long):
Nearest Community (city/town):	Name of Waterbody(ies): Type (watercourse, lake/pond, ditch):
Indicate if any of the following impacts have occurred or are about to occur: Fish Kill (if yes, approximately how many):_____ □ Sediment deposition in channel Bank failure □ Obstruction of fish passage through: Modification of flows □ Channel □ Culvert Other (specify):	

Immediate Actions Taken:

(Describe the activities/works that are being / have been immediately implemented. e.g. mitigation measures, damming / pumping etc.)

Photos: □ Attached

(Where feasible, it is recommended that the photos be submitted with the form or as follow up)

PART 4: EMERGENCY WORKS

Description of Proposed Emergency Works:

(Be as specific as possible. Describe what work will be undertaken within the next two weeks.

E.g. culvert replacement (include existing and new culvert diameter / length / type), slope restoration (include material / method),:

Mitigation measures:

(Describe what measures have been or will be implemented to address the immediate issue. E.g. sediment fence, turbidity curtain, check dam, fish salvage etc.):

Indicate which of the works will be followed (if applicable):

Beaver Dam Removal □ Culvert Maintenance

Bridge Maintenance □ Like-for-like culvert replacement

Ditch maintenance within 30 m of a □ Temporary watercourse crossing waterbody

Riparian vegetation maintenance in existing right-of-way

The Emergency Works are (check one):

Temporary (additional work will be required) □ Final (no additional work required)

Proposed Start Date: (YYYY/MM/DD)	Proposed End Date: (YYYY/MM/DD)

PART 5: OTHER AGENCIES NOTIFIED

Other Agency(ies) Notified: Yes □ No □	Agency(ies) Notified:
Date Notified:	Incident Report No. (if issued by notified Authority):

END OF SUPPLEMENTARY CONDITIONS