ONTARIO NORTHLAND

TRANSPORTATION COMMISSION

Request for Proposals No. RFP 2024 008

For

Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility

REPLY BY DATE: 2:00:00 p.m. Friday, April 12, 2024

Primary Contact:

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Procurement Contracts Specialist
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PART 1

REQUEST FOR PROPOSALS

SECTION 1 - INTRODUCTION

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

"Substantially Compliant" 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" means the Respondent 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 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

The 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 a large part of ONTC's service offering. We remanufacture and repair locomotives, passenger rail cars, freight cars, and more. ONTC's unique mechanical skillset attracts new business and secures skilled trades jobs in Northern Ontario.

ONTC makes provincial dollars reach further by creating innovative solutions that help drive economic growth sustainably, responsibly, and with future generations top of mind. Throughout the agency, modernization is underway with many exciting projects that will improve how we operate. ONTC employs over 900 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 – Scope of Work
(b) Schedule 3-A-1 – Technical Specifications
(c) Schedule 3-A-2 – Reference Documents
(d) Schedule 3-A-3 – Questions and Answers for Contractors

Part 4 – Form of Proposal

(a) Proposal Form 1 – Proposal Submission Form
(b) Proposal Form 2 – Respondent's General Information
(c) Proposal Form 3 – Acknowledgment to Comply with Part 3 – Request for Proposals Specifications
(d) Proposal Form 4 – References
(e) Proposal Form 5 – Compliance with Contract Documents
(f) Proposal Form 6 – Respondents' Meeting Registration Form
(g) Proposal Form 7 – Health, Safety and Environment
(h) Proposal Form 8 – Schedule of Materials
(i) Proposal Form 9 – List of Equipment
(j) Proposal Form 10 – Schedule and Proposed Approach
(k) Proposal Form 11 – Schedule of Progress Payments
(l) Proposal Form 12 – List of Personnel
(m) Proposal Form 13 – Current Labour Agreements
(n) Proposal Form 14 – Contractor's Qualification Statement
(o) Proposal Form 15 – Local Knowledge and Benefit
(p) Proposal Form 16 – Claims

Part 5 – Draft Agreement **[The draft agreement will be issued by way of Addendum in accordance with these RFP Documents.]**

(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) Each Respondent 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) Each Respondent is 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) Each Respondent is solely responsible for conducting its own independent research, due diligence, and any other work or investigations and seeking any other independent advice necessary for the preparation of its 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. Nothing in the RFP Documents is intended to relieve the Respondents 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, each Respondent agrees 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 each Respondent's 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 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 ***Brinda Ranpura, Procurement Contracts Specialist, 555 Oak Street East, North Bay, Ontario P1B 8L3 (705) 472-4500 ext. 548, brinda.ranpura@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 amend, 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) Each Respondent is solely responsible for ensuring that it has 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 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 a Respondent 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; 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) A Respondent shall not, and shall ensure that its 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 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 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 Process, if selected as the Successful Respondent, 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 as confidential but shall not be liable in any way whatsoever to any Respondent 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 Respondent agrees 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 Respondent 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 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 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 by a contractual, legal or fiduciary obligation; or,

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

(2) RFP Information:

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

(b) shall not be used by the Respondent 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 to any person who is not involved in the Respondent's 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.

(3) Each Respondent 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) Each Respondent or Short-listed Respondent acknowledges and agrees 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) Each Respondent agrees 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 a Respondent is required by the Applicable Laws to hold or obtain a license, permit, consent or authorization to carry on an activity contemplated in its 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 Respondent shall bear all costs and expenses incurred by the Respondent relating to any aspect of its participation in this RFP Process, including, without limitation, all costs and expenses related to the Respondent's 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 Respondent waives 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 Respondent is deemed to consent to ONTC verifying or clarifying any information and requesting additional information from third parties regarding the Respondent) and its directors, officers, shareholders or owners and any other person associated with the Respondent 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 a Respondent.

(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

Each Respondent 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) Each Respondent will complete and submit the forms included in Part 4 – Form of Proposal. Failure of the Respondent 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.

(4) 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 Respondent 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 on 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) Each Respondent shall promptly disclose any potential, perceived or actual Conflict of Interest of the Respondent 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 or terminate the Final Agreement if such Respondent is the Successful Respondent.

(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) Each Respondent 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 Senior Manager of Strategic Procurement by prepaid courier or personal delivery at the following address:

Jason Baker
Senior Manager, Strategic Procurement
Ontario Northland Transportation Commission
555 Oak Street East
North Bay, Ontario P1B 8E3

The Respondent 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 Respondent 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 Respondent should identify and mark any trade secret or proprietary intellectual property in its 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 (7) 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 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 shall deliver to ONTC:

(a) certificates of insurance as specified in the draft Agreement;

(b) executed Contractors Health and Safety Responsibility Agreement;

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

(d) 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 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 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 2024 008 **Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility**	
Contact Details	
Contact Person	Brinda Ranpura, Procurement Contracts Specialist
Contact Information	555 Oak Street East North Bay, Ontario, P1B 8L3 brinda.ranpura@ontarionorthland.ca (705) 472-4500 ext. 548
Proposal Detail	
Respondents' Meeting	A mandatory Respondents' Meeting will be held on Tuesday, March 26, 2024 at 10:30 a.m. Respondents must complete the Respondents' Meeting Registration Form and return it via email by Monday, March 25, 2024 at 4:00 p.m. to Brinda Ranpura at brinda.ranpura@ontarionorthland.ca. The Respondents shall meet at 567 Wallace Road, North Bay, ON.
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 not be a two-envelope process.
Distribution Method	The RFP Documents will be posted on the ONTC website and MERX. Any addenda to the RFP will be shared with those Respondents who attended the Mandatory Respondents' Meeting.

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

RFP 2024 008
Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility

Proposal Detail *continued* – *Note the requirements below are new to ONTC*

Submission Requirements	Respondents are required to submit **all** of the 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 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 of Materials		
	Proposal Form 9 - List of Equipment		
	Proposal Form 10 Schedule and Proposed Approach **Include Construction Schedule in Gantt chart format and Written Narrative Proposed Approach**		Material
	Proposal Form 11 - Schedule of Progress Payments		
	Proposal Form 12 - List of Personnel **and Resumes**		Material
	Proposal Form 13 - Current Labour Agreements		
	Proposal Form 14 Contractor's Qualification Statement **Include Company Profile and 3 Project Descriptions** **Include Subcontractor Profiles, if applicable**		Material
	Proposal Form 15 – Local Knowledge and Benefit		Material
	Proposal Form 16 – Claims		
	Bid Performance Security as prescribed in Part 1, Request for Proposals, Section 4.3		Material

PART 2 – REQUEST FOR PROPOSALS

SUMMARY OF REQUIREMENTS
SCHEDULE 2-A *continued*
RFP DATA SHEET

RFP 2024 008 **Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility**			
Important Dates			
Publication Date	Wednesday, March 13, 2024		
Participation Registration Form	Complete and submit to the Contact Person as soon as possible		
Deadline for Additional Information Request	Four (4) full Business Days prior to the Submission Deadline		
Submission Deadline Date and Time	Friday, April 12, 2024, at 2:00:00 p.m. local time (North Bay, ON)		
Target Start Date	Spring 2024		
Target Completion Date	March 1, 2025		
Draft Agreement			
Liquidated Damages	The per diem rate is $2,000 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.		
Procedure of Selection			
Mandatory Requirements	Respondents must first satisfy that all of the Mandatory Requirements listed below have been met. Respondents will receive a pass/fail for each Mandatory Requirement. Respondents who fail any of the Mandatory Requirements will be disqualified from the RFP Process.		
	Mandatory Requirement	**Pass**	**Fail**
	Respondent has participated in the Mandatory Respondents' Meeting		
	Respondent has submitted all of the documents as specified in the Submission Requirements listed in Part 2, Request for Proposals, Summary of Requirements, RFP Data Sheet		
	Respondent has provided sufficient evidence to pass the Contractor Safety Pre-Qualification (Part 4 – Form of Proposal, Proposal Form 7, Health, Safety and Environment)		
	Respondent has achieved a minimum score of 9 under Experience and Qualifications		
	Bid Bond and Agreement to Bond included in Proposal Submission (scanned copy acceptable)		

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

RFP 2024 008 **Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility**		
Procedure of Selection *continued*		
Evaluation General Procedure	ONTC will proceed with an evaluation of the Proposals. The evaluation will be based on the following criteria:	
Evaluation Criteria	**Description**	**Weight**
	Price ONTC will use the following to calculate the initial score for price: Lowest price of all Proposals / price of Respondent x 40 = Score *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 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".*	40
	Experience and Qualifications ONTC will assess Respondents' experience and qualifications using the information supplied as part of Part 4 of this RFP. The following sub-weights will apply: Company Profile & Resumes of Key Personnel – **5 points** Project Profiles 1, 2 & 3 – **10 points** (ONTC may or may not contact references as part of the evaluation and may use this information as part of this score)	15
	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 in conjunction with the ONTC deadline? - **5 points** Is the schedule and proposed approach logical and does it have sufficient detail with durations for each task? Has the critical path been identified? **10 points** (Note: *ONTC reserves the right, in its sole discretion, to disqualify a proposal that cannot be completed prior to the end of the ONTC fiscal year (March 31, 2025).*	15
	Local Knowledge and Benefit Describe your experience with climatic and environmental requirements in Northern Ontario – **5 points** What is the value of the budget to be allocated to local subcontractors and how and when will the vendor use the local workforce, local vendors, local manufacturers, etc. – **10 points**	15

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

RFP 2024 008 Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility		
Procedure of Selection *continued*		
	Environmental and Sustainability Provide your organization's written environmental policy and provide evidence of compliance to Ontario's environmental requirements (e.g., recycling, waste management)	10
	References ONTC may rely on the information submitted by Respondents or contact references in order to evaluate this area.	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 2024 008
Description of Requirement:	Design-Build Services for Two-Story Expansion for ONTC's Motor Coach Stores and Office Administration Facility

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.

Brinda Ranpura
Procurement Contracts Specialist
Ontario Northland Transportation Commission
Phone: 1-800-363-7512 Ext. 548
Email: brinda.ranpura@ontarionorthland.ca
Website: www.ontarionorthland.ca

Ontario Northland

PART 3

REQUEST FOR PROPOSALS

SPECIFICATION

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

Introduction

Ontario Northland Transportation Commission (ONTC) is seeking proposals for a two-story design build structural steel building solution to expand our stores operation and office space building at our North Bay, Ontario Motor Coach facility. We require approximately 2000 sq. ft. of additional warehouse space to accommodate parts, racking, skids, forklifts, and shipping and receiving equipment. The anticipated completion date for the project is March 1, 2025.

The building is located at 567 Wallace Road, in North Bay, Ontario.

ONTC is seeking "turnkey" proposals from Respondents who can complete the entire project from start to finish. ONTC will not entertain the sale of building packages, kits, or proposals that require ONTC to hire additional resources or subcontractors to complete the project.

Background

The North Bay Motor Coach Facility was originally constructed in 2005 and a wash bay extension was completed in 2022.

The existing stores operation area is included in the main Motor Coach building on the Southeast corner. The current stores location is approximately 1500sq ft. We have outgrown this space and need room to extend our parts storage. The current building is a prefabricated steel structure. We are seeking a structural steel building to tie into the current pre-engineered building and match to the exterior finish.

Scope of Work

ONTC is seeking proposals for the construction and addition of a new two-story structural steel building with approximate dimensions of 32'x60'. The main floor needs to be an open-type warehouse building and the second story will consist of office space.

Contractor shall design and construct this facility to an environmentally responsible manner, utilizing sustainable design concepts, systems and materials to the maximum extent practical, in order to provide a facility that minimizes adverse effects on the exterior environments, enhances the quality of the indoor environment, and minimizes consumption of energy, water, construction materials, and other resources.

<u>The Respondent will provide</u>:

• All architecture, engineering, design, and construction of the new two-story structural steel building, including but not limited to:

- Architecture
- Geotechnical engineering,
- Structural Engineering,
- Mechanical Engineering,
- Electrical Engineering,
- Civil Engineering (above and underground site services)

Architects and Engineers working on this project shall have minimum 8 years' experience individually and be registered to practice in the province of Ontario.

• All architecture, engineering, design, and construction for modification of the existing Stores Warehouse and second floor offices building where the two will meet/attach.

• Engineered plans, Geotechnical reports, surveys, and storm water management plan for all construction required for the installation of the new building.

• All construction must meet the National Building Code of Canada, the National Fire Code of Canada, the Ontario Building Code, Ontario Fire Code and applicable codes and design standards as a minimum.

• The Respondent will be required to supply all labour, material, equipment, travel, living expenses, permits, fees, and all others to complete the project.

Document Review:

The Contractor shall notify and communicate to The ONTC any and all variances between the documents submitted for review, and the requirements of the RFP. The Contractor shall prepare and submit design development and construction documents to The ONTC for review at the following stages of completeness. A review meeting shall be held to present and discuss each submission.

1- Design Drawings and Specifications (50% complete)
2- Design Drawings and Specifications (95% complete)
3- Construction documents (drawing, specifications, and shop drawings) (95% complete)

Review will include providing samples and/or mockups and colour selection.

Demolition

- The Contractor will be responsible for demolition, removal, and proper disposal of structures and any contents of the stores building.

- All debris created by the execution of the work shall be removed progressively from the site.

- Contractor is responsible for all temporary shoring, bracing and supports required during the project.

- Non-hazardous and masonry materials and any excavated material will be disposed of on an on-site location identified by ONTC.

- Contractor shall ensure all sewer and sanitary drains within the work area are protected and with filter cloth throughout the project if needed.

Certifications and Permits

The Contractor shall obtain, prior to commencing the construction of the project, as part of their price unless otherwise specified, all permits and consents necessary to perform lawfully the project and shall comply with all the statutes, law, ordinances, regulations and orders whether federal, provincial or municipal, relating the structure. A copy of the applicable permit(s) must be sent to ONTC contact person prior to commencing the project.

Utility Disconnects

The Contractor, when required, will be responsible for coordinating and the cost of all-utility disconnects and relocations. All disconnects must be communicated to ONTC's project lead 72 hours in advance.

Temporary Facilities

The Contractor will be responsible for all temporary facilities necessary to successfully complete the project to include, but not limited to, portable restrooms, site fencing, site security, proper signage, eating areas, construction trailer, etc.

Dust Control

- During remediation, demolition, or construction activities, generated dust must be controlled on site using proper techniques based on varying site and weather conditions. Dust control measures shall be implemented consistent with Ontario Provincial Standard Specification (OPSS) 506 "Construction Specification for Dust Suppressants".

- Respondents shall provide as part of their submission their approach to contain the dust or dust abatement policy.

Health, Safety and Security

- During the performance of the work, the Contractor shall keep the land and buildings in a safe and orderly state, as appropriate in accordance with good industry practice, to avoid danger to persons thereon and in the immediate vicinity thereof, shall take all reasonable measures in accordance with good industry practice to prevent access to the designated area on the land and roofs under remediation by any persons not entitled to be present, shall perform all the obligations of a "Constructor" within the meaning of the Occupational Health and Safety Act (Ontario) and shall be solely responsible for construction safety on the land and buildings and for compliance with the health and safety provisions of the contract documents, the Occupational Health and Safety Act (Ontario) and applicable law.

- Contractor shall provide fencing. Approved safety fencing must encompass the full perimeter of the building/worksite and remain until the project's completion. The Contractor must ensure that the fencing is secured when the Contractor is not on site.

- Provide traffic control as required.

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

Cleaning and Restoration

- Keep site clean and organized throughout the project.

- Upon completion of project, remove debris, trim surfaces and leave work site clean.

- Upon completion of project, reinstate parking surfaces and walkways affected by Work to condition which existed prior to beginning of Work and match condition of adjacent, undisturbed areas.

- In addition to the progressive removal of waste materials and debris from building and site, leave the site clean. Perform the following before final inspection by the ONTC:

    - Spray-wash all exterior building finishes in construction area and any adjacent building areas soiled by the construction processes.

    - Broom clean and wash exterior walks, steps and platforms soiled from delivery or removal materials. - Remove all dirt and other disfigurations from exterior surfaces.

    - Sweep clean all paved areas if applicable.

General

ONTC shall provide, prior to the closing date of the RFP, an impact assessment for the Project (if applicable), general environment, social impact and heritage assessment. If any part of this impact assessment is unavailable prior to the closing date of the RFP and that part of the assessment identifies additional work will be required by the Contractor, ONTC and the Contractor shall negotiate a Change Order in accordance with the terms of the Agreement.

The Contractor shall advise ONTC immediately if it becomes aware of any previously unknown environmental conditions or impacts, including the presence of species at risk, during the demolition.

- The demolition and construction Contractor will be required to be the Constructor under the regulations of Province of Ontario for the duration of the project.

New Warehouse and Office Space Requirements

- Building code review by an architect and/or engineering review of the existing MCS bus garage building, and all required, architecture, engineering, design, and construction of all required modifications to the MCS bus garage required by the addition of the new Structural steel building for the warehouse and office spaces.

- Complete detailed review of items to be stored in the new warehouse and the Main Stores with ONTC and incorporate into design and construction to ensure all items are safely

stored.

- Review if an emergency exit is needed for the second-floor office space.
- The foundation and floor must support ONTC forklift traffic and load rated warehouse racking.
- Interior height to be approximately 14 feet and aligned with other Main Stores building.
- Building to be flat roof design with roof drains.
- Provide specifications of posts or columns supporting the building walls and roof trusses (type of metal, thickness, and warranties, if any).
- Concrete knee walls on the sides of the building to prevent water entering, ice buildups, or traffic damage to side exterior walls.
- Provide specifications of roof trusses (type of metal, thickness, and warranties, if any).
- Provide specifications of exterior wall construction and roof materials (metal type, gauge of material, and warranties, if any).
- Supply and install aggregate that will be needed to back fill.
- Provide compaction testing at every 12” lift and supply the report to ONTC.
- Provide the Compressive strength testing for concrete at 28 days, for the footings, walls, piers and floor slab to be provided in a report from the Engineering to ONTC. All concrete to be tested for slump on each truck. Cast four cylinders per 48M3 of concrete.
- When testing is complete, provide certification that concrete mix proportions selected will produce concrete of quality, yield strength as specified by Design Engineer, and will comply with CAN/CSA-A23.1.
- Ensure exterior wall materials match current building color, type pattern.
- Provide specifications of post or column footings, size, requirements, and composition.
- The building envelope shall meet or exceed the minimum insulating values and air infiltration rates as required by the National Energy Building Code, the National Building Code and the Ontario Building Code.
- Roof to have 30 years minimum warranty, specify warranty type, exclusions and if pro-rated. Provide details of materials to be used.

- Gas heating source suited for size of building and square footage (specify type of heat system infrared, overhead, etc.).

- Review existing natural gas service and upgrade or relocate as necessary for new warehouse and offices.

- Supply and install a quantity of (1) One, 10’ wide X 10’ high insulated garage door and one 36-inch insulated man door with window. Garage door to be a TX500 or equivalent (R-18.4 value) with an electric operator.

- Supply and install one (1) man door on the Southeast corner.

- All exterior man doors to come with a panic bar, thumb leaver, lock, and self-closers.

- Supply and install exit sign at all man door in the new addition.

- Supply and install LED lighting on motion sensors throughout the new building/addition and offices. This will be a warehouse environment; therefore, bright lights are required. Provide specifications on the LED light.

- Supply and install outside LED security lights on all exterior walls of new building. Minimum quantity (1) light at approximately every 30 feet or as required by codes ad design standards.

- Power outlets located on every inside wall. Minimum quantity one (1) 20 Amp receptacle every 20 feet.

- Buff flooring for proper finish and add concrete sealer.

- Remove canopy mounted to exterior wall near current stores garage door.

- Ensure communication cable connections are maintained throughout the Project.

- Remove existing concrete pad at the store garage door.

- Install new concrete pad measuring 16X10 at entrance of proposed man door and garage door.

- 2 (two) Bollard posts outside at the garage door opening.

- Add foam board insulation around concrete pad at man door and garage door to prevent frost and movement of pad during winter months.

- Remove the existing air compressor.

- Supply and install a new Gardner Denver air compressor Model # LRS15-22B with an air dryer or equivalent products.

- Dewatering: Dewater site for foundation construction as required by soil conditions and local subsurface waters and surface water, including rainfall.

- Foundation and Below Grade Insulation: The proposed structure shall be insulated to prevent frost penetration below its foundation. Insulation shall be sufficient thickness and thermal resistance value around perimeter edges of foundation and horizontally out and as required to meet applicable building code.

Offices and Boardroom requirements

- Install a new walkway and stairs from the new office space to the existing building.
- Internet connections at all offices, cubicles, and Boardroom.
- Lower and upper cabinets with a microwave stand in the boardroom.
- Flooring to be tiled carpet in the boardroom and office spaces.
- LED lighting.
- Provide a heating, ventilation, and air conditioning (HVAC) system including accessories and devices as necessary and required for a complete and usable system. System to be energy efficient and will meet or exceed required air changes as required per applicable Codes and Standards.
- Ductwork will be insulated to prevent condensation.
- All ductwork penetrations through fire-rated assemblies are to be provided with fire dampers and fire-stopped to maintain the required rating.
- Emergency exit signs.
- Install receptacle for all workstation (cubicles), offices and boardroom.
- Sound proofing for all the offices and boardroom.
- Smoke and carbon monoxide detectors.
- Drop ceiling grid with fire rated tiles.

Existing Roof and front wall cladding to be priced separately.

- New roof to be evaluated by a Structural Engineer for the extra materials weight and snow load.
- Supply and install a new PVC roof to match existing on the West side of the building.
- 1 layer 1.5” polyisocyanurate insulation
- 1” EPS flute filler –

- 2” EPS flute filler –
- Sika Sarnafil S327.20 PVC roof membrane.
- Wood blocking at perimeters.
- Chevrons to protect against snow and ice sliding.
- 26ga sheet metal drip flashing.
- Supply and install new gutter and downspouts.
- Warranty to be 30 years on material and 2 years on workmanship.
- Existing front wall gladding to be removed and replace to match existing building cladding.
- All insulation in the existing front wall is to be removed and replaced with a minimum R-28.
- Remove, supply, and install new drip edge where needed.
- Remove, supply, and install new capping for the windows and door and make a waterproof seal.
- Remove, supply, and install new canopy at the exit door.
- Electrical meter and disconnect to be always protected.
- Remove, supply, and install a new exit door with frame, must include door closer and panic bar with lock.
- Remove and re-install a new Ontario Northland sign. Ontario Northland sign to be supplied by ONTC.

<u>Secondary Requirements or Options Broken down by Individual Cost</u>

- Demolition of the current brick oil room and the air compressor room above inside the current stores location.
- Fire suppression system if not required by code.
- Fire alarm/early indicator system if not required by code. Include with integration into security monitoring.
- List demolition and building permit costs as a separate line item as ONTC is a Crown corporation which may be exempt from the requirement to obtain building and/or demolition permits and associated costs.

Demolition and Construction Notes

Demolition and construction activities shall not adversely affect the structural integrity of any structure located on adjoining areas. Contractor will be responsible for any remediation work required to the satisfaction of the ONTC at no additional cost to the ONTC.

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

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

    - Filing notice of project with the Ontario Ministry of Labour.

    - Obtaining all necessary demolition and building permits and inspections.

3. Contractor to provide all locates required to complete work. Locates are required before breaking any ground or floor.

4. 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 inside this construction island, including health and safety. The Contractor shall coordinate their work with ONTC supervision to ensure that disruption to work being done by ONTC employees in the areas outside of the construction island is not interrupted. Access by the Contractor will be restricted to the work area (construction island) only.

5. The Contractor will be required to perform all remediation work for designated substances which is required to complete the work for the Project, including the removal and disposal of any designated substances in accordance with all applicable laws. The cost of this remediation and disposal shall be included in the Contractor's price submission.

6. The Contractor shall remove all demolished material from ONTC property and pay for all disposal fees, with the exception of excavated material. Any excavated material (soil, gravel, sand, etc.,)

7. The Contractor will have access to the construction island, 24 hours per day, seven days per week. The Contractor will be required to coordinate their hours of work with ONTC supervision. Note that every employee of the Contractor, their subcontractors, and their suppliers, will be required to sign in and sign out using the book located at the Contractor Construction trailer, every time the employee enters or leaves the property. This is a requirement to comply with our emergency evacuation policy.

8. The Contractor shall:

    a. Supply their own on-site facilities, including construction trailer, eating area, and washrooms.

    b. Plan and organize the work prior to and during construction.

c. Prepare all required documentation submittals in compliance with the contract documents.

d. Provide a preliminary construction schedule with their Proposal.

e. Supply all personal protective equipment (PPE) and consumable supplies as required. Note that safety glasses with side shields, safety boots, hard hats, and high visibility clothing must be always worn on ONTC property. Any employees not wearing the required PPE will be immediately escorted off ONTC property.

f. 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.

g. Coordinate required site inspections with independent inspection and testing firms.

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

i. 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.

j. Receive, unload, store, protect, secure, and transport within the jobsite all Contractor and ONTC furnished equipment and materials.

k. Provide on-site and off-site quality control services as required in specifications, drawings and documents.

l. Maintain complete records including daily construction site diary/logbook, shop drawings, and pertinent photographs.

m. Provide qualified personnel to perform the work.

n. Ensure that the project is started and completed on schedule.

o. Make every reasonable effort to contain any dust or fumes so that adjacent work areas are not contaminated during the project.

p. Clean up and demobilize areas upon completion of the work.

q. 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.

r. Be aware of all high voltage equipment in the building. Be familiar with proper equipment shut down procedures and follow “Lock Out and Tag Out” procedures. Understand the effect on light sources for work involving power outages and be responsible for temporary light sources required to complete their work safely.

Quality Control

Contractor shall have in place a Quality Control Plan that details the procedures, instructions and reports to be used to assure compliance with the Contract Documents. The Plan should describe in detail proposed quality control practices that identify times of Work which will be subject to controls, and list particular checks and tests that are to be performed for each item of work, indicate frequency of checks or tests, milestones at which they are to be carried out, and provide for reports on results of these activities, with reports submitted to The ONTC. The Contractor shall appoint and pay for services of Testing Agents & Laboratories. Materials and assemblies installed in the work shall be inspected and found to be in compliance with industry standards and the Design specifications prior to acceptance of the work. Items found not to be in compliance shall be removed or corrective measures taken, to assure compliance with standards.

Additional Information, Clarifications and Separate Pricing

- Existing compressor to be relocated along with all associated components i.e. air dryer etc. New location to be confirmed during the mandatory Respondent’s Site Meeting.
- Provide separate cost for metal studs & cement board vs. block masonry.
- Provide separate cost to use Metalaire grilles & diffusers in lieu of EH Price grilles and diffusers. Indicate lead times for both HVAC items.
- Hydro transformer to be upgraded to accommodate added electrical load.
- Relocate gas meter to front of the building. Location will be confirmed during the mandatory Respondent’s Site Meeting.
- Carry cash allowance of $45k for office and boardroom furniture.
- All construction activities related to the project are not to negatively impede the Motor Coach operation in any way, activities are to be coordinate around the operation, if and when necessary.
- Fire suppression system will not be required by code.
- Electrical Upgrade Required:

  For the future Electrical Vehicle Charging loads, future-proof the following electrical equipment:

  Upgrade the hydro pole mount transformers from 150KVA to 300KVA, including trenching, conduit, and cables; provide a 1200 Amp Main Hydro Weatherproof Disconnect fused at 400A; provide a 4x4 weatherproof hydro metering cabinet rated for

1200Amps; provide a new weatherproof meter base to accommodate the bi-directional hydro meter; North Bay Hydro to provide a new bi-directional meter, ct's and pt's that are compatible to the hydro meter cabinet and the new 400amp Service; retrofit the existing panel PP-A with a new panel board with the highest amperage rating available.

Training

After installation of the equipment and systems, provide training to ONTC staff including items contained in the Operations and Maintenance manuals.

PART 3 – RFP SPECIFICATIONS
SCHEDULE 3-A-1
TECHNICAL SPECIFICATIONS

SECTION	TITLE
01 11 00	Summary of Work
01 14 00	Work Restrictions
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 32 33	Photographic Documentation
01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 35 35	Fire Safety Requirements
01 35 43	Environmental Procedures
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 71 00	Examination and Preparation
01 73 00	Execution
01 74 00	Cleaning
01 74 19	Waste Management and Disposal
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 79 00	Demonstration and Training
01 91 13	General Commissioning Requirements (1)
01 91 13.13	Commissioning Plan
01 91 13.16	Commissioning Form

1 GENERAL

1.01 RELATED REQUIREMENTS

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

.2 Defined terms:

.1 "**ONTC**" means ONTC and its directors, officers, employees, agents, consultants, contractors and subcontractors.

.2 "**ONTC Representative**" means the person or entity appointed or engaged by ONTC to manage the Work on behalf of ONTC.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises the following:

.1 office and stores expansion.

.2 roof upgrade.

.3 east walls upgrade.

1.03 CONTRACT METHOD

.1 Construct Work under single stipulated price contract.

.2 Relations and responsibilities between Contractor and subcontractors and suppliers, subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:

.1 Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Owner.

.2 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Owner.

1.04 SUBMITTALS

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

.2 Submit Project construction progress schedule in accordance with contract documents.

.3 Sustainable Design Submittals:

.1 Construction Waste Management:

.1 Submit project Waste Management Plan highlighting recycling and salvage requirements

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

.

1.05 WORK BY OTHERS

.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from ONTC Representative.

.2 Co-ordinate work with other contractors. If any part of work under this Contract depends for its proper execution or result upon work of another contractor, report promptly to ONTC Representative, in writing, any defects which may interfere with proper execution of Work.

1.06 FUTURE WORK

.1 Not used.

1.07 WORK SEQUENCE

.1 Construct Work in stages to accommodate Owner's continued and or intermittent use of premises during construction.

.2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.

.4 Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.

.6 Maintain fire access/control.

.7 Protect workers and public safety.

1.08 CONTRACTOR USE OF PREMISES

.1 Contractor will have unrestricted use of the construction island until Substantial Performance.

.2 In some circumstances, Contractor shall coordinate and limit his access to allow:

.1 Owner occupancy.

.2 Partial owner occupancy.

.3 Work by other contractors, testing agencies or Utilities providers.

.3 Co-ordinate use of premises under direction of ONTC Representative.

.4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.5 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.

.6 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by ONTC Representative.

.8 Ensure that operations conditions of exiting work at completion are still the same, equal to or better than that which existed before new work started.

1.09 OWNER OCCUPANCY

.1 Owner will occupy premises during entire construction period for execution of normal operations.

.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.10 PARTIAL OWNER OCCUPANCY

.1 Not used.

1.11 PRE-ORDERED PRODUCTS OR PRE-BID WORK

.1 Not used.

1.12 PRE-PURCHASED EQUIPMENT

.1 Not used.

1.13 OWNER FURNISHED ITEMS

.1 Not used.

1.14 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, occupants, and normal use of premises. Arrange with ONTC Representative to facilitate execution of work.

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

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

.2 Provide the required protection for passenger elevators walls, obtain Consultant approval before using these elevators.

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

1.15 EXISTING SERVICES

.1 Notify, ONTC Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give ONTC Representative at least 48 hours notice for necessary interruption of mechanical or electrical service

throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and ONTC operations.

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

.4 Establish location and extent of service lines in area of work before starting Work. Notify ONTC Representative of findings.

.5 Submit schedule for approval by ONTC Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.6 Provide temporary services when directed by Consultant or ONTC Representative to maintain critical building and tenant services.

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

.8 Where unknown services are encountered, immediately advise ONTC Representative and confirm findings in writing.

.9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.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] .

1.16 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy of each document as follows:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings, product data and samples.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 As-built red marked drawings.
- .12 Other documents as specified.

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 RELATED REQUIREMENTS

.1 Not used.

1.02 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.03 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with ONTC Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Contractor is responsible for sanitary facilities.

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

.1 Protect walls of passenger elevators, to approval of ONTC Representative prior to use.

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

.6 Closures: protect work temporarily until permanent enclosures are completed.

.7 Carry out Work Monday to Friday during hours of 7:00 am to 5:00 pm. Work outside of these hours, including on weekends, shall be pre-approved by ONTC Representative. Provide a minimum (05) business days' notice to work outside of these windows.

1.04 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, occupants, public and normal use of premises. Arrange with ONTC Representative to facilitate execution of work.

1.05 EXISTING SERVICES

.1 Notify, ONTC Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give ONTC Representative 48 hours of notice for necessary

interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel, pedestrian and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.06 SPECIAL REQUIREMENTS

.1 Carry out noise generating Work Monday to Friday from 7:00am to 5:00pm hours.

.2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.3 Keep within limits of work and avenues of ingress and egress.

1.07 SECURITY

.1 Contractor is responsible to provide temporary security to the site for the duration of the Work.

1.08 BUILDING SMOKING ENVIRONMENT

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

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 RELATED REQUIREMENTS

.1 Not Used.

1.02 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to ONTC Representative and meeting participants.

.4 Provide physical space and make arrangements for meetings at the jobsite.

.5 ONTC Representative will chair the meetings.

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

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance and ONTC Representative.

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

1.03 PRECONSTRUCTION MEETING

.1 Within (10) days after award of Contract and before Mobilization, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities. ONTC Representative will chair the meeting.

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

.3 Establish time and location of meeting and notify parties concerned minimum 05 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include, but not limited to:

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

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

.2 Schedule of Work and 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 Section 01 11 00 Summary of Work.

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

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.

.8 Owner provided products, existing conditions and owner site use/operations.

.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 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 Cleaning and Waste Management

.17 Invoicing and payment procedures.

1.04 PROGRESS MEETINGS

.1 During course of Work and up to completion date, schedule regular progress meetings Bi-weekly.

.2 Contractor, major Subcontractors involved in Work and ONTC Representative are to be in attendance. Consultants and subconsultants may attend as and when necessary.

.3 Notify parties minimum three days prior to meetings and provide Agenda.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within two days after meeting.

.5 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 projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Safety concerns and issues.

.13 Open items, RFIs and SIs.

.14 Other business.

1.04 COMMISSIONING MEETINGS

.1 Arrange pre-commissioning meetings for the commissioning of equipment and systems. ONTC Representative and commissioning team shall be in attendance.

2. Notify parties minimum five days prior to meetings and provide Agenda.

3. Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance, and ONTC Representative.

1.04 SUBSTANTIAL COMPLETION MEETINGS:

.1 Arrange pre-substantial completion meetings. ONTC Representative and Consultant shall be in attendance.

2. Notify parties minimum five days prior to meetings and provide Agenda.

3. Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance, and ONTC Representative.

1.04 OTHER MEETINGS:

.1 Arrange meetings to coordinate large deliveries and in advance of complex installation. ONTC Representative shall be in attendance.

.1 Arrange meetings, as required, for urgent safety concerns and

conflict resolution. ONTC Representative and affected parties shall be in attendance.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 77 00 Closeout Procedures.

1.2 SCHEDULES REQUIRED

.1 Submit schedules as follows:

.1 Construction Progress Schedule.

.2 Submittal Schedule for Shop Drawings and Product Data.

.3 Submittal Schedule for Samples.

.4 Product Delivery Schedule.

.5 Cash Allowance Schedule for purchasing Products, if applicable.

.6 Shutdown or closure activity.

1.3 FORMAT

.1 Prepare schedule in form of a horizontal bar chart.

.2 Provide a separate bar for each major item of work, trade or operation.

.3 Split horizontally for projected and actual performance.

.4 Provide horizontal time scale identifying first work day of each week.

.5 Format for listings: chronological order of start of each item of work.

.6 Identification of listings: By Systems description.

1.4 SUBMISSION

.1 Submit initial format of schedules after award of Contract ten (10) days before mobilization.

.2 Submit schedules in electronic format, PDF or Excel files.

.3 Submit one opaque reproduction, plus 2 copies to be retained by Owner.

.4 Owner will review schedule and return review copy within ten (10) working days after receipt.

.5 Resubmit finalized schedule within seven (7) working days after return of review copy.

.6 Submit revised progress schedule with each application for payment.

.7 Distribute copies of revised schedule to:

.1 Job site office.

.2 Subcontractors.

.3 Other concerned parties.

.8 Instruct recipients to report to Contractor within ten (10) working days, any problems anticipated by timetable shown in schedule.

1.5 CRITICAL PATH SCHEDULING

.1 Include complete sequence of construction activities.

.2 Include dates for commencement and completion of each major element of construction as follows.

.1 Site clearing.

.2 Site utilities.

.3 Foundation Work.

.4 Structural framing.

.5 Special Subcontractor Work.

.6 Equipment Installations.

.7 Finishes.

.3 Show projected percentage of completion of each item as of first day of month.

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

.5 Show changes occurring since previous submission of schedule:

.1 Major changes in scope.

.2 Activities modified since previous submission.

.3 Revised projections of progress and completion.

.4 Other identifiable changes.

.6 Provide a narrative report to define:

.1 Problem areas, anticipated delays, and impact on schedule.

.2 Corrective action recommended and its effect.

.3 Effect of changes on schedules of other prime contractors.

1.6 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings, product data, and samples.

.2 Indicate dates for submitting, review time, resubmission time, last date for meeting fabrication schedule.

2 PRODUCTS:

2.1 DAILY CONSTRUCTION REPORTS:

.1 Prepare a daily construction report recording the following information concerning events at Project Site:

.1 List of subcontractors at Project Site.

.2 Approximate count of personnel at Project Site.

.3 Equipment at Project Site.

.4 Material Deliveries.

.5 Accidents.

.6 Meetings and Significant Decisions.

.7 Unusual Events.

.8 Stoppages, Delays, Shortages, and Losses.

.9 Emergency Procedures.

.10 Orders and Requests of Authorities Having Jurisdiction.
.11 Change Orders received and implemented.

.12 Construction Work Change Directives received and implemented.

.13 Services Connected and Disconnected.

.14 Equipment or System Tests and Startups.

.15 Partial Completions and Occupancies.

.16 Substantial Completions Authorized.

.2 Submit daily report at the end of each shift to ONTC Representative.

2.2 MATERIAL LOCATION REPORTS:

.1 At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

Indicate the following categories for stored materials:

.1 Material stored prior to previous report and remaining in storage.

.2 Material stored prior to previous report and since removed from storage and installed.

.3 Material stored following previous report and remaining in storage.

2.3 SITE CONDITION REPORTS:

.1 Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

1. Contractor's Construction Schedule Updating: At weekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule five (5) days before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate final completion percentage for each activity.

.2 Distribution: Distribute copies of approved schedule to ONTC Representative, Subcontractors, testing and inspecting agencies,

and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

1 GENERAL

1.01 MEASUREMENT AND PAYMENT

.1 Separate measurement or payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included with the related item of work in the Bid Schedule of the Bid Form, or incidental to the Work.

1.02 STAGES OF CONSTRUCTION

.1 The Contractor shall take photographs at all construction milestones and at each of the following stages of construction:

.1 Before commencement of clearing and demolition;

.2 Upon completion of clearing and demolition;

.3 Monthly during performance of the Work; and

.4 Upon completion of the Work.

.5 Anytime a problem arises that may result in a Notice of Potential Claim and the problem can be illustrated by photographs.

.2 Furnish at least three different views or vantage points of each milestone and stage of construction. Furnish an average of 20 photographs each month until completion of the Work. Location of views shall be as approved by ONTC Representative.

1.03 QUALITY AND QUANTITY OF PHOTOGRAPHS

.1 All photographs shall be digital photographs in pdf, jpg or png format with the following requirements:

.1 Minimum resolution: 1024 x 768 pixels.
.2 Colors: 24 Bits per Pixel.
.3 Maximum File size of 3MB.

.2 Digital photographs provided shall use the following file naming convention:

PYYMMDDLOCATIONSEQ.EXT

P = Photograph

YYMMDD = Date in Year, Month, Day format

LOCATION = (8 Characters maximum) Location taken, either by BART 3- character alpha numeric + 5, or Milepost by line designation. (e.g. M90, C40-west, A1MP32-1, etc.)

SEQ = Sequential number from 001 to 999.

EXT = File extension (e.g. pdf, jpg, or png).

.3 Flash drive used to store photos shall be labeled to include the Contract number and the date the photographs were taken.

1.04 IDENTIFICATION OF PHOTOGRAPHS

.1 The following information shall be furnished for each digital photograph in a manner approved by ONTC Representative.

.1 Title of Contract and Contract Number;

.2 Identification of subject shown;

.3 Station point of camera and direction of view;

.4 Time and date taken.

1.05 VIDEO RECORDINGS

.1 The Contractor shall provide video recordings to supplement contract photographs of certain construction milestones and events as indicated herein:

.1 Start of construction including clearing and demolition operations, as applicable;

.2 Highlights of all formal inspections; and

.3 Highlights of the final inspection and acceptance by the District.

.4 Video recordings shall be at minimum standard definition (480p).

.2 Video recordings shall include an unobtrusive time and date indicator on the film, accurately depicting the time and date when the photography was performed.

.3 The Flash drive shall be labelled with the same identifying information specified above for photographs.

.4 Individual digital video files shall use the file naming convention indicated above, paragraph 1.03.2, however the filename shall be modified such that the first character shall be “V” for video instead of “P”.

2 PRODUCTS

.1 Not Used

3 EXECUTION

.1 Not Used

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS Not Used

1.02 RELATED REQUIREMENTS Not Used

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Submit to ONTC Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals before submission to ONTC Representative. 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. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify ONTC Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

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

.8 Contractor’s responsibility for errors and omissions in submission is not relieved by ONTC Representative review of submittals.

.9 Contractor’s responsibility for deviations in submission from requirements of Contract Documents is not relieved by ONTC Representative review.

.10 Keep one reviewed copy of each submission on site.

1.04 SHOP DRAWINGS AND PRODUCT DATA

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

.2 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of

Work.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in 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 10 days for ONTC Representative review of each submission.

.6 Adjustments made on shop drawings by ONTC Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to ONTC Representative before to proceeding with Work.

.7 Make changes in shop drawings as ONTC Representative may require, consistent with Contract Documents. When resubmitting, notify ONTC Representative in writing of revisions other than those requested.

.8 Accompany submissions with transmittal letter containing:

.1 Date.

.2 Project title and number.

.3 Contractor’s name and address.

.4 Identification and quantity of each shop drawing, product data, and sample.

.5 Other pertinent data.

.9 Submissions to include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor’s stamp, signed by Contractor’s authorized representative certifying approval of submissions, verification of site measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified site dimensions and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Material being supplied, all connections, attachments, anchorages and locations of exposed fastenings as applicable.

.11 Typical and special installation conditions, including setting or erection details.

.12 Relationship to adjacent work.

.13 Copy of associated project warranty.

.10 After ONTC Representative review, distribute copies.

.11 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as ONTC Representative may reasonably request.

.12 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by ONTC Representative 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.

.13 Submit electronic] copies of test reports for requirements requested in specification Sections and as requested by ONTC Representative.

.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.

.2 Testing must have been within 3 years of date of Contract award for project.

.14 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by ONTC Representative .

.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 award of Contract complete with project name.

.15 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by ONTC Representative.

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

.16 Submit electronic copies of Manufacturer's Site Reports for requirements requested in specification Sections and as requested by ONTC Representative.

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

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

.18 Submit 03 hard copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by ONTC Representative , after a review of an electronic copy has been completed and approved.

.19 Delete information not applicable to project.

.20 Supplement standard information to provide details applicable to project.

.21 If upon review by ONTC Representative ,no errors or omissions are discovered or if only minor corrections are made, electronic copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.05 SAMPLES

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

.2 Deliver samples prepaid to ONTC Representative.

.3 Notify ONTC Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

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

.5 Adjustments made on samples by ONTC Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to ONTC Representative before proceeding with Work.

.6 Make changes in samples which ONTC Representative 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.

1.06 MOCK-UPS

.1 Erect mock-ups in accordance with section 01 43 00 - Quality Assurance.

1.07 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic colour digital photography in jpg format, in resolution, monthly with progress statement and as directed by ONTC Representative

.2 Project identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints.

.1 Viewpoints and their location as determined by ONTC Representative.

.4 Frequency of photographic documentation: weekly as directed by ONTC Representative.

.1 Upon completion of: excavation, foundation, framing and services before concealment of Work, major milestones and as directed by ONTC Representative.

.5 Consultant Progress Observation Reports and Field Reviews: Contractor is responsible for providing photographs in jpg format to demonstrate how deficient items identified within the reports have been corrected.

1.08 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

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 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.

.6 American National Standards Institute (ANSI):

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

1.02 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 51 00 - Temporary Utilities

.3 Section 01 56 00 - Temporary Barriers and Enclosures

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within [7] days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation [found in work plan].

.3 Submit 2 copies of Contractor’s authorized representative’s work site health and safety inspection reports to ONTC

Representative and authority having jurisdiction weekly.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS Safety Data Sheets (SDS) and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.

.7 Emergency Procedures.

.7 ONTC Representative] will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to ONTC Representative 3 days after receipt of comments from ONTC Representative Consultant.

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

.9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to ONTC Representative.

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.

.3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

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 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

.3 Definition of responsibilities for project safety/organization chart for project.

.4 General safety rules for project.

.5 Job-specific safe work procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 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 site 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 to the ONTC Representative.

.5 ONTC Representative's review: the review 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 MEETINGS

.1 Schedule and administer Health and Safety meeting with ONTC Representative prior to commencement of Work.

.2 Attend all subsequent Health and Safety meetings called by the ONTC Representative.

1.07 REGULATORY REQUIREMENTS

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

1.08 PROJECT/SITE CONDITIONS

.1 Work at site may involve contact with:

.1 public.

.2 ONTC employees.

.3 Other contractors and 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 Reference 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.

1.09 GENERAL REQUIREMENTS

.1 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.

1.10 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.

1.11 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.

1.12 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 ONTC Representative verbally and in writing.

1.13 HEALTH AND SAFETY CO-ORDINATOR

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

.3 Visit site regularly to ensure work is being completed in compliance with contractor's Health and Safety programs and all applicable laws and regulations.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Ontario having jurisdiction, and in consultation with ONTC Representative.

.2 Post legible versions of the following documents on site:

.1 Site Specific Health and Safety Plan.

.2 Sequence of work.

.3 Emergency procedures.

.1 Site drawing showing project layout, locations of the first-aid station, marshalling stations, and emergency transportation provisions.

.4 Notice of Project.

.5 Site plans.

.6 Notice as to where a copy of the Workers' Compensation Act and Regulations is available on the work site for review by employees and workers.

.7 Workplace Hazardous Materials Information System (WHMIS) documents.

.8 WHIMS Safety Data Sheets (SDS).

.9 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by ONTC Representative.

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

.3 ONTC Representative may stop Work if non-compliance of health and safety regulations is not corrected. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

1.16 BLASTING

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

1.17 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from ONTC Representative

1.18 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.

.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with ONTCde Representative.

.2 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.

1.19 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 ONTC Representative.

.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 ONTC Representative or by any authorized safety representative.

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.

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 National Research Council of Canada (NRC):

.1 National Building Code of Canada (NBC), [2015]

.2 National Fire Code of Canada (NFC), [2015]

.2 National Fire Protection Association (NFPA):

.1 NFPA 51B-[19], Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

.3 Ontario Fire Code.

.4 Ontario Occupational Health and Safety Act R.S.O 1990

.5 O.Reg 213/91 Construction Projects

.6 Canada Labour Code R.S.C., 1985 c L-2

.7 Canada Occupational Health and Safety Regulations SOR/86-304

1.02 CONSTRUCTION FIRE SAFETY

.1 Contractor is responsible for construction fire safety in accordance with national and provincial codes, laws and regulations.

1.03 FIRE DEPARTMENT BRIEFING

.1 NOT USED

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit fire safety plan before construction commences.

1.05 REPORTING FIRES

.1 Be aware at all times of nearest fire alarm pull station location, nearest telephone, and emergency phone number.

.2 Report fire incidents to Fire Department immediately in the following sequence:

.1 Activate nearest fire alarm pull station.

.2 Telephone the Fire Department

.1 Telephone:911

.2 Contact ONTC Rep.

.3 Person activating fire alarm pull station to remain at main site entrance and direct Fire Department personnel to location of fire.

.4 When reporting a fire by telephone, give location of fire, building name or number, and be prepared to give basic directions (e.g., northeast corner of base compound, visual reference points).

.5 Promptly inform ONTC Representative of fire incidents at Work site,

regardless of size.

1.06 FIRE SAFETY PLAN

.1 Prepare a fire safety plan in cooperation with the local fire department and other applicable regulatory authorities for the Work site before beginning Work on site.

.2 Submit fire safety plan to ONTC representative who will submit to local fire department for their review. Implement recommendations from local fire department into fire safety plan.

.3 Limit scope of fire safety plan to Work site area only. Existing fire safety plans covering other existing buildings are not the responsibility of this construction contract.

.4 Prepare fire safety plan in conformance with NFC. Include:

.1 Emergency procedures in case of fire, including:

.1 sounding fire alarm

.2 notifying fire department

.3 instructing occupants on procedures to follow when fire alarm sounds

.4 evacuating occupants, including special provisions for persons requiring assistance

.5 confining, controlling, and extinguishing the fire

.2 Appointment and organization of designated supervisory staff to carry out fire safety duties

.3 Training of supervisory staff and other occupants in their responsibilities for fire safety

.4 Documents, including diagrams, showing type, location and operation of building fire emergency systems.

.5 Holding of fire drills

.6 Control of fire hazards in the building

.7 Inspection and maintenance of building facilities provided for the safety of occupants

.5 Post fire safety plan at each entrance to Work site or near each Work site’s health and safety board.

.6 Review fire safety plan a maximum of every 12 months to ensure it takes into account changes in the use and other characteristics of the building. Revise fire safety plan when it can be improved.

1.07 FIRE WARNING SYSTEM

.1 Provide a fire warning system for entire Work site, capable of notifying construction personnel of a fire emergency in construction area.

.2 Provide a fire warning system with sufficient coverage so that

alarms are capable of being heard throughout building and everywhere on site.

1.08 FIRE PROTECTION SYSTEM IMPAIRMENT

.1 Maintain existing fire protection systems in an operational state at all times during construction.

.2 Use of fire hydrants, standpipes, or hose systems for purposes other than firefighting is prohibited.

.3 Existing fire protection and alarm systems will not be obstructed, shut off, disabled, or left inactive at end of each Working Day or shift without written authorization from ONTC Representative.

.4 Submit written notification to ONTC Representative 48 hours in advance of planned interruption of services. Submit written notification for operation including shutting down active fire protection system, including water supply, fire suppression, fire detection, and life safety systems.

.5 Where an existing fire protection system that provides fire alarm monitoring becomes impaired in an existing building, provide a fire watch as directed by Senior Firefighter.

.6 Where systems are affected or impaired during the Work, conduct work on fire protection system in accordance with NFC.

1.09 TEMPORARY PORTABLE FIRE EXTINGUISHERS

.1 Provide portable extinguishers, or as otherwise directed by Fire Department.

.2 Provide supplemental portable extinguishers to the following areas or as otherwise directed by Fire Department :

.1 Adjacent to hot works

.2 Areas where combustibles materials are stored

.3 Adjacent to areas where flammable liquids or gases are stored or handled

.4 Near or on internal combustion engines

.5 Adjacent to temporary oil fired or gas fired equipment

.6 Adjacent to bitumen heating equipment

.7 Adjacent to each roof installation or repair work area

.3 Provide portable extinguishers classified and rated as 10-A:80B:C, minimum 20 pounds unless otherwise directed by Senior Firefighter.

.4 Provide dry chemical type extinguishers unless otherwise required by hazard being protected.

.5 Provide a sufficient number of portable extinguishers based on a maximum travel distance between fire extinguishers of 22.9 m.

.6 Inspect and maintain extinguishers in accordance with NFC.

1.10 ACCESS FOR FIRE FIGHTING

.1 Provide and maintain access for firefighting operations in accordance with NFC.

.2 Submit written notification to ONTC Representative a minimum of five Working Days before operation of activities that may cause problems that might impede fire department equipment access and personnel response including

.1 violation of minimum horizontal and overhead clearances

.2 erecting of barricades and digging of trenches.

Note: Access routes are intended for the movement of fire department vehicles around buildings. Access aisles and access paths are intended for the movement of fire department personnel inside a building.

.3 Maintain a minimum 6.0-m clear horizontal width for access routes, or as otherwise directed by ONTC Representative.

.4 Maintain a minimum 5.0-m vertical clearance for access routes, or as otherwise directed by ONTC Representative.

1.12 SMOKING RESTRICTIONS

.1 Smoking is prohibited in buildings, including buildings under construction.

.2 Obey posted signs and restrict smoking to only existing designated smoking areas. Obey posted smoking restrictions near existing buildings.

.3 Provide a temporary approved non-combustible receptacle at each designated smoking area in accordance with the Fire Safety Plan.

1.13 WASTE MANAGEMENT

.1 Manage waste in accordance with Section 01 74 19 – Waste Management and Disposal, and as follows:

.1 Minimize waste materials.

.2 Do not burn waste materials.

.3 Remove waste from Work site at end of each Working Day or shift, or more frequently when directed by Senior Firefighter.

.4 Storage:

.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles. Remove at end of each Working Day.

.5 Provide temporary waste bins no closer than 3.0 m to buildings.

1.14 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handle, store, and use flammable and combustible liquids in accordance with NFC or as otherwise directed by the Senior Firefighter.

.2 Store flammable and combustible liquids such as gasoline, kerosene, and naphtha in quantities not exceeding 45 litres. Store in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual approved certification mark. Obtain written authorization from Senior Firefighter for storage of quantities of flammable and combustible liquids exceeding 45 litres.

.3 Transfer of flammable or combustible liquids within buildings or on jetties is prohibited.

.4 Transfer of flammable or combustible liquids in vicinity of open flames or any type of heat-producing device is prohibited.

.5 Use of flammable liquids having a flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents is prohibited.

.6 Storing flammable and combustible waste liquids on site is prohibited. Remove daily or more frequently as directed by Senior Fire fighter.

1.15 HOT WORKS

.1 Implement a Hot Works program in accordance with NFC, FMD 4004, and NFPA 51B. Apply Hot Works program to processes involving welding, cutting, roofing, and other hot works when directed by Senior Firefighter.

.2 Obtain a Hot Works permit 48 hours in advance from ONTC Representative for hot works in work area. Frequency of renewal for hot works permits is at discretion of the ONTC Representative use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the ONTC Representative.

.4 Provide fire watch service as required. Provide fire watchers trained in use of fire extinguishing equipment.

.5 Carry out hot works processes in areas free of combustible and flammable content.

.6 Where hot works must be carried out in areas where combustibles are present:

.1 Protect flammable and combustible materials within 15.0 m of hot works in accordance with NFC.

.2 Provide a fire watch during hot works and for a minimum of 60 minutes after work is complete, unless otherwise directed by ONTC Representative.

.3 Conduct a final inspection of area not less than 4 hours after completion of hot works, unless otherwise directed by Senior Firefighter.

.7 Where there is a possibility of sparks leaking onto combustible materials in areas adjacent to areas where the hot works is carried out:

.1 Cover or close openings in walls, floors, or ceilings to prevent passage of sparks to such adjacent areas.

.2 Provide a fire watch during hot works, and a minimum 60 minutes after hot works is complete.

.3 Conduct a final fire watch inspection not less than 4 hours after hot works is complete, unless otherwise directed by ONTC Representative.

.8 Protection of flammable or combustible materials:

.1 Remove flammable and combustible materials including combustible or flammable dust or residue from area where hot works is carried out.

.2 When removal is not possible, protect materials with a non-combustible covering.

.9 Provide a temporary fire extinguisher within 3.0 m of hot works, minimum size of 20 lbs Type ABC extinguisher, unless otherwise directed by ONTC Representative.

1.16 HAZARDOUS SUBSTANCES

.1 Perform Work involving the use of toxic or hazardous materials, chemicals or explosives, or otherwise creating hazard to life, safety or health, in accordance NFC.

.2 Provide temporary mechanical ventilation where flammable liquids, such as lacquers or urethanes are used. Eliminate sources of ignition. Provide written notification to the ONTC Representative Ca minimum five days before starting Work and immediately at completion of Work.

1.17 PARTIAL OCCUPANCY PROCEDURES

.1 Implement partial occupancy procedures as required. Partial occupancy is defined as a Work site adjacent to an area occupied by ONTC. This includes:

.1 Phased new construction

.2 Early or partial occupancy of new construction

.3 New construction being added onto an existing building

.4 Renovation or recapitalization of an existing building

.5 Phased renovation or recapitalization of an existing building

.2 Where partial occupancy occurs, implement requirements as indicated in Plans (drawings) and Specifications. This may include temporary

construction of a rated fire separation between occupied and construction areas as required by NFC.

.3 If Work occurs in an occupied building, perform fire watch at least every hour, throughout entire site during period of demolition.

.4 If Work occurs in an occupied building and where building does not have a Fire Alarm system or similar automatic monitoring or protection equipment, perform inspections every hour for entire period of construction.

1.18 QUESTIONS OR CLARIFICATION

.1 Direct questions and requests for clarification on Fire Safety to ONTC Representative.

.2 ONTC Representative will obtain clarifications from Fire Department Do not contact Fire Department directly for notification, authorization, or any requests unless situation constitutes an immediate emergency.

1.19 FIRE INSPECTION

.1 Coordinate site inspections by Fire Department through ONTC Representative.

.2 Allow Fire Fighter unrestricted access to work site.

.3 Cooperate with Fire Department during routine fire safety inspection of Work site.

.4 Immediately remedy unsafe fire situations observed by Fire Department.

2 PRODUCTS

2.01 NOT USED

.1 NOT USED

3 EXECUTION

3.01 ATTACHMENTS

.1 ONTC HOT WORK PROGRAM

END OF SECTION

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^{o}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

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Not used.

1.02 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.03 RELATED REQUIREMENTS

.1 Not used.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer’s instructions, printed product literature and data sheets for all products and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS Safety Data Sheets (SDS).

.3 Sustainable Design Submittals:

.1 Not used.

.4 Submit Environmental Protection Plan (EPP) for review and approval by ONTC Representative before delivering materials to site or commencing construction activities.

.5 EPP shall include comprehensive overview of known or potential environmental issues to be addressed on site during construction.

.6 Address topics at level of detail commensurate with environmental issue and required construction task [s] .

.7 Include in Environmental Protection Plan (EPP):

.1 Name [s] of person [s] responsible for ensuring adherence to EPP.

.2 Name [s] and qualifications of person [s] responsible for manifesting hazardous waste to be removed from site.

.3 Name [s] and qualifications of person [s] responsible for training site personnel.

.4 Descriptions of environmental protection personnel training

program.

.5 Submit a site-specific Stormwater Pollution Prevention Plan (SPPP) in accordance with EPA-833-R-06-004 . Include the site-specific Erosion and Sediment Control Plan (ESCP) identifying the type and location of erosion and sediment control measures to be provided on site. Include monitoring and reporting requirements to ensure that ESC control measures are in compliance with erosion and sediment control plan, Federal and Provincial regulations, and Municipal by-laws.

.6 Submit drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Submit a site-specific Traffic Control Plan (TCP) including measures to reduce erosion of [temporary] [and] [existing] roadbeds by construction traffic, especially during wet weather.

.1 TCP to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.8 Submit a Site Work Plan (SWP) showing work areas for proposed activities in each portion of area and identifying areas of limited use or non-use.

.1 SWP to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.9 Submit a Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Submit a Solid Waste Disposal Plan (SWDP) for non-hazardous solid wastes identifying methods and locations for solid waste disposal including clearing debris.

.11 Submit an Air Pollution Control Plan (APCP) detailing provisions to ensure that dust, debris, materials, and trash, are contained within the project site.

.12 Submit a site-specific Contaminant Prevention Plan (CPP) identifying the proper procedures and actions to be implemented to prevent potentially or expected hazardous substances due to the presence of any hazardous substances within the project site. The intent of the CPP is to:

.1 Prevent introduction of designated substances (DS) into air, water, or ground;

.2 Detail provisions for storage and handling of these materials in compliance with Federal, Provincial, and Municipal laws.

.13 Submit a Wastewater Management Plan (WMP) identifying methods

and procedures for management [and] [or] discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.14 Submit an Identification and Protection Plan (IPP) that defines procedures for identifying and protecting historical, archaeological, cultural and biological resources and wetlands.

.15 Submit a Pesticide Treatment Plan (PTP) identifying the presence of any pesticides within the site. PTP to be updated as required.

1.05 FIRES

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

1.06 DRAINAGE

.1 Ensure that the ESCP measures are provided and that its recommendations are followed on site, in accordance with the site-specific SPPP, at all times during construction.

.2 Provide temporary drainage and pumping as required to keep excavations on site free of standing water.

.1 Obtain ONTC Representative approval before pumping standing water, which is free of suspended materials, into waterways, sewer or drainage systems.

.2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with the site-specific SPPP in compliance with the requirements of authorities having jurisdiction.

.3 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

1.07 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of two (2) m minimum. Ensure that control measures used for protection are in compliance with Municipal laws and regulations.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by ONTC Representative. Obtain permits before trees removal in accordance

with the requirements of the authorities having jurisdiction.

1.08 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Keep waterways free of excavated fill, waste material and debris.

.4 Design and construct temporary crossings to minimize waterways erosion.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast underwater or within 100 m of indicated spawning beds.

1.09 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract in accordance with site-specific SPPP.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements. Check with local authorities for any environmental compliance requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where as directed by ONTC Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.10 HISTORICAL/ARCHAEOLOGICAL CONTROL

.1 Refer to the site-specific IPP for procedures in identifying and protecting historical and archaeological resources previously known to be on project site or discovered during construction.

.1 Plan to include methods to ensure protection of known or discovered resources and identify lines of communication between Contractor personnel and ONTC Representative.

1.11 NOTIFICATION

.1 ONTC Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental bylaws, permits, and other elements of site-specific plans, such as [EPP] , [SPPP] , [TCP] , [SCP] , [SWDP] , [APCP] , [CPP] , [WMP] , [PTP] and [IPP] as applicable.

.2 Contractor after receipt of such notice, shall inform ONTC Representative of proposed corrective action and take such action to obtain the their approval.

.1 Take action only after receipt of written approval by ONTC Representative

.3 ONTC Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 CLEANING

.1 Leave Work area clean at end of each day.

.2 Burying rubbish and waste materials on site is not permitted.

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.4 Proceed with final cleaning upon completion and removal of surplus materials, rubbish, tools and equipment.

.5 Waste Management: separate waste materials for recycling.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 ASTM International (ASTM):

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

.2 International Organization for Standardization (ISO):

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

1.02 DEFINITIONS

.1 Mock-up: A full-size physical example that demonstrates materials, finishes, interrelationship of materials and assemblies, aesthetic effects, and execution. A mock-up may demonstrate coordination of multiple Subcontractors' work. A mock-up establishes a standard by which the Work will be judged. Mock-ups are not samples.

.2 Quality Assurance: Procedures for preventing defects and deficiencies before and during execution of the Work.

.3 Quality Audit: Systematic and independent examination to determine whether quality requirements have been fulfilled as planned. A quality audit will examine processes, products and services to determine if they have been implemented effectively to achieve their specified objective.

1.03 SECTION INCLUDES

.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.

1.04 RELATED REQUIREMENTS

.1 Section [_____]

1.05 ADMINISTRATIVE REQUIREMENTS

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

.2 ONTC will 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 building 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. Quality Management System will describe Contractor's contributions for testing and inspection programs as necessary for a successful Work.

1.06 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit a detailed testing and inspections schedule to ONTC Representative in accordance with the Contractor's Quality Management System.

.3 Submit certificates for products, process and system for approval by ONTC Representative.

.4 Submit formal testing and inspections reports per ASTM E329as indicated in technical specification Sections to ONTC Representative in accordance with contractual agreement.

.5 Submit one digital copy of each quality assurance inspection and test report to ONTC Representative, except where a technical specification Section indicates otherwise.

.6 Submit mill test certificates as required in technical specification Sections and as indicated on Drawings.

1.07 QUALIFICATIONS

.1 Manufacturers' Qualifications:

.1 specializes in manufacturing the products specified in the technical Section of the Project's construction specification.

.2 minimum 3 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 ONTC Representative for reporting, scheduling access and incidental labor required by Quality Auditor’s reports if required.

.3 Obtain ONTC Representative approval before proceeding with tests and inspections , and additional tests and inspections as may be reasonably requested by ONTC Representative.

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

1.10 SITE SAMPLES

.1 Obtain ONTC Representative acceptance to proceed with the sampling process.

.1 Testing agency is responsible for obtaining representative samples of those materials required to be tested and evaluated as directed by ONTC Representative 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 Obtain ONTC Representative acceptance of mock-ups installation before beginning to install those portions of the Work represented by the mock-up.

.3 Assemble mock-ups at the Place of the Work in locations acceptable to ONTC Representative, or where location is indicated in the technical specification Section.

.4 Schedule mock-ups ready for ONTC Representative review and 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 If requested, ONTC Representative will assist in scheduling dates for construction of mock-ups.

.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 of these Subcontractors to ensure mock-ups are complete.

.8 Modify or replace mock-ups when unacceptable to ONTC Representative.

.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 ONTC Representative

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 Not Used.

1.02 RELATED REQUIREMENTS

.1 Not Used.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 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.

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

.3 When Electrical power supply is available at site, it will be provided for construction use at no cost. Connect to existing power supply in accordance with Canadian Electrical Code.

.5 Electrical power systems installed under this Contract may be used for construction requirements only with prior approval from ONTC Representative if warranties are not affected. Repair damage to electrical system caused by use under this Contract.

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

1.05 TEMPORARY FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

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

1.06 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 of [10] °C 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, may not be used.

1.07 TEMPORARY LIGHTING

.1 Provide and maintain temporary lighting throughout Project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.2 Electrical lighting systems installed under this Contract may be used for construction requirements only with prior approval of ONTC Representative 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.

1.08 TEMPORARY Sanitary Facilities

.1 Provide sanitary facilities in accordance with Occupational health and Safety requirements in the place of work. Use of Owner’s

existing sanitary facilities or new sanitary facilities is not allowed.

1.9 TEMPORARY TELECOMMUNICATIONS

.1 Provide and pay for temporary telephone, data hook up equipment necessary for own use and use of ONTC Representative.

1.10 TEMPORARY WATER

.1 Owner will provide continuous supply of potable water for construction use.

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

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 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 water and power.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.2 Canada Green Building Council (CaGBC)

.3 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.

.4 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.

.5 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 RELATED REQUIREMENTS

.1 Not used.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Indicate use of supplemental or other staging area.

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

.4 Remove from site all such work after use. Reinstate area to same state before start of project.

1.05 SCAFFOLDING

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

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

1.06 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.

1.07 ELEVATORS

.1 Permanent elevators not to be used by construction personnel or transporting of materials. Co-ordinate use with ONTC Representative if use is permitted.

.2 Provide protective coverings for finish surfaces of cars and entrances.

1.08 SITE STORAGE/LOADING

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

.2 Do not load or permit to load any part of Work with 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 ONTC Representative 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.

1.09 CONSTRUCTION PARKING

.1 Parking may be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

1.10 SECURITY

.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.11 OFFICES

.1 Provide office heated to [22] degrees C, lighted [750] lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily

available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

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

1.13 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

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

1.14 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 ONTC Representative.

1.15 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 ONTC Representative

.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: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.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 ONTC Representative

.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 ONTC Representative.

1.16 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.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 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 General Standards Board (CGSB)

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

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

.2 CSA Group (CSA)

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

1.02 RELATED REQUIREMENTS

.1 Section [_____].

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 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 around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide as required by governing authorities.

1.06 WEATHER ENCLOSURES

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

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

.3 Design enclosures to withstand wind pressure [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.

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 BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with ONTC Representative locations and installation schedule [3] 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 – Cleaning and Waste Management and Disposal.

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 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 45 00 – Quality Requirements.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit name, address, and registration information of land surveyor to ONTC Representative.

.2 Submit documentation that verifies accuracy of site engineering work when requested by ONTC Representative.

.3 Submit certificate signed by surveyor indicating elevations and locations of completed Work that conform to Contract Documents and those that do not conform.

1.03 QUALIFICATIONS

.1 Surveyor: Qualified, registered land surveyor, licensed to practice at the Place of the Work, and acceptable to ONTC Representative.

1.04 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Review existing conditions with contract documents and identify in writing to ONTC Representative of any discrepancies.

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 and submit a certified survey showing dimensions, locations, angles, and elevations of Work.

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

.4 Provide a final survey of building location , surrounding grades as affected by the work and buried utilities.

1.08 SUBSURFACE CONDITIONS

.1 Promptly notify ONTC Representative 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 Consultant determine that conditions do differ materially, instructions will be issued for

changes in Work as provided in Changes and Change Orders.

1.09 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform ONTC Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment. Contractor responsible for coordination of all equipment and services before installation.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 EXAMINATION REQUIREMENTS

.1 Verification of Conditions:

.1 Verify that substrate 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 Proceed with installation only after unacceptable conditions are remedied.

.5 Proceeding with cutting, patching, or installation means acceptance of existing conditions.

.6 Existing Services:

.1 Confirm locations and extent of service lines in area of Work before beginning work on site. Notify ONTC Representative of findings.

.2 Remove abandoned service lines within [2] m of structures. Cap or seal lines at cut-off points as indicated on Drawings.

.2 Pre-Installation Testing:

.1 Perform manufacturer-recommended pre-installation site test of

substrate and submit report of test results indicating whether test results meet the manufacturer's minimum requirements and recommendations.

.3 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.

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 ONTC Representative.

.3 Notify ONTC Representative if a reference point is lost or destroyed.

.1 Surveyor to replace reference points in accordance with original land survey.

.4 Notify ONTC Representative if a reference point requires relocation because of necessary changes in grades or locations.

.1 Surveyor to register new reference points with land titles department.

.4 Survey Requirements:

.1 Establish min two permanent benchmarks on site, referenced to established benchmarks by survey reference points. Record locations with horizontal and vertical data in Project record documents.

.2 Establish lines and levels, location and layout, by instrumentation.

.3 Stake for grading, fill and topsoil placement and landscaping features.

.4 Stake slopes and berms.

.5 Establish pipe invert elevations.

.6 Stake batter boards for foundations.

.7 Establish foundation column locations and floor elevations.

.8 Establish lines and levels for mechanical and electrical work.

.5 If Contractor is found to be in error, all costs incurred to correct condition shall be assumed by the Contractor.

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 and required repairs arising from tests and destructive inspections.

1.02 RELATED REQUIREMENTS

.1 Not used.

1.03 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.

.3 Submit written request before cutting or altering to existing conditions which may affect the following:

.1 structural integrity of existing elements: Submit structural details and calculations performed by a professional structural engineer registered or licensed in Province of Ontario, Canada. Include evidence of unsatisfactory structural integrity of the elements according to ONTC Representative.

.2 integrity of weather-exposed and moisture-resistant elements

.3 efficiency, maintenance, safety, or accessibility of operational elements

.4 visual qualities of sight-exposed elements.

.5 Work of Owner or other contractor(s).

.4 Submit a request for cutting or altering, which includes:

.1 identification of the Project; and

.2 location and description of affected existing conditions including changes to structural elements, function of elements, and visual appearance of existing elements; and the location and identification of utilities that will be temporarily out of service during cutting and patching activities.

.5 Submit site plan drawings indicating relative location of various services and equipment upon the request of ONTC Representative

.6 Submit a work plan including:

.1 a statement why cutting or altering is unavoidable and describe alternatives to cutting and patching if available;

.2 a description of proposed work and proposed Products;

.3 the effect of cutting or altering on work by Owner or other contractors;

.4 written acknowledgement by other contractors affected by cutting or altering , if applicable; and

.5 proposed date(s) [and time(s)] work will be executed.

1.04 QUALIFICATIONS

.1 Engage a structural engineer licensed at the Place of the Work, to submit details and calculations when altering existing structural elements.

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 Change in materials: submit request for substitution in accordance with contract documents.

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 ONTC Representative in writing, of conflicts between specifications and manufacturer’s instructions, so that ONTC Representative will establish course of action.

.5 Improper installation or erection of products, due to failure in complying with these requirements, authorizes ONTC Representative 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 specifications are approximate.

.2 Notify ONTC Representative of impending installation and obtain approval 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] [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 is not acceptable.

3.03 CUTTING AND PATCHING

.1 Proceed with cutting and patching after the review and acceptance by the ONTC Representative 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 Employ original installer to perform cutting and patching for weather-exposed elements, moisture-resistant elements, and surfaces exposed to view.

.5 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 ONTC Representative.

.6 Fit Work airtight to pipes, sleeves, ducts, conduit, and other

penetrations through surfaces.

.7 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 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 Not used.

1.03 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by ONTC Representative. Do not burn waste materials on site, unless approved by ONTC Representative.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only, or remove from site, as agreed upon at outset of contract.

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

.5 Provide on-site steel containers for collection of waste materials and debris.

.6 Provide and use marked separate bins for recycling. Refer to Section 1 74 19 - Waste Management and Disposal.

.7 Dispose of waste materials and debris at designated dumping areas off site.

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

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

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

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

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.04 FINAL CLEANING

.2 When Work is Substantially Performed remove surplus products, tools,

construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris including that caused by Owner or other Contractors.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by ONTC Representative. Do not burn waste materials on site, unless approved by ONTC Representative.

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

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings, and at exterior of building.

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

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

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

.14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.15 Remove dirt and other disfiguration from exterior surfaces.

.16 Clean and sweep roofs, gutters, areaways, and sunken wells.

.17 Sweep and wash clean paved areas.

.18 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.19 Clean roofs, downspouts, and drainage systems.

.20 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.21 Remove snow and ice from access to building.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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 SUMMARY

.1 The Project shall generate the least amount of waste possible. Contractor shall implement processes to ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor.

1.02 REFERENCE STANDARDS

.1 ASTM International (ASTM)

.1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program

1.03 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re-modeling , repair and demolition operations.

.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.5 Non-toxic: Not poisonous to humans either immediately or after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the Project site to another site for remanufacture into a new product for reuse by others.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the Project site.

.11 Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported

by storm or well production run off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings;

.2 Wood preservatives; strippers and household cleaners;

.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.04 RELATED REQUIREMENTS

.1 Not used.

1.05 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the Project, and ensure that requirements of the Construction Waste Management Plan are followed.

.2 Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 31 19 - Project Meetings before starting any Work of the Contract attended by the Owner, Contractor, affected Subcontractor's and ONTC Representative to discuss the Contractors Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.06 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Draft Construction Waste Management Plan (Draft CWM Plan): Submit to ONTC Representative a preliminary analysis of anticipated site generated waste by listing a minimum of five (5) construction or demolition waste streams that have potential

to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; ONTC Representative will provide commentary before development of Contractor's Construction Waste Management Plan.

.1 Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Draft CWM Plan materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

.2 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.

.3 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the Project, and the proposed local market for each material.

.4 Landfill Materials: materials that cannot be recycled, reused or composted.

.5 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the Project.

.6 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

.7 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.07 PROJECT CLOSEOUT SUBMITTALS

.1 Diversion Documentation: Submit as constructed information in accordance with Section 01 78 00 - Closeout Submittals as follows:

.1 Construction Waste Management Report (CWM Report) : Submit for this Project in a format acceptable to submittal requirements and that includes the following information:

.1 Accounting: Submit information indicating total waste produced by the Project.

.2 Composition: Submit information indicating types of waste

material and quantity of each material.

.3 Diversion Rate: Submit information indicating total waste diverted from landfill as a percentage of the total waste produced by the Project.

.4 Submit copies of transportation documents or shipping manifests indicating weights of materials, and other evidence of disposal indicating final location of waste diverted from landfill and waste sent to landfill.

.5 Alternative Daily Cover (ADC): Submit quantities of material that were used as ADC at landfill sites, and that form a part of the total waste generated by the Project.

.6 Photographs: Submit photographs of waste diversion facilities documenting location and signage describing usage of waste separation containers.

1.08 DELIVERY, STORAGE, AND HANDLING

.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the Project waste and the available recycling and reuse programs in the Project area.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 (CWM PLAN) IMPLEMENTATION

.1 Manager: Contractor is responsible for designating an on site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the Project.

.2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor , the Owner, the ONTC Representative

and other site personnel as required to maintain CWM Plan.

.3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the Project to Subcontractors at appropriate stages of the Project.

.4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:

.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

.5 Progressive Documentation: Submit a monthly summary of waste generated by the Project to ensure that waste diversion goals are on track with Project requirements:

.1 Submittal of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Owner, ONTC Representative.

.2 Monthly waste summary shall contain the following information:

.1 The amount in tonnes or m^3 and location of material landfilled,

.2 The amount in tonnes or m^3 and location of materials diverted from landfill, and

.3 Indication of progress based on total waste generated by the Project with materials diverted from landfill as a percentage.

3.02 SUBCONTRACTOR'S RESPONSIBILITY

.1 Subcontractor's shall cooperate fully with the Prime Contractor to implement the CWM Plan.

.2 Failure to cooperate may result in the Owner not achieving their environmental goals, and may result in penalties being assessed by the Contractor to the responsible Subcontractor's.

END OF SECTION

1 GENERAL

1.01 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.2 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.02 RELATED REQUIREMENTS

.1 Not used.

1.03 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 ONTC Representative in writing of satisfactory completion of Contractor’s inspection and submit verification that corrections have been made.

.2 Request ONTC Representative inspection.

.2 ONTC Representative Inspection:

.1 ONTC Representative and Contractor to inspect 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 ONTC Representative.

.7 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by ONTC Representative, and Consultant.

.2 When Work is incomplete according to ONTC Representative and Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when ONTC Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When ONTC Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 Refer to Contract documents: when Work deemed incomplete by ONTC Representative, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.04 FINAL CLEANING

.1 Clean in accordance with Section 01 74 00 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

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 Environmental Protection Act (CEPA):

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations

1.02 RELATED REQUIREMENTS

.1 Not used.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week before Contract completion with ONTC Representative, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.2 ONTC Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 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.

.4 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 Two weeks before Substantial Performance of the Work, submit to the ONTC Representative, four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.05 FORMAT

.1 Organize data as 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 by 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 [1:1] scaled CAD files in [dxf] [dwg] format on [CD].

1.06 CONTENTS - PROJECT RECORD DOCUMENTS

.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 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

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

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

.5 Typewritten Text: As required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

.6 Training: Refer to Section 01 79 00 - Demonstration and Training.

1.07 AS-BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for ONTC Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Site test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in site office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by ONTC Representative.

1.08 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line and in copy of Project Manual, provided by ONTC Representative.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

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

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

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Site changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

.5 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.

.2 Changes made by Addenda and change orders.

.6 Other Documents: Maintain manufacturer's certifications, inspection certifications, site test records, required by individual specifications Sections.

.7 Provide digital photos, if requested, for site records.

1.09 FINAL SURVEY

.1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.10 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

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

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide [Contractor's] [Design-Builder's] coordination drawings, with installed colour coded piping diagrams.

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

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

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and Section 01 91 13 - General Commissioning Requirements.

.15 Additional requirements: As specified in individual specification Sections.

1.11 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.

.3 Moisture-protection and weather-exposed products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: As specified in individual specifications Sections.

1.12 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.

.4 Receive and catalogue items.

.1 Submit inventory listing to ONTC Representative.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to ONTC Representative.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before to final payment.

.3 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 ONTC Representative.

.2 Include approved listings in Maintenance Manual.

1.13 DELIVERY, STORAGE, AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer’s seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by ONTC Representative.

1.14 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, [30] days before planned pre-warranty conference, to ONTC Representative approval.

.3 Warranty management plan to include required actions and documents to assure that ONTC Representative receives 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 Submit, warranty information made available during construction phase, to ONTC Representative for approval before each monthly pay estimate.

.6 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] days after completion of applicable item of work.

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

.5 Co-execute submittals when required.

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

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

.8 Conduct joint [4] month and [9] month warranty inspection, measured from time of acceptance, by ONTC Representative.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, Subcontractors, manufacturers, or suppliers involved.

.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include Roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as fire protection, alarm systems, sprinkler systems, lightning protection systems,.

.3 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.

.4 Contractor's plans for attendance at [4] and [9] month post-construction warranty inspections.

.5 Procedure and status of tagging of equipment covered by extended warranties.

.6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.10 Respond in timely manner to oral or written notification of required construction warranty repair work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the ONTC Representative to proceed with action against Contractor.

1.15 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil- and water-resistant tag approved by ONTC Representative.

.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.

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 RELATED REQUIREMENTS

.1 Not used.

1.02 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel before date of substantial performance.

.2 ONTC will provide 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 designated personnel are present.

.3 Ensure equipment has been inspected and put into operation in accordance with specified equipment Section.

.4 Ensure testing, adjusting, and balancing has 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, trouble-shooting, 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 operation and maintenance manuals as basis of instruction.

.3 Review contents of 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 Ensure a sufficient amount of time is provided for instruction of each item of equipment or system.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks before designated dates, for ONTC Representative approval.

.3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Give time and date of each demonstration, with list of persons

present.

.5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.04 QUALITY ASSURANCE

.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:

.1 Instruct Owner’s personnel.

.2 Submit written report that demonstration and instructions have been completed.

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 SUMMARY

.1 This Section includes general requirements relating to commissioning (Cx) of project components and systems, specifying general requirements for performance verification (PV) of components, equipment, sub-systems, systems, and integrated systems.

1.02 ABBREVIATIONS

.1 AFD: Alternate Forms of Delivery, service provider

.2 BMM: Building Management Manual

.3 Cx: Commissioning

.4 EMCS: Energy Monitoring and Control Systems

.5 O&M: Operation and Maintenance

.6 PI: Product Information

.7 PV: Performance Verification

.8 TAB: Testing, Adjusting and Balancing

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.

.5 Section 01 91 13.13 - Commissioning Plan.

1.04 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 ONTC Representative will observe some or all commissioning activities at their discretion.

.2 Owner’s Performance Testing: Performance testing of equipment or systems by ONTC Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

.3 Cooperate fully with ONTC Representative and Consultant during stages of acceptance and occupancy of facility.

.4 Coordination with Authorities Having Jurisdiction (AHJ):

.1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of AHJ, arrange for authority to witness procedures to avoid duplication of tests and to facilitate an earlier acceptance of facility.

.2 Obtain certificates of approval, acceptance, and compliance

with rules and regulations of AHJ.

.3 Submit copies to ONTC Representative within [5] days of test and with Cx report for review.

.2 Commissioning Meetings:

.1 Arrange Cx meeting(s) as per this section, and provide agenda minimum three (3) days before meeting(s).

.2 Use Cx meetings to resolve issues, monitor progress, and identify defects and deficiencies relating to Cx.

.3 Continue Cx meetings on a regular basis, including during equipment start-up period, and functional testing period until commissioning deliverables have been addressed.

.4 At [60]% construction completion stage: ONTC Representative will request a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Agenda topics include the following:

.1 Review duties and responsibilities of Contractor and Subcontractors, addressing delays and potential problems.

.2 Determine the degree of involvement of Subcontractors and manufacturer's representatives in the Cx process.

.5 Meeting will be chaired by ONTC Representative, who will record and distribute minutes.

.6 Ensure Subcontractors and relevant manufacturer representatives are present at [60]% construction completion stage, at subsequent Cx meetings, and when otherwise required.

.3 Observation of Starting and Testing:

.1 Give [14] days notice before beginning commissioning.

.2 ONTC Representative and Consultant, if required, will observe start-up and testing.

.3 ONTC Representative to be present at tests performed and documented by Subcontractors, suppliers, and equipment manufacturers.

.4 Conflicts:

.1 Report conflicts between requirements of this Section and other Sections to ONTC Representative and obtain interpretation or clarification before starting commissioning work.

.2 Failure to report conflicts and obtain interpretation or clarification will result in application of the more stringent requirement.

.5 Excess Administration:

.1 Contractor shall pay the costs related to ONTC Representative or Consultant's excess contract administration if third and subsequent verifications occur where:

.1 Verification of reported results fail to receive ONTC

Representative's acceptance.

.2 Repetition of second verification again fails to receive acceptance.

.3 ONTC Representative deems Contractor's request for second verification was premature.

.2 The cost of the ONTC Representative and Consultant's excess contract administration will be based on a rate of $250 per hour.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

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

.1 Submit no later than [4] weeks after award of Contract:

.1 draft Cx documentation, and

.2 preliminary Cx schedule.

.2 Request changes to submittals in writing to ONTC Representative and obtain written acceptance or rejection at least [8] weeks before start of Cx.

.3 Where Cx procedures are not specified, submit proposed ones to ONTC Representative and obtain written acceptance or rejection at least [8] weeks before start of Cx.

.4 Submit additional documentation relating to Cx process as required by ONTC Representative.

.5 If instruments installed in Contract will be used for Cx of TAB and PV, then submit TAB and PV instrument calibration certificates for review and acceptance.

.6 Submit EMCS sensor calibration certificates.

.2 Commissioning Schedule:

.1 Create and submit detailed Cx schedule as part of construction schedule.

.2 Allow in the schedule adequate time for Cx activities prescribed in technical specification Sections and commissioning Sections including:

.1 acceptance of Cx reports

.2 verification of reported results

.3 repairs, retesting, re-commissioning, and re-verification

.4 training

.3 Start-Up Documentation:

.1 Assemble start-up documentation and submit to ONTC Representative for review and acceptance before beginning commissioning.

.2 Start-up documentation to include:

.1 Factory and on-site test certificates for specified

equipment.

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up checklists.

.4 Start-up reports.

.5 Step-by-step description of complete start-up procedures so ONTC Representative can repeat start-up at any time.

.4 Submit for review and acceptance:

.1 Complete list of proposed instruments and equipment to perform commissioning.

.2 List data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.

.5 Commissioning Documentation:

.1 Submit completed Cx documentation to ONTC Representative and Consultant for review and acceptance.

1.06 MAINTENANCE MATERIALS SUBMITTALS

.1 Supply and document maintenance materials, spare parts, and special tools as specified in other specification Sections.

1.07 SITE CONDITIONS

.1 Where Cx of weather-dependent, occupancy-dependent, or seasonally-dependent equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions if acceptable to ONTC Representative with manufacturer's assistance in accordance with equipment manufacturer's instructions, data, and approved formulae.

2 PRODUCTS

2.01 NOT USED

.1 Not used.

3 EXECUTION

3.01 GENERAL

.1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Perform Cx after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Complete Cx in the most effective and timely manner available.

.1 Objectives: Verify that installed equipment, systems and integrated systems operate in accordance with Contract

Documents and design criteria and intent.

.2 Contractor shall assist in Cx process, operating equipment and systems, troubleshooting, and making adjustments as required.

.1 Operate systems at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems should interact with each other as intended in accordance with Contract Documents and design criteria.

.2 Make adjustments as needed, during these checks, to enhance performance and meet environmental or user requirements.

.3 Design Criteria: In accordance with Owner's requirements or as determined by Consultant. To meet Project functional and operational requirements.

3.02 COMMISSIONING OVERVIEW

.1 Include Cx as a line item in Contractor's cost breakdown.

.2 Cx activities supplement the site quality control and testing procedures described in relevant technical specification Sections.

.3 Conduct Cx at the same time as other activities during the construction stage.

.4 Cx identifies issues in the Design stages, which are addressed during Construction and Cx stages. This step ensures the built facility meets functional and operational requirements while operating as intended under weather, environmental and occupancy conditions. Cx activities include the transfer of critical knowledge to the Owner's facility operations personnel.

.5 ONTC Representative will issue Interim Acceptance Certificate only after:

.1 Cx documentation has been received, reviewed for suitability, and reviewed and accepted by ONTC Representative.

.2 equipment, components and systems have been commissioned, and

.3 O&M training has been completed.

3.03 PRE-COMMISSIONING REVIEW

.1 Before Construction:

.1 Review Contract Documents and confirm in writing to ONTC Representative the following:

.1 Adequacy of provisions for Cx.

.2 Aspects of design and installation pertinent to success of Cx.

.2 During Construction:

.1 Coordinate provision, location, and installation of provisions for Cx.

.3 Before Beginning Cx:

.1 Verify Cx Plan and schedules are up-to-date.

.2 Verify installation of related components, equipment, systems, and sub-systems are complete.

.3 Review Cx requirements and procedures.

.4 Verify documentation used for the Cx process is shelf-ready (bound, organized, indexed, etc.).

.5 Review design criteria and intent, and special features to ensure full understanding.

.6 Submit complete start-up documentation to Consultant.

.7 Verify systems have been cleaned thoroughly.

.8 Complete TAB procedures on systems and submit TAB reports to Consultant for review and acceptance.

.9 Verify "As-Built" system schematics are available.

.4 Inform Consultant in writing of defects and deficiencies in installed Work.

3.04 STARTING AND TESTING

.1 Contractor to bear all costs associated with Cx activities, including, but not limited to, costs of the following:

.1 inspections, including disassembly and re-assembly after approval, and for starting, testing, adjusting, and;

.2 temporary testing equipment.

.3 required personnel and test equipment.

3.05 PERFORMANCE VERIFICATION TOLERANCES

.1 Application Tolerances:

.1 A specified range of acceptable deviations of measured values from specified values or specified design criteria except for special areas that shall be within +/- [10]% of specified values.

.2 Instrument Accuracy Tolerances:

.1 To be of higher order of magnitude than equipment or system being tested.

.3 Measurement Tolerances During Verification:

.1 Unless otherwise specified, actual values shall be within +/- [2]% of recorded values.

3.06 MANUFACTURER SERVICES

.1 During factory testing, manufacturer to:

.1 Coordinate time and location of testing.

.2 Arrange for ONTC Representative and Consultant to observe testing.

.3 Submit testing documentation for review and acceptance by Consultant.

.4 Obtain written acceptance of test results and documentation from ONTC Representative before delivery to site.

.2 Obtain manufacturer's installation, start-up and operations instructions before start-up of components, equipment and systems, and review with Consultant.

.1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.

.2 Modify procedures that may be detrimental to equipment performance and review with manufacturer before start-up.

.3 Integrity of warranties:

.1 Use manufacturer's trained start-up personnel where specified in other divisions or where required to maintain integrity of warranty.

.2 Verify with manufacturer that testing as specified will not void warranties.

.4 Qualifications of manufacturer's personnel:

.1 Experienced in design, installation and operation of equipment and systems.

.2 Ability to interpret test results accurately.

.3 Report results in clear, concise, logical manner.

3.07 COMMISSIONING PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in a normal and safe manner before conducting start-up, testing and Cx.

.2 Conduct start-up and testing in the following distinct phases:

.1 Included in delivery and installation:

.1 Verification of conformity to specification, reviewed and accepted shop drawings and completion of PI report forms.

.2 Visual inspection of quality of installation.

.2 Start-up: Follow accepted start-up procedures.

.3 Operational testing: Document equipment performance.

.4 System PV: Include repetition of tests after correcting deficiencies.

.5 Post-Substantial Performance Verification: To include fine-tuning.

.3 Correct deficiencies and obtain acceptance from ONTC Representative after distinct phases have been completed and before beginning the next phase.

.4 Document required tests on approved PV forms.

.5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by ONTC Representative and or Consultant. If evaluation report indicates that equipment start-up procedure was deficient and resulted in equipment damage, perform the following:

.1 Minor equipment/systems: Perform corrective measures acceptable to Consultant .

.2 Major equipment/systems: If evaluation report indicates that equipment damage is minor, perform corrective measures acceptable to ONTC Representative and Consultant.

.3 If evaluation report indicates that major equipment damage has occurred, ONTC Representative will reject equipment.

.1 Remove rejected equipment from site and replace with new equipment.

.2 Perform specified start-up procedures on new equipment/systems.

3.08 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

.1 After start-up, operate and maintain equipment and systems as directed or recommended by equipment/system manufacturer.

.2 With manufacturer's assistance, develop written maintenance program and submit to Consultant for review and acceptance before implementation.

.3 Operate and maintain systems for length of time required for commissioning to be completed.

.4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

3.09 TEST RESULTS

.1 If start-up, testing, or PV produce unacceptable results, repair, replace or repeat specified starting or PV procedures until acceptable results are achieved.

.2 Provide labor and materials, and assume costs for re-commissioning.

3.10 START OF COMMISSIONING

.1 Notify ONTC Representative at least [21] days before start of Cx.

.2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

3.11 TEMPORARY INSTRUMENTS AND EQUIPMENT

.1 Provide all required instruments and equipment required to complete commissioning.

3.12 COMMISSIONING PERFORMANCE VERIFICATION

.1 Carry out Cx:

.1 under actual and accepted simulated operating conditions, over entire operating range, and in all modes, and

.2 on independent systems and interacting systems.

.2 Cx procedures to be repeatable and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

.4 Make EMCS trending information available as supporting documentation for performance verification.

3.13 EXTENT OF VERIFICATION

.1 Laboratory areas:

.1 Provide labour and instrumentation to verify up to [100]% of reported results.

.2 Elsewhere:

.1 Provide labour and instrumentation to verify up to [30]% of reported results, unless otherwise specified in other specification Sections.

.3 Number and location to be at discretion of ONTC Representative.

.4 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, and instrumentation.

.5 Review and repeat commissioning of systems if inconsistencies found in more than [20]% of reported results.

.6 Perform additional commissioning until results are acceptable to ONTC Representative.

3.14 INSTALLED INSTRUMENTATION

.1 Use instruments installed under Contract for TAB and PV if:

.1 Accuracy complies with this specification Section.

.2 Calibration certificates have been submitted to Consultant.

.2 Calibrated EMCS sensors may be used to obtain performance data if sensor calibration has been completed and accepted.

3.15 PROCEDURES FOR DEFICIENCIES DISCOVERED DURING COMMISSIONING

.1 Correct defects and deficiencies found during the Cx process. Re-verify equipment and components within the defective or deficient system to verify proper performance, including related systems if requested by ONTC Representative or Consultant.

.2 Costs associated with re-commissioning defective and deficient work is the responsibility of Contractor. Above costs to be in the form of progress payment reductions or hold-back assessments.

3.16 COMMISSIONING CONSTRAINTS

.1 Not used.

3.17 MISCELLANEOUS CHECKS AND ADJUSTING

.1 Make adjustments and changes which become apparent as Cx proceeds.

.2 Perform static and operational checks as applicable and as required.

3.18 DEFICIENCIES AND DEFECTS

.1 Correct deficiencies and defects found during start-up and Cx to satisfaction of ONTC Representative.

.2 Report concerns, deficiencies, and defects affecting Cx to ONTC Representative in writing. Stop Cx until problems are rectified. Proceed with written acceptance from ONTC Representative.

3.19 CLOSEOUT ACTIVITIES

.1 Completion of Commissioning:

.1 Upon completion of Cx, leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx before issuance of Interim Certificate of Completion.

.3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by ONTC Representative.

.2 Activities Upon Completion of Commissioning:

.1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

.3 Training:

.1 In accordance with Section 01 79 00- Demonstration and Training.

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 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.

1.03 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 Optimized life cycle costs.

.4 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 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.

.3 Sets out deliverables relating to O&M, process and administration of Cx.

.4 Describes process of verification of how built works meet Owner requirements.

.5 Produces a complete functional system prior to issuance of Certificate of Occupancy.

.6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:

.1 Overview of Cx.

.2 General description of elements that make up Cx Plan.

.3 Process and methodology for successful Cx.

.4 Acronyms:

.1 Cx - Commissioning.

.2 BMM - Building Management Manual.

.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.

1.04 DEVELOPMENT OF 100% CX PLAN

.1 Cx Plan shall be 100% completed within [08] weeks of award of contract and [06] weeks before CX start and shall take into account:

.1 Approved shop drawings and product data.

.2 Approved changes to contract.

.3 Contractor's project schedule.

.4 Cx schedule.

.5 Contractor's, sub-contractor's, suppliers' requirements.

.6 Project construction team's and Cx team's requirements.

.2 Submit completed Cx Plan to ONTC Representative and obtain written approval.

1.05 REFINEMENT OF CX PLAN

.1 During construction phase, revise, refine and update Cx Plan to include:

.1 Changes resulting from Owner program modifications.

.2 Approved design and construction changes.

.2 Revise, refine and update every [6] [weeks] during construction phase. At each revision, indicate revision number and date.

.3 Submit each revised Cx Plan to ONTC Representative for review and obtain written approval.

.4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.06 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

.1 Prime Contractor to maintain overall responsibility for project and is sole point of contact between members of commissioning team.

.2 Prime Contractor's Project Manager will select Cx Team consisting of following members:

.1 Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.

.2 Quality Assurance Commissioning Manager: ensures Cx activities are carried out to ensure delivery of a fully operational project including:

.1 Review of Cx documentation from operational perspective.

.2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.

.3 Protection of health, safety and comfort of occupants and O&M personnel.

.4 Monitoring of Cx activities, training, development of Cx documentation.

.5 Work closely with members of Cx Team.

.3 ONTC Representative is responsible for:

.1 Organizing Cx.

.2 Monitoring operations Cx activities.

.3 Witnessing, certifying accuracy of reported results.

.4 Witnessing and certifying TAB and other tests.

.5 Validating BMM.

.6 Ensuring implementation of final Cx Plan.

.7 Performing verification of performance of installed systems and equipment.

.8 Coordination of Training Plan.

.4 Construction Team: contractor, subcontractors, suppliers and support disciplines, are responsible for construction/installation in accordance with Contract Documents, including:

.1 Testing.

.2 TAB.

.3 Performance of Cx activities.

.4 Delivery of training and Cx documentation.

.5 Assigning one person as point of contact with Consultant and Cx Manager for administrative and coordination purposes.

.5 Contractor's Cx agent implements specified Cx activities including:

.1 Demonstrations.

.2 Training.

.3 Testing.

.4 Preparation, submission of test reports.

.6 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.

1.07 CX PARTICIPANTS

.1 Employ the following Cx participants to verify performance of equipment and systems:

.1 Installation contractor/subcontractor:

.1 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 Specialist Cx agency:

.1 Possessing specialist qualifications and installations providing environments essential to client’s program but are outside scope or expertise of Cx specialists on this project.

.5 Owner:

.1 Responsible for intrusion and access security systems.

.2 Coordinates Owner’s staff participation in Cx activities.

.6 Ensure that Cx participant:

.1 Could complete work within scheduled time frame.

.2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O&M personnel, including:

.1 Modify ventilation rates to meet changes in off-gassing.

.2 Changes to heating or cooling loads beyond scope of EMCS.

.3 Changes to EMCS control strategies beyond level of training provided to O&M personnel.

.4 Redistribution of electrical services.

.5 Modifications of fire alarm systems.

.6 Modifications to voice communications systems.

.7 Provide names of participants to ONTC Representative and details of instruments and procedures to be followed for Cx [8] weeks prior to

starting date of Cx for review and approval.

1.08 EXTENT OF CX

.1 The CX plan should include all new systems/equipment installed as part of the contract, including (when exist) but not limited to, the systems listed below:

.1 Architectural Systems:

.1 Architectural and structural:

.1 Exterior systems:

.1 Roofing system.

.2 Exterior walls.

.3 Accessibility and operational safety:

.1 Automatic door operators.

.4 Equipment.

.5 Doors, windows, related hardware:

.1 door and window hardware.

.2 Commission mechanical systems and associated equipment:

.1 HVAC and exhaust systems:

.1 HVAC systems.

.2 Exhaust systems and related systems.

.3 Heat recovery systems.

.4 Smoke control systems.

.2 Fire and life safety systems.

.3 Noise and vibration control systems for mechanical systems.

.4 IAQ environmental control systems.

.5 EMCS.

.6 Energy metering systems.

.3 Commission of all electrical systems and equipment, including but not limited to:

.1 High voltage.

.2 Low voltage.

.3 Emergency power generation systems.

.4 Lighting systems:

.1 Lighting equipment.

.2 Distribution systems.

.3 Emergency lighting systems, including battery packs.

.4 Fire exit emergency signage.

.5 Fire alarm systems and equipment:

.1 Annunciators.
.2 Control panels.
.3 Fire alarm battery banks.
.6 Other systems and equipment:
.1 Intrusion and access security and safety systems, if any.

1.10 DELIVERABLES RELATING TO O&M PERSPECTIVES

.1 General requirements:
.1 Compile English documentation.
.2 Documentation to be computer-compatible format ready for inputting for data management.
.2 Provide deliverables:
.1 Warranties.
.2 Project record documentation.
.3 Inventory of spare parts, special tools and maintenance materials.
.4 Maintenance Management System (MMS) identification system used.
.5 WHMIS information.
.6 WHMIS Safety Data Sheets (SDS).
.7 Electrical Panel inventory containing detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.

1.11 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: provide:
.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 and certify tests and reports of results provided to ONTC.

.5 Consultant and ONTC Rep. may participate.

1.12 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Items listed in this Cx Plan include the following:

.1 Pre-Start-Up inspections.

.2 ONTC Representative will monitor 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 certified by ONTC Representative and does not form part of Cx specifications.

.5 Include completed documentation in Cx report.

.2 Pre-Cx activities - ARCHITECTURAL AND STRUCTURAL:

.1 Exterior walls: conduct thermographic surveys to ensure appropriate level of tightness after exterior envelope has been completed. Permanent HVAC systems are able to provide appropriate negative or positive pressure, a temperature of at 20 degrees C can be maintained between inside and outside and wind speed is less than 10 kph.

.2 Equipment:

.3 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 approved by Consultant before submission to ONTC Representative.

.2 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 ONTC Representative and 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 and certified 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.

.1 Requires independent testing agency to perform pre-energization and post-energization tests.

.3 Emergency power generation systems

.1 Transfer switches: test by simulating loss of power. Verify availability of power at equipment requiring same.

.2 Uninterruptible power systems: test under full and partial load conditions.

.4 Lighting systems:

.1 Emergency lighting systems:

.1 Tests to include verification of lighting levels and coverage, initially by disrupting normal power.

.5 Fire alarm systems: test after other safety and security systems are completed. Testing to include a complete verification in accordance with ULC requirements. ONTC Represenatative has witnessed and certified report, demonstrate devices and zones to ONTC Representative.

.6 Low voltage systems: these include:

.1 Clock, communications, low voltage lighting control systems and data communications systems.

.7 Security, surveillance and intrusion alarm systems: to include verification by ONTC Representative.

1.13 START-UP

.1 Start up components, equipment and systems.

.2 ONTC Representative to monitor all of these start-up activities.

.1 Rectify start-up deficiencies to satisfaction of ONTC Representative.

.4 Performance Verification (PV):

.1 Approved Cx Agent to perform.

.1 Repeat when necessary until results are acceptable to ONTC Representative.

.2 Use procedures modified generic procedures to suit project requirements.

.3 ONTC Representative to witness and certify reported results using approved PI and PV forms.

.4 ONTC Representative to approve completed PV reports and provide to ONTC Representative.

.5 ONTC Representative reserves 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.

1.14 CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Perform Cx by specified Cx agency using procedures developed by Cx agency and approved by ONTC Representative.

.2 ONTC Representative to monitor Cx activities.

.3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.

.4 When directed by ONTC Representative, Consultant may witness, certify reported results of Cx activities and forward to ONTC Representative.

.5 ONTC Representative reserves right to verify a percentage of reported results at no cost to contract.

1.15 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

.1 Cx to be performed by specified Cx specialist, using procedures approved by ONTC Representative.

.2 Tests to be witnessed by ONTC Representative and documented on approved report forms.

.3 Upon satisfactory completion, Cx specialist to prepare Cx Report, to be submitted to ONTC Representative for review.

.4 ONTC Representative reserves right to verify percentage of reported results.

.5 Integrated systems to include:

.1 HVAC and associated systems forming part of integrated HVAC systems.

.2 Smoke control systems.

.4 Indoor air quality.

.5 Environmental space conditions.

.6 Fire alarm systems.

.8 Voice communications systems.

.9 Emergency power generator.

.10 Transfer switch and controllers.

.11 Emergency lighting systems.

1.16 CX SCHEDULES

.1 Prepare detailed critical path Cx Schedule and submit to ONTC Representative for review and approval same time as project Construction Schedule. 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: [28]days after contract award, and before construction starts.

.3 Cx agents' credentials: [30] days before start of Cx.

.4 Cx procedures: [28]days after award of contract.

.5 Cx Report format: [28]days after contract award.

.6 Discussion of heating/cooling loads for Cx: [28]days before start-up.

.7 Submission of list of instrumentation with relevant certificates: [28] days before start of Cx.

.8 Notification of intention to start TAB: [21] days before start of TAB.

.9 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.

.10 Notification of intention to start Cx: [14] days before start of Cx.

.11 Notification of intention to start Cx of integrated systems: after Cx of related systems is completed [14] days before start of integrated system Cx.

.12 Identification of deferred Cx.

.13 Implementation of training plans.

.14 Cx of smoke management/control systems: after Cx of related systems is completed and [7] days before proposed date of Cx these systems.

.15 Cx stair shaft pressurization systems, if applicable: before issuance of occupancy certificate and at same time as emergency evacuation exercises.

.16 Cx reports: immediately upon successful completion of Cx.

.17 Emergency evacuation exercises: after [80]% occupancy and at same time as Cx of stair shaft pressurization systems, if applicable.

.2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to ONTC.

.3 Cx schedule for verification of performance in all seasons and wear conditions.

.2 After approval, incorporate Cx Schedule into Construction Schedule.

.3 Consultant, Contractor, Contractor's Cx agent, and ONTC Representative will monitor progress of Cx against this schedule.

1.17 CX REPORTS

.1 Submit reports of tests, witnessed and certified by Consultant to ONTC Representative who will verify reported results.

.2 Include completed and certified PV reports in properly formatted Cx Reports.

.3 Before reports are accepted, reported results to be subject to verification by ONTC Representative.

1.18 ACTIVITIES DURING WARRANTY PERIOD

.1 Cx activities must be completed before issuance of Interim 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.

1.19 TESTS TO BE PERFORMED BY OWNER/USER

.1 Full-scale emergency evacuation exercises.

1.20 TRAINING PLANS

.1 Refer to Section 01 79 00 - Demonstration and Training.

1.21 FINAL SETTINGS

.1 Upon completion of Cx to satisfaction of ONTC Representative and Consultant, lock control devices in their final positions, indelibly mark settings marked and include in Cx Reports.

1.22 PAYMENTS FOR CX

.1 Contractor to include 1% of construction cost as a cash allowance for Cx.

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 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 & ONTC Rep. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) 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 BMM at completion of work.

.2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Consultant's approval.

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 approval.

1.05 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

.1 Develop appropriate verification forms and submit to ONTC Representative for approval prior to use.

.1 Additional commissioning forms to be in same format.

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, approved by ONTC Representative.

.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 ONTC Representative.

.9 Submit immediately after tests are performed.

.10 Reported results in true measured SI unit values.

.11 Provide ONTC Representative 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 Building Management Manual.

1.07 LANGUAGE

.1 To suit the language profile of the awarded contract.

2 PRODUCTS

2.01 NOT USED

.1 Not Used.

3 EXECUTION

3.01 NOT USED

.1 Not Used.

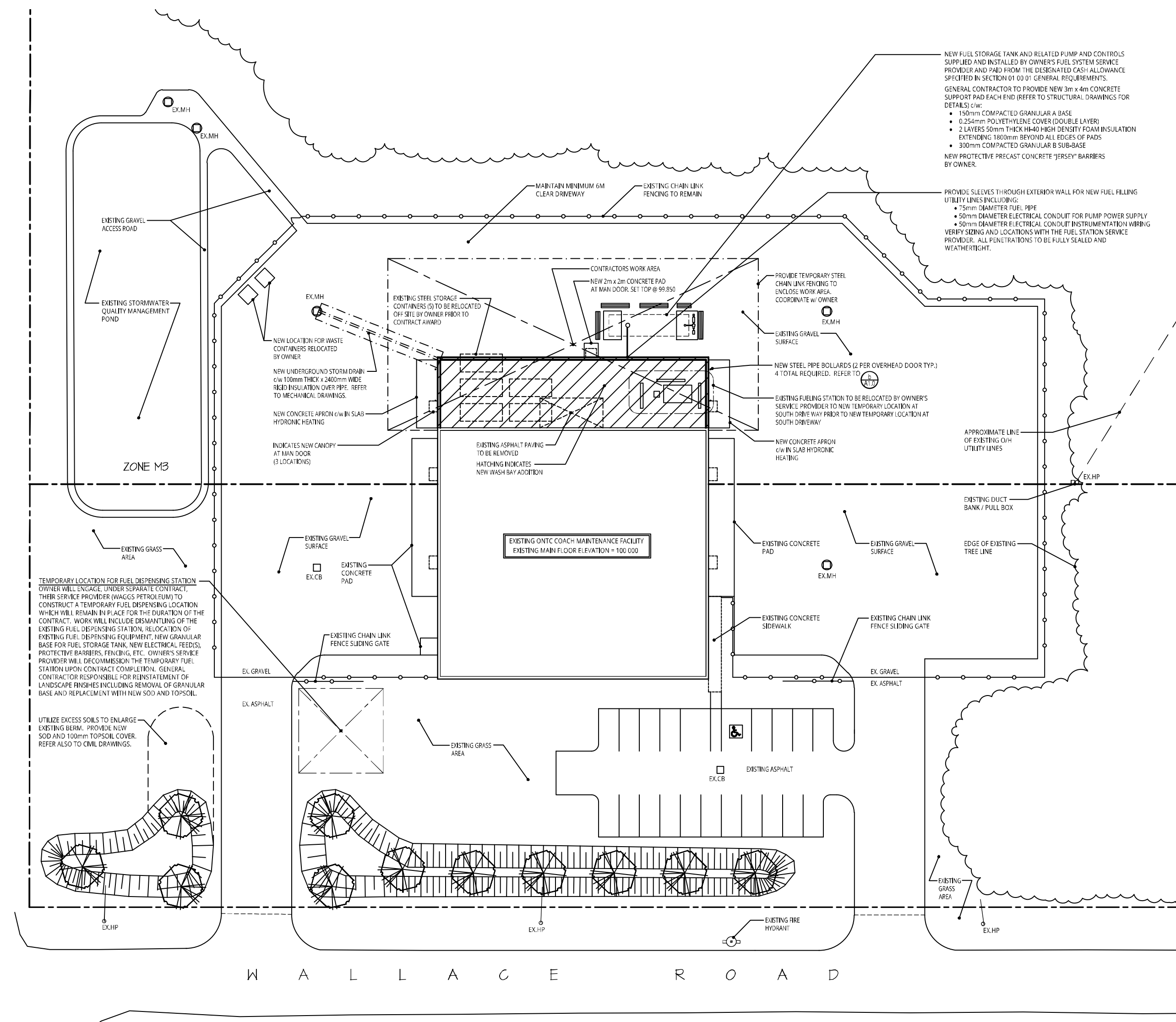
END OF SECTION

PART 3 – RFP SPECIFICATIONS
SCHEDULE 3-A-2
REFERENCE DOCUMENTS

Refer to the reference documents below:

TAB 1	Mitchell Jensen Architects – Drawing No. A1.0
TAB 2	Mitchell Jensen Architects – Drawing No. A3
TAB 3	Halsall – Drawing No. S1
TAB 4	Preliminary Sketches/Drawings – Proposed Office/Stores Extension
TAB 5	Planning & Surveying Ltd. – Existing Conditions Topographic Survey
TAB 6	Land Survey – Part of Lot 17 Concession C
TAB 7	STS Ltd. – Geotechnical Investigation Report – August 8, 2023
TAB 8	Review of existing Roof Structure for Proposed Roofing System

TAB 1



a Site Plan

Item	Ontario's 2012 Building Code Data Matrix Parts 3 or 9	OBC Reference (References are to Division B unless noted [A] for Division A or [C] for Division C.)	
1	Project Description: ☐ New ☑ Addition ☐ Change of Use ☐ Alteration ☐ Part 11 11.1 to 11.4	☑ Part 3 1.1.2 [A]	☐ Part 9 1.1.2 [A] & 9.10.1.3
2	Major Occupancy(s) -	3.1.2.1 (1)	9.10.2
3	Building Area (m²) Existing 1366 New 388 Total 1754	1.4.1.2 [A]	1.4.1.2 [A]
4	Gross Area (m²) Existing 1658 New 388 Total 2046	1.4.1.2 [A]	1.4.1.2 [A]
5	Number of Storeys Above Grade 2 Below Grade 0	1.4.1.2 [A] & 3.2.1.1	1.4.1.2 [A] & 9.10.4
6	Number of Streets / Fire Fighter Access 3	3.2.2.10 & 3.2.5	9.10.20
7	Building Classification	3.2.2.20-83	9.10.2
8	Sprinkler System ☐ entire building ☐ selected compartments ☐ selected floor areas ☐ basement ☐ in lieu of roof rating ☑ not required	3.2.2.20-83 3.2.1.5 3.2.2.17 INDEX	9.10.8.2 INDEX
9	Standpipe required ☐ Yes ☑ No	3.2.9	N/A
10	Fire Alarm Required ☑ Yes ☐ No	3.2.4	9.10.18
11	Water Service / Supply is Adequate ☑ Yes ☐ No	3.2.5.7	N/A
12	High Building ☐ Yes ☑ No	3.2.6	N/A
13	Construction Restrictions ☐ Combustible ☐ Non-combustible ☑ Both Actual Construction ☐ Combustible ☑ Non-combustible ☐ Both	3.2.2.20-83	9.10.6
14	Importance Category ☐ Low ☐ Normal ☐ High ☐ Post-disaster	4.1.2.1 (3) 5.2.2.1 (2)	9.4.1.1, 4.1.2.1 (3) 5.2.2.1 (2)
	Site Class (A,B,C,D,E from Geotechnical Report) -	4.1.8.4	4.1.8.4
	Earthquake importance factor (I_E) -	T.4.1.8.5.	T.4.1.8.5.
	Acceleration based coefficient (Fa) -	T.4.1.8.4.B	T.4.1.8.4.B
	5% Spectral Response Acceleration Sa (0.2) -	4.1.8.4 (1) & SB-1, T.1.2.	4.1.8.4 (1) & SB-1, T.1.2.
	Seismic Hazard Index (I_E) Fa Sa (0.2)= - Design for Seismic Required for Categories 6 to 21. Table 4.1.1.18. (Equal or Above 0.35?) (Yes or No)	4.1.8.18.(1) 4.1.8.18.(2)	4.1.8.18.(1) 4.1.8.18.(2), 9.20.1.2., 9.31.6.2 (3)
15	Mezzanine(s) Area (m²) N/A	3.2.1.1. (3)-(8)	9.10.4.1
16	Occupant load based on ☐ m² /person ☑ design of building Basement Occupancy - Load - persons 1st Floor Occupancy - Load - persons 2nd Floor Occupancy - Load - persons 3rd Floor Occupancy - Load - persons	3.1.17	9.9.1.3
17	Barrier-free Design ☑ Yes ☐ No (Explain) -	3.8	9.5.2
18	Hazardous Substances ☑ Yes ☐ No	3.3.1.2 & 3.3.1.19	9.10.1.3 (4)
19	Required Fire Resistance Rating (FRR) (see below)	3.2.2.20-83 & 3.2.1.4	9.10.8 9.10.9
20	Spatial Separation - Construction of Exterior Walls	3.2.3	9.10.14
21	Plumbing Fixture Requirements (see below)		
22	Other (describe)	-	-

Item 19 – Required Fire Resistance Rating (FRR):

Horizontal Assemblies FRR (Hours)		Listed Design No. or Description (SG-2)
Floors	3/4 Hours	Existing
Roof	0 Hours	N/A
Mezzanine	N/A Hours	N/A
FRR of Supporting Members		**Listed Design No. or Description (SG-2)**
Floors	3/4 Hours	Existing
Roof	0 Hours	N/A
Mezzanine	N/A Hours	N/A

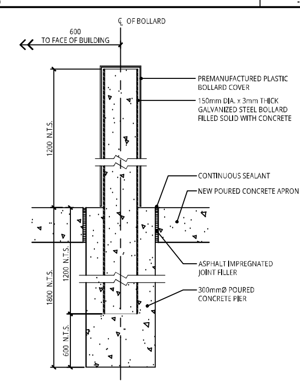
Item 20 – Spatial Separation:

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Descrip.	Comb Const.	Comb. Const. Nonc. Cladding	Non-comb Constr.
North	350	>30	5.6 : 1	100	-	-	-	-	-	-
South	350	>30	5.6 : 1	100	-	-	-	-	-	-
East	295	>30	5.3 : 1	100	-	-	-	-	-	-
West	295	>30	5 : 1	100	-	-	-	-	-	-

Item 21 – Plumbing Fixture Requirements:

Male/Female Count @ 50 % / 50 %, except as noted otherwise

		Occupant Load (M/F)	OBC Table Number	Fixtures Required (M/F)	Fixtures Provided	Building Code Reference ☐ Part 3	☐ Part 9
Basement: Occupancy	-	-	-	-	-	3.7.4	9.31.1.1
Occupancy	-	-	-	-	-		
1st Floor: Occupancy	-	-	-	-	-		
Occupancy	-	-	-	-	-		
2nd Floor: Occupancy	-	-	-	-	-		
Occupancy	-	-	-	-	-		
3rd Floor: Occupancy	-	-	-	-	-		
Occupancy	-	-	-	-	-		
(Adjust as Required for Additional Floors or Occupancies)		-	-	-	-	-	-



b Typical Bollard Detail
SCALE: 1:10

ONTARIO ASSOCIATION OF ARCHITECTS
NATHAN TYLER JENSEN
LICENCE
7198

PROJECT NORTH:

GENERAL NOTES:

1. Bore hole information as conducted by: Englobe Corp. Report # P-0017919-0-00-100-01 Dated February 2019
2. Contractor to confirm locations of all existing site services.
3. Read in conjunction with civil engineering site plan.

LEGEND:

- BH-# TP-# — Indicates Bore Hole (BH) and Test Pit (TP) locations. Bore hole and test pit information can be found in the Geotechnical Report, refer to General Note #1
- Indicates existing chain link fence
- EX.CB — Indicates existing catch basin
- EX.MH — Indicates existing catch basin manhole
- EX.HP — Indicates existing hydro pole

Wash Bay Addition to ONTC Motor Coach Maintenance & Administration Facility

North Bay, ON.

MITCHELL JENSEN ARCHITECTS

Mitchell Jensen Architects
124a Main Street East
North Bay, ON. P1B 1A8
705.474.3250

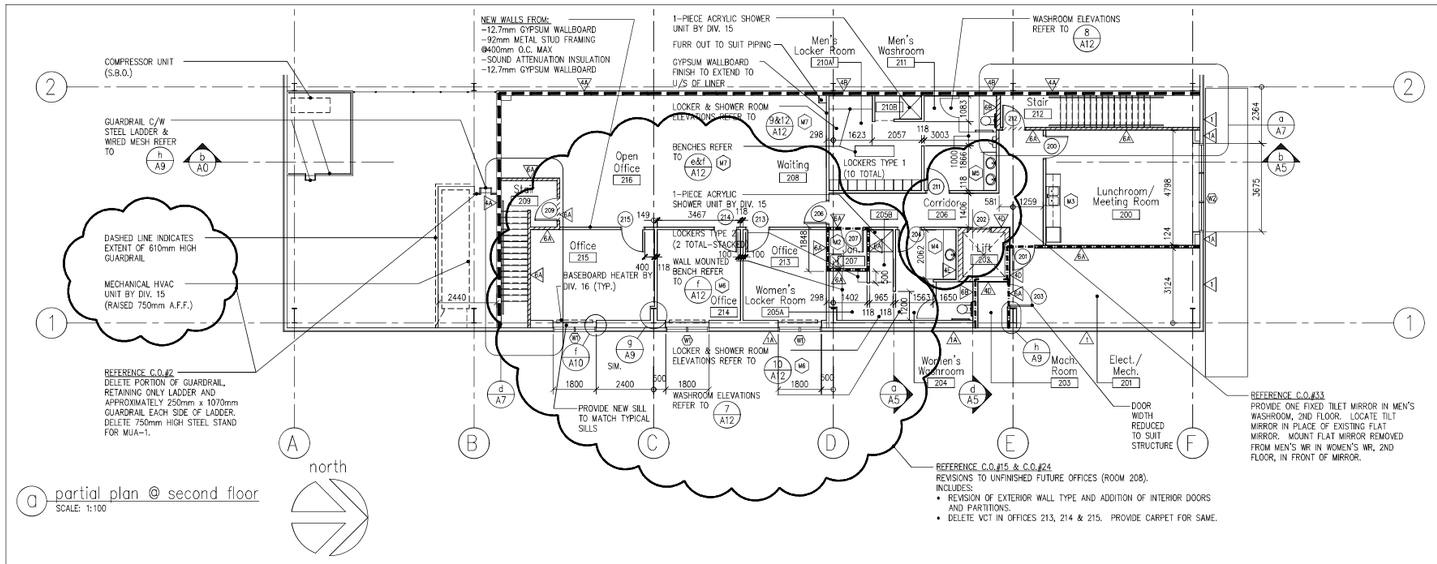
PROJECT NO: 218102
LIBRARY NO: 218102-FP
DRAWN BY: BD
SCALE: 1:300

NO.	ISSUE	DATE
1	Final Drawings Issued for Client Approval	April 12, 2019
2	Issued for Tender	May 28, 2021

Site Plan, General Notes, Legend and OBC Matrix

DRAWING NO: A1.0

TAB 2



(a) partial plan @ second floor
SCALE: 1:100

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS		CEILING		REMARKS
				MATERIAL	FINISH	MATERIAL	FINISH	
100	VESTIBULE	VCT	RB	GWB	PT	ACT	–	
101	WAITING	VCT	RB	GWB	PT	ACT	–	
102	RECEPTION	VCT	RB	GWB	PT	ACT	–	
103	COPY ROOM	VCT	RB	GWB	PT	ACT	–	
104	LIFT	RT	–	–	–	–	–	
105	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
106	OFFICE	CPT	RB	GWB	PT	ACT	–	
107	JANITOR	VCT	RB	GWB	PT	ACT	–	
108	OFFICE	CPT	RB	GWB	PT	ACT	–	
109	OFFICE	CPT	RB	GWB	PT	ACT	–	
110	OFFICE	CPT	RB	GWB	PT	ACT	–	
111	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1-PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDINGS
112A	PARTS & INVENT.	CONC.	–	CB/LIN.	PT/PREF.	–	–	COLOURED CONC. HARDENER
112B	TANK ROOM	CONC.	–	CB/LIN.	PT/PREF.	CONC.	PT	COLOURED CONC. HARDENER
113A	MEETING ROOM	VCT	RB	GWB	PT	ACT	–	
113B	CLOSET	VCT	RB	GWB	PT	GWB	PT	
114	WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 3/A12
115	OFFICE	VCT	RB	GWB	PT	ACT	–	
116	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
117	OFFICE	VCT	RB	GWB	PT	ACT	–	
118	OFFICE	VCT	RB	GWB	PT	ACT	–	
119	OFFICE	VCT	RB	GWB	PT	ACT	–	
120	OFFICE	VCT	RB	GWB	PT	ACT/GWB	–/PT	
121	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1-PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDING
122	WASHROOM	VCT	CT	CB/GWB	PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 4/A12
123	GARAGE BAYS	CONC.	–	CB/LIN.	PT/PREF.	–	–	COLOURED CONC. HARDENER PT FINISH WASH BAY WALL
200	LUNCH ROOM	VCT	RB	GWB	PT	ACT	–	
201	MECH./ ELECT.	CONC.	SEALER	GWB	PT	ACT	–	
202	LIFT	RT	–	–	–	–	–	
203	MACHINE ROOM	CONC.	RB	CB GWB LIN.	PT PT PREF.	ACT	–	
204	WOMEN'S WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 7/A12
205A	WOMEN'S LOCKER ROOM	VCT	RB	GWB	PT	ACT	–	
205B	SHOWER	CT	CT	CT	–	GWB	PT	CT TO U/S OF CEILING SEE – 10/A12
206	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
207	JANITOR	VCT	RB	GWB	PT	ACT	–	
208	UNFINISHED FUTURE OFFICES	VCT	RB	GWB	PT	ACT	–	
209	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1-PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDING
210A	MEN'S LOCKER ROOM	VCT	RB	GWB	PT	ACT	–	
210B	SHOWER	CT	CT	CT	–	GWB	PT	CT TO U/S OF CEILING SEE – 11/A12
211	MEN'S WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 8/A12
212	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1-PIECE RUBBER STAIR TREAD/ RISER/NOSING

LEGEND
ACT ACOUSTICAL CEILING TILE
CPT CARPET
CB CONCRETE BLOCK
CT CERAMIC TILE
GWB GYPSUM WALL BOARD
PT PAINT
LIN. EXT. WALL SYSTEM LINER
RB RUBBER BASE
RT RUBBER TILE
VCT VINYL COMPOSITE TILE
PREF. PREFINISHED
– NONE

(b) room finish schedule

DOOR NO.	DOOR(S)				LABEL	FRAME(S)			DETAILS			REMARKS
	W x H x T	ELEV.	MATERIAL	FINISH		ELEV.	MATERIAL	FINISH	HEAD	JAMB	SILL	
100A	915x2150x45	B	TBAL	AN	–	1	TBAL	AN	d/A11	f/A11	e/A11	EXTERIOR DOOR, H/C POWER OPERATOR
100B	915x2150x45	B	AL	AN	–	2	AL	AN	p/A11	p/A11	–	SIDELITE, H/C POWER OPERATOR
104	BY MANUF.	–	–	PT	45 MIN.	–	–	PT	–	–	–	SEE LIFT SPECIFICATIONS
106	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
107	813x2150x45	A	SC	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
108	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
109	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
110	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
111	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
112A	1830x3000	–	–	–	–	–	–	–	–	–	–	SLIDING DOOR BY MESH PARTITION SUPPLIER
112B	1067x2150x45	A	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
113A	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
113B	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
114	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
115	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
116A	915x2150x45	B	HM	PT	–	3	HM	PT	n/A11	n/A11	–	SIDELITE, CLOSER
116B	915x2150x45	C	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
117	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
118	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
119	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
120	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
121A	915x2150x45	C	HM	PT	45 MIN.	1	HM	PT	k/A11	sim	m/A11	sim. – CLOSER
121B	915x2150x45	B	TBAL	AN	–	1	TBAL	AN	d/A11	f/A11	e/A11	EXTERIOR DOOR KEYPAD + CLOSER
121C	915x2150x45	C	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
122	915x2150x45	A	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
123A	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123B	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123C	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123D	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123E	915x2150x45	A	IHM	PT	–	1	IHM	PT	o/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
200	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
201	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
202	BY MANUF.	–	–	PT	45 MIN.	–	–	PT			–	SEE LIFT SPECIFICATIONS
203	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
204	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
206	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
207	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
209	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
211	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
212	915x2150x45	C	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
OH1	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH2	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH3	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH4	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH5	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH6	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH7	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH8	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
OH9	2440x2440x45	D	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR

REFERENCE ADDENDUM #1
REVISED DOOR AND FRAME INFORMATION

LEGEND
AN ANODIZED
PREM. PREMANUFACTURED
HM HOLLOW METAL
PT PAINT
IHM INSULATED HOLLOW METAL
SC SOLID CORE WOOD
TBAL THERMALLY BROKEN ALUMINUM
PREF. PREFINISHED
PREM. PREMANUFACTURED

NOTE: FOR ALL DOOR & FRAME ELEVATIONS REFER TO ELEVATIONS ON DRAWING g/A4.

(c) door schedule

WINDOW NO.	SIZE		HEAD (AFF	ELEV.	MATERIAL	FINISH	LABEL	REMARKS
	W X H							
W1	1800 x 1600		2200	W1	TBAL	AN	–	C/W AWNING SASH
W2	4800 x 1600		2200	W2	TBAL	AN	–	C/W AWNING SASH
S1	1590 x 1400		2200	S1	HM	PT	1.5 HR	–
S2	1800 x 1400		2200	S2	HM	PT		–

LEGEND
AL ALUMINUM
TBAL THERMALLY BROKEN ALUMINUM
– NONE
AN ANODIZED
IHM INSULATED HOLLOW METAL
HM HOLLOW METAL
PT PAINT

NOTE: FOR ALL WINDOW & SCREEN ELEVATIONS REFER TO ELEVATIONS ON DRAWING e/A5

(d) window & screen schedule

MILLWORK NO.	ROOM NO.	DESCRIPTION	DETAIL NO.
M1	102	RECEPTION COUNTER	1/A12
M2	107	JANITOR CLOSET ELEVATIONS	6/A12
M3	200	LUNCHROOM COUNTER	5/A12
M4	204	WOMEN'S WASHROOM ELEVATIONS	7/A12
M5	211	MEN'S WASHROOM ELEVATIONS	8/A12
M6	205A, 205B	WOMEN'S LOCKER/SHOWER ROOM BENCHES & ELEVATIONS	10/A11
M7	210A, 210B	MEN'S LOCKER/SHOWER ROOM BENCHES & ELEVATIONS	9/A12 & 12/A12
M8	103	COPY ROOM COUNTER	11/A12

NOTE: ALL DETAILS REFERENCED ABOVE TO BE FOUND ON DRAWINGS A12

(e) millwork schedule

AS-BUILTS

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

ONTC
Motor Coach Maintenar & Administration Facili North Bay ON.

mitchellarchitects
Mitchell Architects Inc.
124a Main Street East, North Bay, ON, P1B 1AB
voice 705.474.3250 fax 705.474.0757

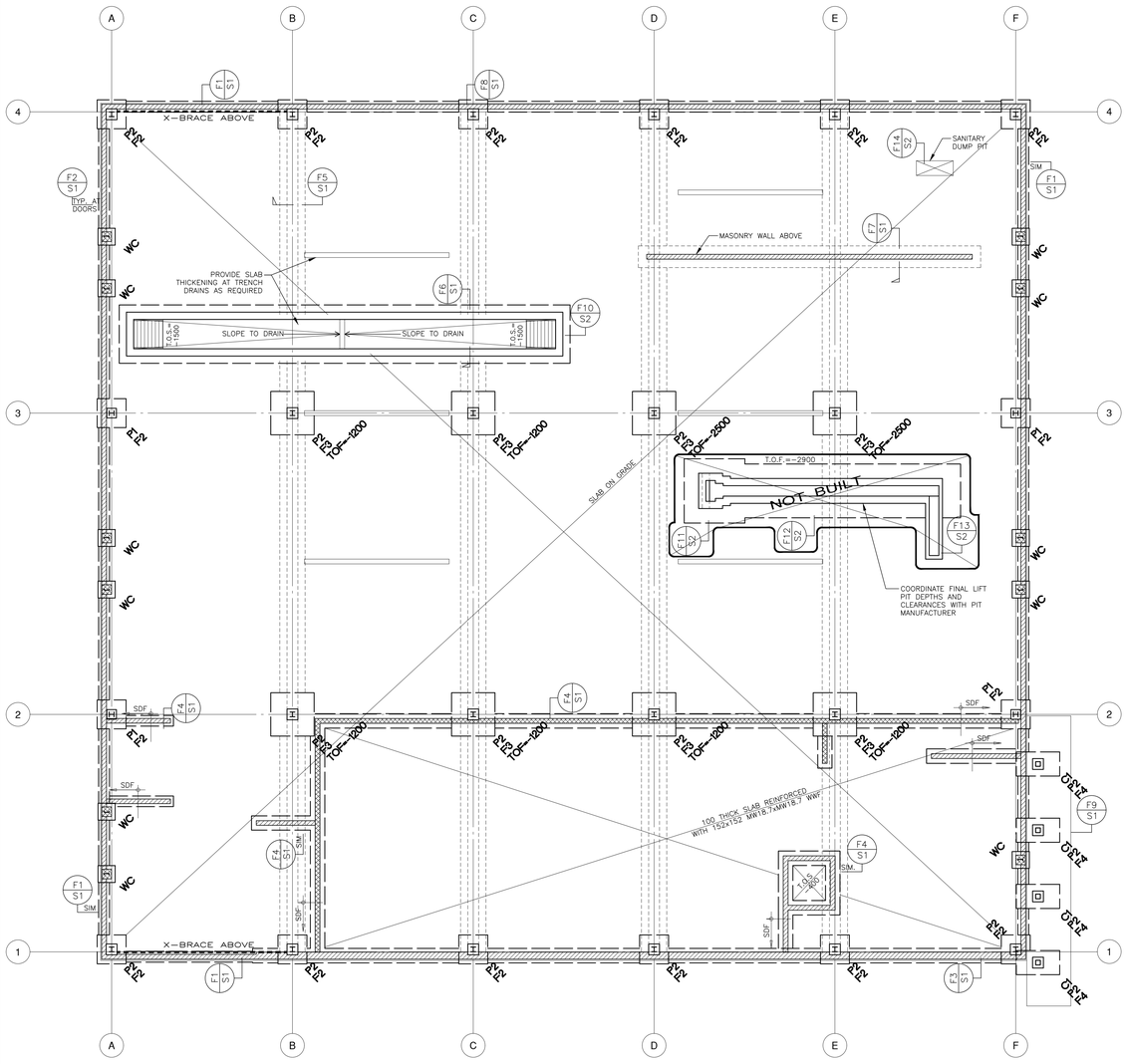
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-FP1-RD
Drawn By:	a.b-p.
Scale:	as noted

Second Floor Pl & Schedules

Drawing No: A3

TAB 3



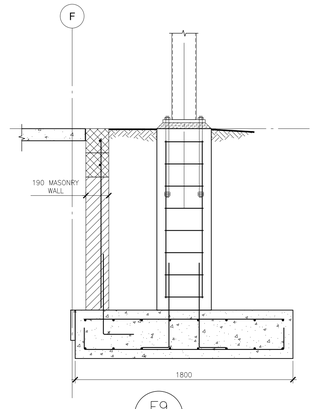
FOUNDATION AND GROUND FLOOR FRAMING PLAN
SCALE 1:100

FOUNDATION AND GROUND FLOOR PLAN NOTES

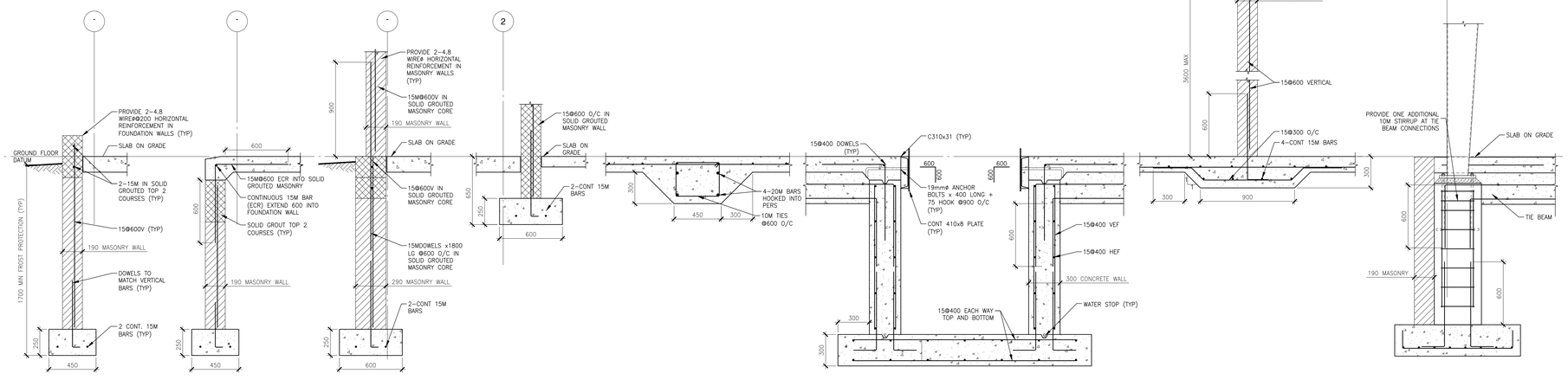
1. SEE GENERAL REQUIREMENTS ON DRAWING S3.
2. SEE THIS DRAWING FOR FOOTING SCHEDULE.
3. SEE DRAWING S3 FOR TYPICAL DETAILS.
4. GROUND FLOOR DATUM ELEVATION IS100.00 (GEODETIC 209.50).
5. UNLESS OTHERWISE NOTED ON PLAN OR DETAILS, THE FOLLOWING DATA APPLY:
   - .1 TOP OF SLAB IS 0.0 FROM DATUM ELEVATION.
   - .2 FRAMED AREAS: DESIGN LIVE LOAD IS 6.0 kN/m2 FOR GARAGE AND. AND 4.8 kN/m2 FOR OFFICES.
   - .3 SET TOPS OF COLUMN AND WALL FOOTINGS AT ELEVATION -1600.
   - .4 PROVIDE CONCRETE WALL AND MASONRY WALL FOOTINGS AS PER TYPICAL DETAILS.
   - .5 PROVIDE 150 THICK CONCRETE SLAB-ON-GRADE WITH 10M BARS AT 300 EACH WAY PLACED 75 mm BELOW TOP OF SLAB.
   - .6 SET TOPS OF PIERS AT -150.
6. GROUT BASE PLATES AND BEARING PLATES PRIOR TO PLACING LOADS ON STEELWORK.
7. "C1" ON PLAN DENOTES HSS203x203x8.0 COLUMN AND 350x25x350 BASE PLATE WITH 4 25ø THREADED ANCHOR BOLTS x 600 LONG. PROVIDE DOUBLE NUT AT EACH ANCHOR BOLT. CONNECT COLUMN TO BASE PLATE FOR Mf=50kN.m. SET U/S BASEPLATE AT +50 ON 50mm GROUT.
8. AT GRIDLINES 1/A, 1/B, 4/A, 4/B, 3/B, 3/C, 3/D, AND 3/E, PROVIDE 4-20ø ANCHOR BOLTS X 750 LONG + 75x75x10 PLATE WITH DOUBLE NUT AT BOTTOM OF ANCHOR BOLT. AT ALL OTHER COLUMNS, PROVIDE 4 20ø ANCHOR BOLTS x 500 LONG + 75 HOOK.
9. "WC" ON PLAN DENOTES WIND COLUMN BY PRE-ENGINEERED BUILDING SUPPLIER. PROVIDE 2 20ø ANCHOR BOLTS x 400 LG + 75 HOOK. PROVIDE 400x400 (MINIMUM) MASONRY PIERS SOLID FILLED WITH GROUT. PROVIDE MINIMUM 150 PROJECTION TO MATCH STRIP FOOTING THICKNESS BEYOND EDGE OF MASONRY PIER.
10. PRIOR TO COMMENCEMENT OF FOUNDATION CONSTRUCTION COORDINATION OF FOUNDATION DESIGN AND PRE-ENGINEERED BUILDING SYSTEM MUST BE COMPLETED THROUGH SUBMISSION OF BUILDING SHOP DRAWINGS FOR REVIEW BY THE STRUCTURAL ENGINEER.

FOOTING AND PIER SCHEDULE

FOOTING					PIER		
MARK	SIZE	DEPTH	REINFORCING	MAX. LOAD (kN)	MARK	SIZE	REINFORCING
					P1	450x550	4-20V 10@300 TIES
F2	1200x1200	300	8-15M BEW (++)	210	P2	450x550	4-20V 10@300 TIES
F3	1800x1800	400	10-15M BEW (++)	480			
F4	1000x1800	400	15@250 TEW 15@250 BEW(++)				



F9 / S1 SCALE 1:20



F1 / S1 SCALE 1:20 — F2 / S1 TYPICAL SECTION AT DOOR SCALE 1:20 — F3 / S1 SCALE 1:20 — F4 / S1 SCALE 1:20 — F5 / S1 SCALE 1:20 — F6 / S1 SCALE 1:20 — F7 / S1 SCALE 1:20 — F8 / S1 SCALE 1:20

north

no.	revisions	date
4	AS BUILTS	OCT. 5, 2006
3	ISSUED FOR TENDER	MAY 6, 2005
2	FINAL COORDINATION	APR. 15, 2004
1	PRELIMINARY WORKING DRAWINGS	MAR. 19, 2004

Halsall
ENGINEERS · CONSULTANTS
80A ELM STREET, 2ND FLOOR
SUDBURY, ONTARIO, CANADA P3C 1T2
tel: (705) 674-8522 fax: (705) 674-8605
EMAIL: sudbury@halsall.com

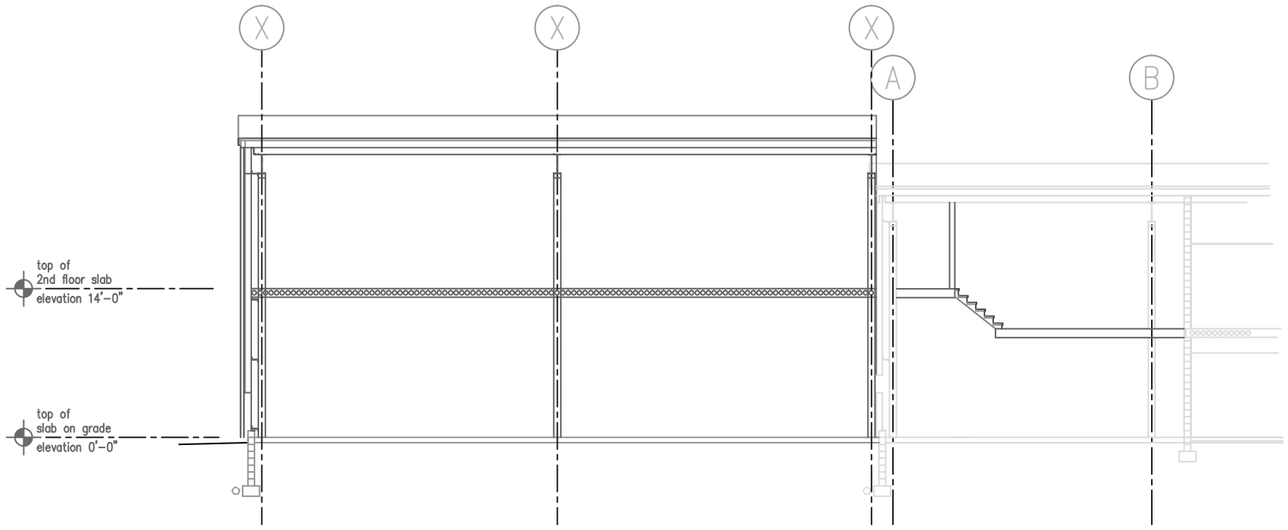
ONTC
Coach Maintainance Facility

North Bay, Ontario

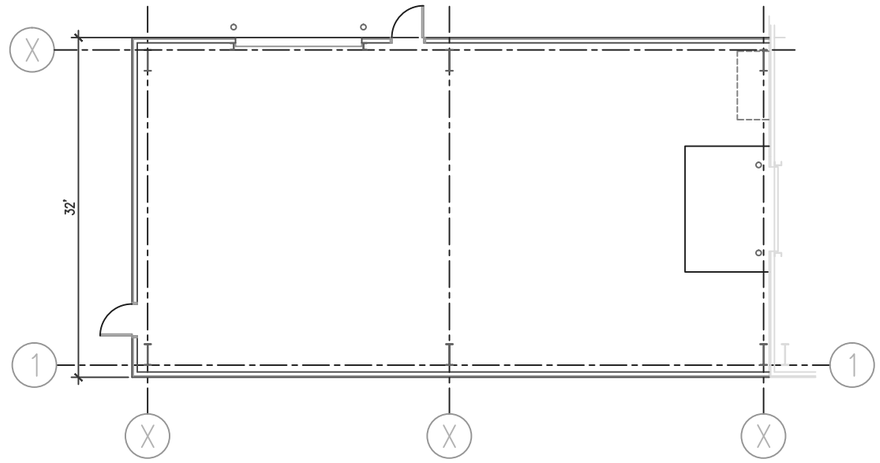
FOUNDATION PLAN & SECTIONS

Date: October 2006 Drawn By: MWH
Scale: AS SHOWN Library No.:
Project No.: 204sS027 Drawing No.: S1

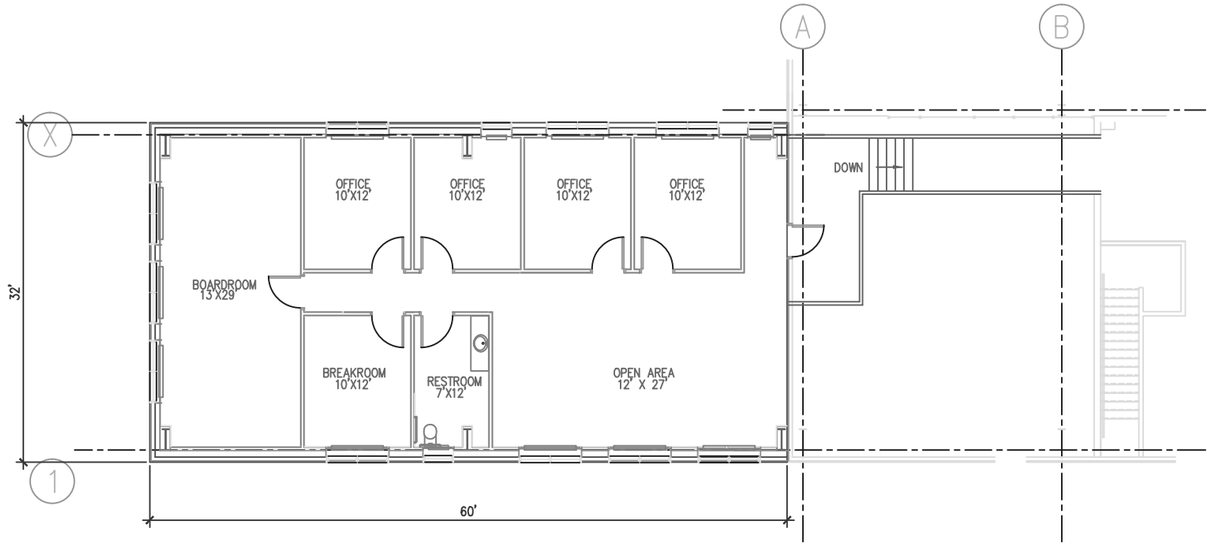
TAB 4



ELEVATION



FIRST FLOOR



SECOND FLOOR

ONTARIO NORTHLAND

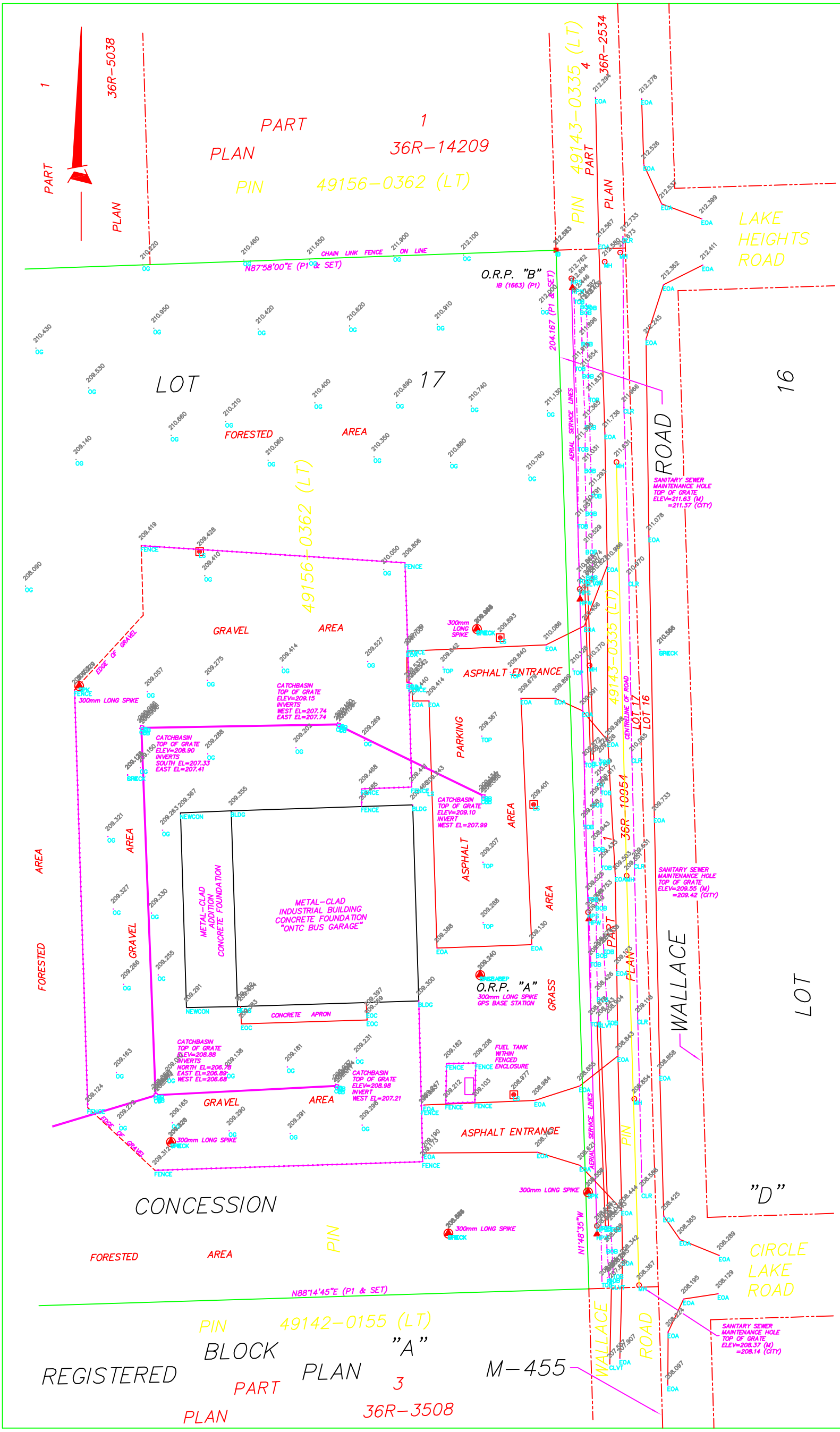
FACILITIES DEPARTMENT

NORTH BAY STORES EXTENSION

PROPOSED OFFICE/STORES EXTENSION

				DATE: JULY 11, 2023	DRAWN BY: ART
3	REMOVE STAIRS AND CREATE OPEN AREA	AUG 18, 2023	AT	SCALE:	CHECKED BY:
REF	REVISION	DATE	BY	SHEET: 1 OF 1	DWG NO:

TAB 5



PARTIALLY COMPILED TOPOGRAPHICAL PLAN OF SURVEY OF

PART OF LOT 17, CONCESSION "C"
GEOGRAPHIC TOWNSHIP OF WIDDIFIELD

MUNICIPALITY OF THE

CITY OF NORTH BAY

DISTRICT OF NIPISSING

SCALE: 1 : 500

25m 20m 15m 10m 5m 0m 12.5m 25m

LEGEND:

■	SURVEY MONUMENT FOUND
□	SURVEY MONUMENT PLANTED
◭	CONTROL POINT (NO LEGAL SIGNIFICANCE)
○	HYDRO POLE
▲	ANCHOR BOLT
CC	CUT CROSS
CP	CONCRETE PIN
IB	IRON BAR
IP	IRON PIPE
MAG	MAG NAIL
RIB	ROUND IRON BAR 19 mm DIAMETER
RPL	ROCK PLUG
SIB	STANDARD IRON BAR
1663	GOODRIDGE WALKER LIMITED, OLS
P1	TOPOGRAPHIC PLAN OF SURVEY DATED JANUARY 13, 2004 BY GOODRIDGE WALKER LIMITED, OLS UNDER FILES 104 & 1504
BLDG	BUILDING CORNER
BOB	BOTTOM OF BANK
CB	CATCHBASIN
CLR	CENTRELINE OF ROAD
CLVT	CULVERT INVERT
EOA	EDGE OF ASPHALT
EOC	EDGE OF CONCRETE
FENCE	FENCE
FH	FIRE HYDRANT
HPS	HYDRO POLE SERVICE
HPW	HYDRO POLE GUY WIRE
LS	LIGHT STANDARD
MH	MAINTENANCE HOLE
NEWCON	NEW CONSTRUCTION
OG	ORIGINAL GROUND SURFACE
SPK	SPIKE
TOB	TOP OF BANK
TOP	TOP OF SURFACE

METRIC:

DISTANCES, ELEVATIONS AND CO-ORDINATES SHOWN ON THIS PLAN ARE IN METERS AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

CAUTION:

THIS PLAN SHOWS ABOVE-GRADE FEATURES ONLY. NO UNDERGROUND UTILITIES OR SUBSURFACE FEATURES WERE SEARCHED FOR. LOCATES MUST BE CONDUCTED PRIOR TO ANY ON-SITE EXCAVATION.

GRID SCALE CONVERSION:

DISTANCES ARE GROUD AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.99975375.

ELEVATIONS:

ELEVATIONS SHOWN HEREON ARE OF GEODETIC ORIGIN (ORTHOMETRIC HEIGHT, CGVD28, HTv2.0) (EPOCH TRANSFORMATION USING VELOCITY GRID NAD83v70VG) AND HAVE BEEN DERIVED FROM GPS STATIC POINT POSITIONING POST-PROCESSED USING THE NRCAN PRECISE POINT POSITIONING SERVICE (PPP). ACCURACY=0.019 AT THE 95 CONFIDENCE LEVEL.

INTEGRATION DETAILS:

OBSERVED REFERENCE POINTS (ORP'S): DERIVED FROM PRECISE POINT POSITIONING SERVICE (PPP): UTM ZONE 17 NORTH, NAD 83 (CSRS) (2021.9) CO-ORDINATES TO URBAN ACCURACY AS PER SECTION 14 (2) OF O. REG. 216/10

POINT ID	NORTHING	EASTING
O.R.P. "A"	5,130,659.793	621,298.924
O.R.P. "B"	5,130,802.164	621,313.823

CO-ORDINATES CANNOT, IN THEMSELVES, BE USED TO ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN.

BEARING NOTE:

BEARINGS HEREON ARE GRID BEARINGS DERIVED FROM RTK GPS OBSERVATIONS AND ARE REFERRED TO THE CENTRAL MERIDIAN 81° WEST LONGITUDE OF THE UTM SYSTEM, NAD83 (CSRS) (2021.9) ZONE 17 NORTH.

A CCLOCKWISE ROTATION HAS BEEN APPLIED TO CONVERT ASTRONOMIC BEARINGS ON UNDERLYING PLANS TO UTM GRID BEARINGS AND HAS BEEN CALCULATED IN ACCORDANCE WITH THE FOLLOWING FORMULA:

ROTATION = 32.39 x DISTANCE FROM CENTTRAL MERIDIAN (km) X tan LATITUDE) / 3,600
= 32.39 x 121.298924 tan 46°19'07.16615" / 3,600
= 1°08'35"

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 LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 3rd DAY OF DECEMBER, 2021.

DECEMBER 6, 2021

PAUL GOODRIDGE
ONTARIO LAND SURVEYOR

GOODRIDGE GOULET
PLANNING & SURVEYING LTD.
ONTARIO LAND SURVEYOR - LAND USE PLANNER - DEVELOPMENT CONSULTANTS
UNIT 1 - 490 MAIN STREET EAST, NORTH BAY, ON P1B 1B5
705-493-1770 paul.goodridge@ggpsltd.com
705-493-7974 don.goulet@ggpsltd.com

PLAN	FIELD	OFFICE	FILE
1292-21 Topo.DWG	G.T.	P. GOODRIDGE	1292-21

PLAN EXISTING CONDITIONS TOPOGRAPHIC
1292-21-A1

TAB 6

PLAN OF TOPOGRAPHIC SURVEY OF

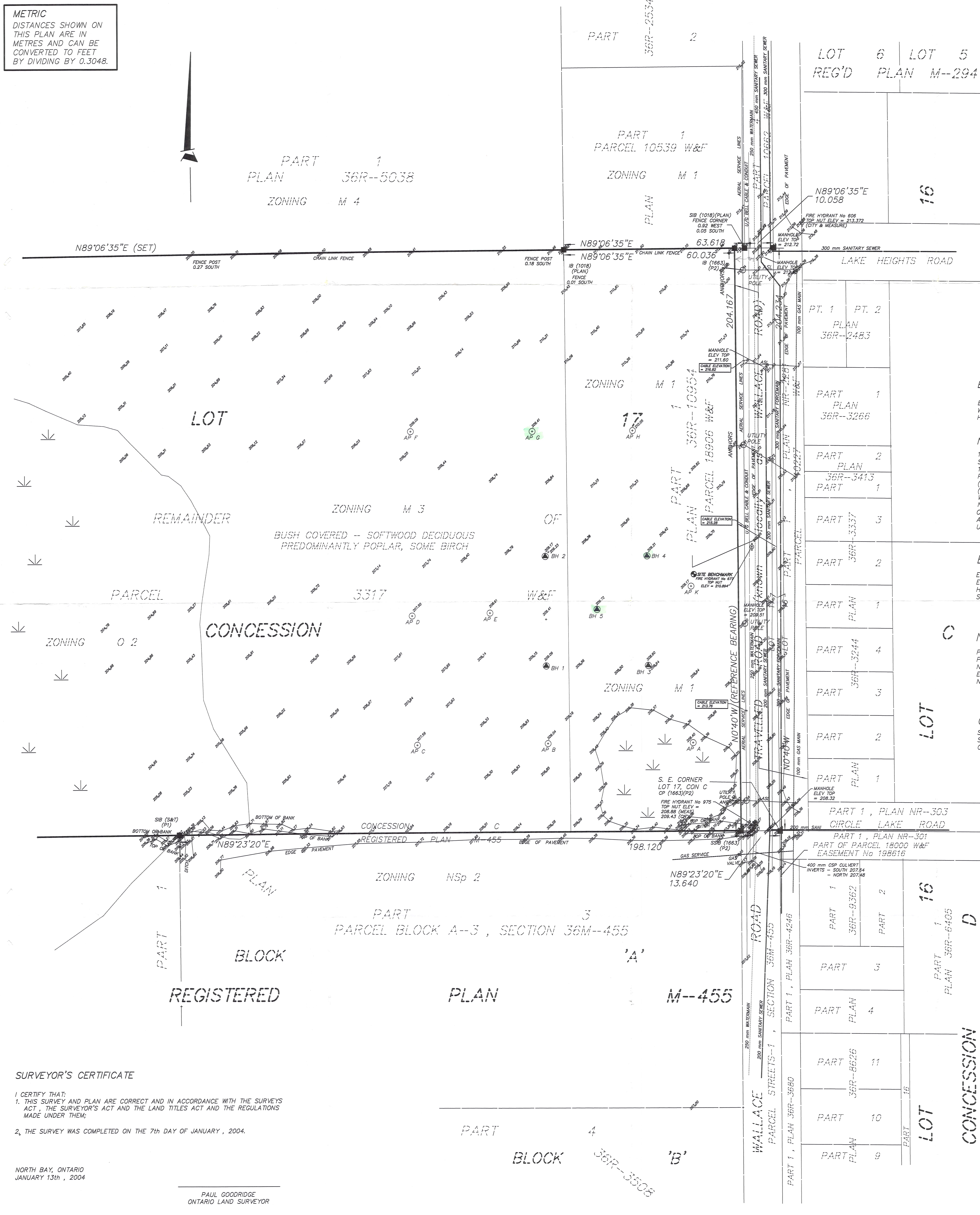
PART OF LOT 17 , CONCESSION C
TOWNSHIP OF WIDDIFIELD
MUNICIPALITY OF THE
CITY OF NORTH BAY
DISTRICT OF NIPISSING

40 m 30 m 20 m 10 m 0 m 20 m 40 m

SCALE: 1 : 500

PAUL GOODRIDGE , OLS
2004

METRIC
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.



BEARING NOTE

BEARINGS ARE ASTRONOMIC AND ARE REFERRED TO THE WEST LIMIT OF PART 1 , PLAN 36R-10954 , SHOWN HAVING A BEARING OF N0°40'W.

NOTE

1663 - DENOTES GOODRIDGE WALKER LIMITED , OLS
S&T - DENOTES SIMPSON & TAYLOR LIMITED , OLS
1018 - DENOTES J. J. NEWLANDS , OLS
PLAN - DENOTES DEPOSITED PLAN 36R-2534
(P1) - DENOTES REGISTERED PLAN M-455
(P2) - DENOTES DEPOSITED PLAN 36R-10954
W&F - DENOTES PARCEL REGISTER FOR WIDDIFIELD AND FERRIS SECTION
NIP. - DENOTES PARCEL REGISTER FOR NIPISSING SECTION
CITY - CITY OF NORTH BAY ENGINEERING DEPARTMENT RECORDS
ASL - DENOTES AERIAL SERVICE LINES
U/G - DENOTES UNDERGROUND

ELEVATIONS

ELEVATIONS ARE OF GEODETIC ORIGIN DERIVED FROM CITY OF NORTH BAY ENGINEERING DEPARTMENT BENCHMARK BEING THE TOP NUT OF FIRE HYDRANT No 677 HAVING A PUBLISHED ELEVATION OF 210.894 AS SHOWN HEREON.

NOTE

POSITIONS OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE PLOTTED VISUALLY FROM NORTHLAND ENGINEERING LIMITED PROJECT No 3949, DRAWING No C4 ON FILE IN THE CITY OF NORTH BAY ENGINEERING DEPARTMENT AS DRAWING No W-332 AND FROM CITY OF NORTH BAY ENGINEERING DEPARTMENT DRAWING No W-328.

CAUTION

SUBSURFACE UTILITIES WERE NOT LOCATED DURING THE COURSE OF THIS SURVEY AND THIS FIRM DOES NOT ACCEPT LIABILITY FOR THEIR LOCATION OR EXISTENCE. LOCATES MUST BE OBTAINED PRIOR TO CONSTRUCTION.

NOTE

AMENDED FEBRUARY 19th, 2004 TO ADD ZONING SHOWN IN CYAN, CABLE ELEVATIONS SHOWN IN YELLOW BOXES AND BOREHOLE AND AUGER PROBE LOCATIONS AND RELEVANT GROUND ELEVATIONS.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT , THE SURVEYOR'S ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM;
2. THE SURVEY WAS COMPLETED ON THE 7th DAY OF JANUARY , 2004.

NORTH BAY, ONTARIO
JANUARY 13th , 2004

PAUL GOODRIDGE
ONTARIO LAND SURVEYOR

GOODRIDGE WALKER LIMITED
ONTARIO LAND SURVEYORS

FIELD	OFFICE	FILE
KM SL	P. GOODRIDGE	104 & 1504

TAB 7

Geotechnical Investigation

ON Maintenance Facility
567 Wallace Road, North Bay

Prepared for:

Mark Dubeault
Facilities Specialist
200 Railway St., PO Box 1926
Cochrane, Ontario

Prepared by:

Shaba Testing Services Ltd.
77 Government Road,
Kirkland Lake, Ontario.

Project No.:

STS 2023-0095

August 8, 2023

EXECUTIVE SUMMARY

Under the authorization of Mark Dubeault of Ontario Northland, Shaba Testing Services Ltd. conducted a geotechnical investigation at the ON Maintenance Facility on 567 Wallace Road, North Bay. The purpose of the investigation was to assess geotechnical parameters in the areas where the proposed two-storey addition to the existing building will be located. The proposed building will be of structural steel and with no basement, and most likely be on strip footing and slab on grade.

The site visit took place on Tuesday, August 8, 2023. Four boreholes (BH-01 to BH-04) were excavated within the footprint of the building. One monitoring well was installed in addition. The borehole locations are as identified on the attached site plan in appendix B of this report.

The stratigraphic profile encountered with increasing depth in the probes generally consisted of: firm to compact granular fill and firm to dense sandy silt Bedrock surface was not encountered at various depths ranging from 4.11 m to 6.10 m (13'-6" to 20 ft).

Sandy silt soil samples were collected and submitted for laboratory analyses of some or all of the following parameters: Moisture Content, Atterberg Limits, Grain size Analysis, Proctor and Density. The soil observed and collected was similar in all the bore holes. .

Wet conditions were encountered in all boreholes at varying depths.

Geotechnical design parameters and construction information for foundations and related features will be as provided. Environmental Considerations are not part of the scope of this report.

Table of Contents

Appendices:

Appendix A: Site Photo Gallery

Appendix B: Supplied Drawing;

Appendix C: Test Pit Log Explanation and Test Pit Log

Appendix D: A Full Chemical Laboratory Report.

Appendix E: OPSDs.

1.0 INTRODUCTION

Under the authorization of Mark Dubeault of Ontario Northland, Shaba Testing Services Ltd. conducted a geotechnical investigation at the Ontario Northland Maintenance Facility on 567 Wallace Ro9ad, North Bay. This is the site for the proposed two-storey addition to the existing building. The purpose of the investigation was to assess geotechnical parameters such as subsoil and groundwater conditions in the areas where the building will be located -which is to the south- east corner of the existing building. The site location and regional topographic features are shown in Appendix B. A site plan showing the borehole locations is presented as well. All of the four boreholes (BH-01 to BH-04) were advanced to varying depths until refusal at the sandy silt soil stratum.

1.1 Description of Subject Property

The property is located at the south -east corner of the Maintenance facility building. See photo #1 below. It was carved out of the existing gravel parking lot. The area has a slight slope of 3 per cent westerly ; there is a catch basin that drain the entire parking lot.

Photo #1- The site- north-east corner of the south parking lot.

1.2 Proposed Development

The proposed development for this site is a steel-framed two storey addition. Ground surface elevations were unavailable at the time of this report; hence there was no geodetic reference of the grade and the soil strata. The foundation, still to be finalized, may consist of strip footings, grade beams and slab on grade on compacted granular materials. Other foundation design options are presented here and can be found in section 4 of this report.

2.0 METHODOLOGY

2.1 General

The investigation was conducted in general compliance with the Geotechnical Engineering Practices and subsequent discussions with the project coordinator. Investigation procedures also followed generally accepted geotechnical engineering practices.

2.2 Field Activities

The field activities were carried out on August 8, 2023, by Shaba Testing Services (STS) crew and Landcore Drilling, Chelmsford, Ontario. Four boreholes were advanced to varying depths in the range of 4.11 m to 6.10 m. A monitoring well-Tag A 387150 - was installed in BH-03. All BH's were within the footprint of the addition.

Drilling and soil sampling was completed using a truck-mounted drill rig operating under the supervision of experienced STS crew. The boreholes were advanced to the sampling depths by means of continuous flight hollow stem augers until refusal. Standard Penetration Test (SPT) N values were recorded for the sampled intervals as the number of blows required to drive a split spoon sample of 305 mm into the soil, with the aid of 63.5 kg drop hammer falling 750 mm as per the ASTM D 1586 procedure. SPT N values that exceeded 50 blows for 305 mm of penetration would be regarded a refusal.

Soil samples were obtained using SPT procedures at selected intervals with a 50 mm diameter split spoon sampler. Groundwater conditions in the open boreholes were observed throughout the drilling operations. One monitoring well was installed at BH -01.

The boreholes were advanced to depths ranging from 4.11 m to 6.10 m to refusal at the locations shown on our borehole logs. Two soil strata were encountered as shown on the

borehole logs. They are granular materials – compact to dense in consistency, and grey silty sand from a very dense to saturated at the termination depth.

In addition, bagged soil samples of mainly sandy silt were recovered from each of the boreholes. They were texturally classified in the field. The samples were packaged and transported to our laboratory for further analysis. No bedrock was encountered in any of the boreholes. See appendix C for the borehole logs and Table 2.2 below for termination depth summary and ground water level

Consistent with the requirements of Geotechnical Engineering practices, all boreholes were barricaded during drilling. After drilling, all boreholes were backfilled with a bentonite meeting the requirements of the Ministry of Environment, Conservation and Parks Regulation 903.

Table 2.2 – Termination Depths and Groundwater levels

Bore hole #	Ground Elevation	Drill Depth		Ground Water Level
	(m)	(m)	(ft)	(m)
BH-01	Not Provided	6.10	20.0	Encountered@ 6.10 m
BH-02	Not Provided	4.88	16.0	Encountered@ 4.88 m
BH-03	Not Provided	4.72	15’ 6”	Encountered@ 4.72 m
BH-04	Not Provided	4.11	13’ 6”	Not Encountered @ 4.11m

2.3 Laboratory Analyses

All soil samples were analyzed for moisture content, visual classifications and description of all soil samples in accordance with the Unified Soil Classification System (USCS). Grain size analyses, proctor determination and Atterberg Limits were performed on various samples. Four selected soil samples were sent to Chemical Laboratory for analyses. The minimum number of laboratory tests was set at 25 percent of the samples collected. Low complexity soil tests were completed at our laboratory. A summary of the Test Methods and Procedures are shown in Table 2.3.

Table 2.3 - Test Methods and Procedures

Test	ASTM Standard	Number of samples/test pits
Natural Moisture Content	ASTM D-2216	6
Grain Size Analysis	ASTM D-422	4
Hydrometer Analysis	ASTM D-422	4
Atterberg' Limits	ASTM D-4318	2
Direct Shear Strength	ASTM D -2166	0
Consolidation Test	ASTM D-2435/D-2435M-11	0
Moisture Density	ASTM D-698	6

3.0 FINDINGS

3.1 Geology

The geology of this site was not investigated during this field investigation.

3.2 Stratigraphy, Groundwater Conditions and Laboratory Test Results

Detailed stratigraphic description, field test results, soil moisture contents, and Atterberg Limits are presented in the test pit logs in Appendix C.

The stratigraphic profile encountered with increasing depth in the bore holes generally consisted of engineering granular fill and compact to dense sandy silt.

3.2.1 Granular Fill

The surface layer in all BHs consisted of 0.0 m to 1.52 m (0-ft to 5 ft) of compact to dense granular fill- typical of parking lots. See photo #2 below.

Photo #2- Granular Fill – to 1. 52 m in depth from grade

3.2.2 Sandy Silt (1.52 m – 6.10 m)

Underlying the granular fill, in all bore holes was a layer of brown and/or gray sandy silt. This layer was encountered at a depth of 1.52 m to 6.10 m in BH-01, 1.52 m to 4.88 m in BH-02, grade to 3.05 m in BH-03 and 1.17 m to 4.11 m in BH-04.The sample gradation is shown in Table 3 .1 below. The inferred Standard Penetration Test (SPT) "N" was in the range of 10 to 40. The consistency of this soil type, based on the SPT" N", was compact to dense. See photo #3 below.

Table 3.1- Results of Grain Size Analyses for Silty Sand and Sandy Silt

Borehole No.	Sample Depth./ (Elevation, m)	Grain Size Distribution		
		% Gravel	% Sand	%silt & Clay
BH-01	20	0	62	38
BH-02	15	0	75	25
BH-03	15	0	51	49
BH-04	13.5	0	60	40

Photo #3- Saturated sandy silt at 5.5 m depth -BH-03

Undrained unconfined shear strength was determined by the Unconfined Direct Shear Tests, which ranged from 60 to 120 kPa for the lab test, indicating the consistency of the silty sand deposit to be very dense at 4.57 m depth.

The Atterberg's limits tests for two samples, one from BH-01 6 and one from BH-04 , the silty sand yielded Non Plastic values:

Liquid limit (W_L)	Non plastic
Plastic Limit (W_P)	Non plastic
Plasticity Index (I_P)	Non plastic

From the USCS Classification Chart, the samples may be classified as Poorly Graded Sand with silt (SP-SC) having a C_u of 1.59 and C_c of 1.25.

Wet conditions, and ground water table, were encountered at all termination depths as shown on the bore hole logs in appendix C of this report.

3.3 Chemical Laboratory Analytical Testing

Samples from test pit numbers 5, 6, 11 and 13 were sent to an independent laboratory for analytical testing comprising pH, sulphate, resistivity and chloride determination and are presented in Appendix D of this report. Sample depths ranged from 0.3 m to 2.4 m (1 ft to 8 ft). A summary is indicated below in Table 3.3.

The concentration of water-soluble sulphate within the selected soil samples tested cannot exceed the limit of 0.1 %, above which CSA A.23 recommends the use of sulphate resistant cement. Hence, the use of sulphate resistant concrete is not required. The resistivity, pH and chloride content indicated should be thoroughly review by experts in those disciplines.

Table 3.3 - Analytical Results for Test Pit samples

Bore hole #	Depth	pH	Sulfide %	Electrical Conductivity uS/cm	Chloride Content µ g/g	Sulfate µg/g	Resistivity ohms.cm
BH-01	10	4.97	<0.3	141	58.2	6	7100
BH-01	20	7.35	<0.3	101	18.1	4	9940
BH-02	5	5.08	<0.3	76	5.8	8	13200

3.4 Monitoring Well Conditions

Monitoring well conditions were observed in open borehole of BH-03 upon completion of drilling. See photo #. The monitoring well is tagged as A387150. Note that the well must be decommissioned by a certified personnel at the end our readings. The static water level in the BH-01 monitoring well was measured. Results are summarized in Table 3.4 below.

Table 3.4: Summary of Monitoring Well –Tag A387150 Conditions at BH-01

Location	Measured Groundwater Depth below grade, m (elevation)	Date Measured
BH-03-Waterline	4.45 m (14’ 10’’) to bottom 3.9 m (13’) to water	August 8, 2023.
BH-03 Waterline	1.35 m (4’ 6’’) from surface	August 10,2023. 3:15pm
BH-03 Waterline	1.31 m (4’ 4½’’) from surface	August 17,2023. 12:05pm
BH -03 Waterline		

It should be noted that groundwater levels may fluctuate seasonally, and in response to climatic conditions.

4.0 DESIGN AND CONSTRUCTION RECOMMENDATIONS

4.1 General Design Parameters

Soil conditions and recommended parameters for general design are summarized in the following Table 4.1 below.

Table 4.1- General Design Parameters for soil samples

Summarized Soil Conditions			Design Parameters		
Description	**Depth (m)**	**Minimum SPT "N" Value**	**Cohesion C_u (kPa)**	**Friction Angle A (degrees)**	**Density (kg/m^3)**
Sandy Silt	<5	9	15 (300 psf)	0	1860 (110 psf)

4.2 Foundations

The soil conditions and bedrock on the site is ideal for shallow foundation design. The foundation could bear on backfill or the sandy silt till.

4.2.1 Shallow Foundation - Footing on Compacted Subgrade & Conventional Spread Footing

Pending final grades, footings can be constructed on engineered fill soils overlying bedrock. Such footings founded on engineered fill can be designed with a factored geotechnical resistance at ULS of 225 kPa (4700 psf) using a geotechnical resistance factor of 0.5 in accordance with the Canadian Foundations Engineering Manual, 4th Edition - table 8.1 on page 139. An SLS resistance of 100 kPa (2000 psf) is recommended. Such footings are expected to settle less than 25 mm (1 in) total and 20 mm (¾ in) differential.

The general subgrade recommendations for footings on compacted subgrade are as follows:

- Excavate and remove the entire existing and underlying fill within the zone of influence of the foundation to a depth of 1.35 m (4.5 ft) or until the native silty sand is encountered.

- Once exposed, the fill / or silt subgrade must be inspected and confirmed by our engineer.
- Some areas may require deeper excavations to remove any deleterious materials and achieve an acceptable silty sand subgrade.
- The silty sand encountered on the site may have to be covered with geotextile filter fabric. The geotextile filter fabric should be over lapped be approximately 0.30 m (1 ft) at the joints.
- Place approximately 150 mm of granular A- to be proof –rolled only.
- The granular A must conform to OPSS SP110S13 (formerly Form 1010)
- For the conventional footing construction, i.e., strip foundation, the footing can bear on the compacted granular A material. An allowable bearing capacity of 250 kPa (5200 psf) at the frost protection depth will suffice for footings 0.6 m to 2.0 m (2 ft to 6 ft) wide.
- These footings should be underlain by a minimum of 1.2 m (4 ft) of fill, and have widths in the range of 0.5 to 1.0 m (1.5 ft to 3 ft).
- The vertical Modulus of Subgrade Reaction for the dense sandy silt is estimated 80 Mpa/m.
- Any granular material to be used as engineered fill on this site must be tested.
- The fill must extend beyond the edge of the footing for a distance equal to the fill depth.
- Adequate drainage must be provided-that is, perimeter weeping tile.
- Also, adequate frost protection is essential in this part of the north. The frost depth is typically 1.2 m (4 ft) in North Bay.
- Perimeter insulation should be provided to prevent frost penetration, especially for slab on grade. For every 25 mm (1 in) of SM, it translates into 300 mm (1 ft) of frost protection.
- Two layers of insulation (high-density polystyrene, HI 40 SM) is recommended. One layer to be 1.8 m (6 ft) out, the top layer to be 1.2 m (4 ft) out from the foundation structure.
- Excavations may encounter some seepage from low lying areas of the site, and this water should be removed with continuous pumping action while backfilling.
- Excavations should be constructed in accordance with the Occupational Health and Safety Act, taking into account the possibility of any unstable fill materials.
- Backfill against the foundation wall should be free draining, engineering fill that conforms to the Ontario Provincial Standards Specifications (OPSS) 1010.

4.2.2 Foundation of Bedrock (if required)

Although bedrock was not encountered in any of the boreholes, the following are presented just in case. Where the bedrock surface is encountered and it is to be utilized, the footings for the piers can bear on the bedrock directly. Footings bearing on the rock or grouted rock anchors or rock dowels would be a suitable foundation system. Rock anchors, if installed, should be sleeved in the upper 1 m (3 ft) to prevent adhesion through this zone. The maximum allowable bearing pressure for footings founded on sound bedrock would be 2 MPa **(WSD)** as indicated in Table 4.2.2 below. The maximum allowable adhesion for rock anchors in compression or tension would be 700 KPa (14600 psf). In accordance with Table 9.3 on page 147 of the Canadian Foundation Engineering Manual.

For rock anchors, the required bond length (L) is the most critical calculation. The length, L, in meters is a function of the core hole diameter (d), and the equation for calculation as a s follows:

$L = P / (\prod \times d \times \zeta)$

L= embedment length (m)

P= Load capacity of rock anchors, (kN)

$\prod = 3.14$

The d = core hole diameter (m)

The ζ = allowable adhesion stress (Kpa)

An example to determine the embedment required for #35 M bar in 50 mm diameter hole will be calculated as follows:

$T_{r35\ M} = 0.85 \times (1000\ mm^2) \times 400Mpa / 1000 = 340\ kN\ (7100\ psf)$

340 kN is the resistance of the 35 M bar. (1 ¼ in)

$C = \prod \times d = \prod \times (50\ mm)^2 = 157\ mm = 0.157\ m\ (6\ in)$

Embedment Required = L = 340 kN/ (700 Kpa x (0.157 m) = 3.1 m. (1 ft)

Pull out tests are normally required during construction of rock anchors, and they are strongly recommended here.

In summary, the following design parameters are recommended:

Table 4.2.2- Foundation Design Parameters

PARAMETER	VALUE[I]
N, c_u, and density	See table above
Allowable design bearing pressure for spread or augered footing / piers on bedrock (if encountered)	2 MPa
Allowable design bearing pressure for compacted sub grade	2000 psf (100 kPa) (WSD) OR
Design bearing pressure for compacted sub grade in ULS	225 kPa (ULS) (4700 psf)
Design bearing pressure for compacted sub grade in SLS	100 kPa (SLS) (2000 psf)
Recommended Geotechnical Resistance factor	0.5 for SLS
Frost Penetration Depth	1.2 m (4 ft)

4.3 Seismic Design

With respect to seismic design and the 2012 Ontario Building Code (O. Reg. 350/06 under the Building Codes Act), Table 4.1.8.4.A, which covers average properties in the upper 30 m, the site would be considered as Class D – Stiff Soil. The four values of the Spectra response acceleration Sa (T) for different periods and the Peak Ground Acceleration (PGA) can be obtained from 2012 Building Code for housing Supplementary Standard SB-1 Table 1.2. The design values of Fa and Fv for the project site should be calculated in accordance with Table 4.1.8.4 B and C.

The minimum earthquake force V calculation, as provided by the Ontario Building Code, is stated below:

V = v. S.I.F. W.

From a geotechnical point of view, the factors of importance, v and F, at this site can be taken as 0.05 and 1.0, respectively. However, these values be reviewed by the structural engineer.

4.3.1 Snow Load Design

With respect to the snow load, the climatic data for 1/50-year snow load for North Bay, Ontario is as follows: The ground snow load is 2.2 kPa , rain load is 0.4 kPa,

4.3.2 Slab–on-Grade/ Grade Beam Design Considerations

For the construction of slabs-on-grade and/or grade beam , the engineering fill encountered on site would be suitable as sub base Slab on grade can be constructed on engineered fill, hence. the slab on grade founded on engineered fill can be designed with a factored geotechnical resistance at ULS of 250 kPa using a geotechnical resistance factor of 0.5. An SLS resistance of 150 kPa may be used. In working stress design (WSD) the allowable bearing capacity will be 150 kPa (3000 psf).The expected settlements will be less than 25 mm total and 20 mm differential.

All required fill below the slab and/or grade beam must be of granular B type I or type II to be placed in a lift not exceeding 0.60 m (2 ft). All engineered fills must conform to Ontario Provincial Standards (OPSS) 1010. The granular B must be compacted to 98 % Standard Proctor Maximum Dry Density (SPMDD) with a moisture content not deviating by 2 % from the Optimum Moisture Content (OMC). The granular A must be compacted to 100 percent SPMDD. All engineering fill must extend 1.5 m laterally, beyond the edge of the foundation and with a slope of one vertical to three horizontal (1V:3V).

In areas where special floor systems, such as tiles, are utilized, or where floor coverings use adhesives, a vapor barrier may be required.

4.3.3 Lateral Earth Pressures

Any foundation and walls must be designed to resist lateral earth pressure. For initial design, the lateral earth pressures P in kPa at any depth h of a permanent retaining wall is given by the following expression:

$P = k (\gamma h + q) + y_w h$

P = lateral earth pressure in kPa

K = coefficient of earth pressure 9 active or passive) Rankine or Coulomb

γ = Gamma = the unit weight of backfill (kN/m^3)

y_w = unit weight of water (9.81 kN/m^3)

h = depth to point of interest, m

q = surcharge load in kPa acting adjacent to the wall at the ground surface

Table 4.3.3 below is the list of various estimated earth pressure.

Table 4.3.3 - Typical backfill Properties.

Soil Type	Angle Of internal Friction, Degrees,Θ	Soil Unit Weight kN/m^3	Earth Pressure Coefficient, k		
			Active k_a	Passive k_p	At rest k_o
Granular A	37	22	0.25	4.0	0.38
Granular B Type I	34	21	0.28	3.7	0.42
Granular B Type II	37	21	0.24	4.2	0.38

4.3.4 Site Drainage

Slab-on-grade structures with the floor level at or above the surrounding ground surface, and the ground surface sloping away from the building, will not require perimeter tile drains.

4.3.5 Insulation

The degree days below 18 ^oC North Bay , Ontario, Canada is 1,802. There is a potential for up to 1.5 m of frost penetration to occur in unprotected areas during winter months. Those areas include roadways and parking lot. Foundation for heated structures should be provided with a minimum of 1.5 m of earth cover. Alternatively, the exterior of the foundation wall, grade beam /pile caps must be insulated with two layers of insulation (i.e. Styrofoam HI-35 or equivalent), extended 1.2 m (4ft) outwards and another layer extended outward for1.8 m (6 ft.).

4.3.6 Pipe Bedding and Trenching for Pipes (If required)

If required, the depth of services installation to be in order of 1.3 to 1.5 m below the existing grades or as required by the local by-laws. The entirety of the trench will be in the moist grey-to brown sandy silt zone. The sandy silt should provide a reasonable structural support for the trench, the bedding, cover and pipe installation. Bedding and pipe installations are to be in accordance with the relevant OPSDs and /or municipal bedding detail specifications and standards in the tender document. In most cases, either Class C or Class B bedding will be adequate. Typically, granular A materials are used for bedding up to the spring-line and

sometimes 300mm above the crown of the pipe. The rest of the fill can be backfilled with granular B-Type I up to the grade. See the OPSDs in appendix E of this report.

The side slopes of conventional unsupported trench excavations would be dependent on the local soil conditions. In general, it is recommended side slopes be cut back to a minimum 1H:1V from the base of excavation. If seepage zone or saturated silty clay soils are encountered, the flatter side slopes may be required. For utility trenches within the roadway, the trench side slopes can be reduced to 5H:1V if possible, to provide gradual transition. See the Frost Protection Section.

Where super saturated or weaker soils are encountered, the use of sheet pile shoring, as an alternative, may be required to help stabilize the trench. Weaker soils can be modified by using geogrid such as TBX 1500 and/or geotextile such as Terrafix 300 R or equivalent.

For an area or part thereof subjected to rising ground water table, the buoyancy effects must be of interest and design consideration. In this instance, the submerged soil unit weight can be taken as 9.0 kN/m^3. A plan of action or techniques must be in place for the potential for uncontrolled water that would be likely trapped in the service trenches. Such technique could involve the use of impervious collars or bentonite with cement /sand mixture.

The degree of stability of a steeply cut excavated trench wall decreases with time and, therefore, construction should be directed at minimizing the length of time service trenches are left open. Ground water seepage from the sides of the trenches and from the base of excavation is to be expected, but marginal. Conventional dewatering of excavated trenches using collection sumps and pumps may be necessary for trenches extending below the depth of the ground water table (GWT, or into saturated sandy silty.

Under no circumstances should the native contaminated soil be used as backfill under structures. However, it is expected that native sandy silt will be used at this site as backfill in other non-structural located areas for economic reasons (although, we strongly recommend granular materials). The native soils will likely consist of a mix of granular materials and sandy silt. For the most part, the soils are marginally suitable for use as trench backfill above the spring-line, if they can be moisture-conditioned to achieve specified levels of compaction during placement. Soil used as trench backfill should be free of organics, and be placed in thin lifts with a nominal thickness of 200 mm. It should be uniformly compacted, with a packer, to a minimum of 90 percent of the SPMDD. Generally, settlement of 1 to 2 percent of the fill thickness is expected for soils compacted to 95 percent of SPMDD.

4.3.7 Recommended Design for Access Roads and Parking Lots (If required)

All deleterious surficial materials (i.e., contaminated fill, disturbed soil, etc.) should be stripped from below the area of influence of the pavement structure down to about 1.5 m. Once the site is stripped of deleterious materials down to approved subgrade, place a layer of geotextile, 360 R or equivalent, on the subgrade. Proceed with granular B-Type II in lifts not exceeding 300 mm and compacted to at least 98 % SPMDD up to the design grade elevation. Provided the subgrade is properly prepared and is uniform, we recommend the following pavement structure.

Table 4.3.7 Recommended Design for Pavement Structures

Pavement Structure	Access Routes	Parking Area
SP 12.5 Coarse	--	40 mm
SP 12.5 Binder	40 mm	40 mm
Base Granular A	150 mm (6”)	150 mm (6”)
Subbase Granular B-Type II	900 mm (36 “)	600 mm (24”)

4.3.8 Pavement Design Consideration for Access Roads and Parking lot

The design frost depth of this part of Northern Ontario ranges between 1.3 to 2.0 m. Good practice will dictate that parking lot and any road base design be constructed to at least half of this depth with granular material, which will be well drained, in order to reduce frost action and minimize damage to the pavements. Our borehole results reveal that the granular layer and grey silty-sand underlay at the proposed area of the property will be suitable. The silty sand, if exposed, will have to be covered with a material, non-woven, geotextile (Terrafix 360 R or equivalent) before backfilling with granular materials.

4.3.9 Hydraulic Conductivity

The estimated hydraulic conductivity**,” k”,** of the soils at this site may be estimated as follows in the table 4.3.9 below.

Table 4.3.9-Hydraulic Conductivity Table

Material Type	Estimated Hydraulic Conductivity in cm/s
Sandy Silt	$< 10^{-6}$
Granular Fill	Variation based on composition

4.4 General Construction Information

4.4.1 Excavation Slopes

Based on the encountered conditions, however, we suspect the surficial granular fill and sandy silt would be Type 1 soil under the *Ontario Occupational Health and Safety Act and Regulations for Construction Projects* (O. Reg. 213/91).

4.4.2 Groundwater Seepage

Groundwater conditions were encountered. However, seepage and sloughing are not expected in excavations below a depth of 4.0 m. Sumps and pumps are expected to be adequate in small, temporary excavations.

4.4.3 Excavation Equipment

It is expected that excavations of this site can be carried out using regular earthwork equipment.

4.4.4 Backfill Material

The granular B-Type I or granular II should be considered back fill material on top of the undisturbed silty sand. However, granular A material materials would be needed for the final subgrade.

5.0 SUMMARY

Four (4) boreholes were advanced to depths ranging from 4.11 m to 6.10 m. Two distinct soil strata – engineering fill and sandy silt were encountered and logged. Soil samples were collected and submitted for laboratory analyses of some or all of the following parameters: moisture content, Grain size analysis, Proctor and density.

Wet surface conditions and ground water were encountered in some boreholes.

Geotechnical design parameters and construction information for foundations and related features are provided herein.

6.0 CLOSURE

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of Ontario Northland - Maintenance Facility on 567 Wallace Road, North Bay.

Information collected herein was obtained while conducting an authorized geotechnical investigation at the properties designated above. Note that the data collected at specific locations and subsurface conditions may vary at other locations.

This report and all portions thereof shall be treated as confidential and shall not be used in any manner or for any purpose or be provided to any third party without the express written consent of Ontario Northland or its consultants.

Respectfully submitted,

Lad Shaba, B.Sc., M.A (Ed), CET, P. Eng.
Principal/ Senior Structural & Geotechnical Engineer
SHABA TESTING SERVICES LIMITED

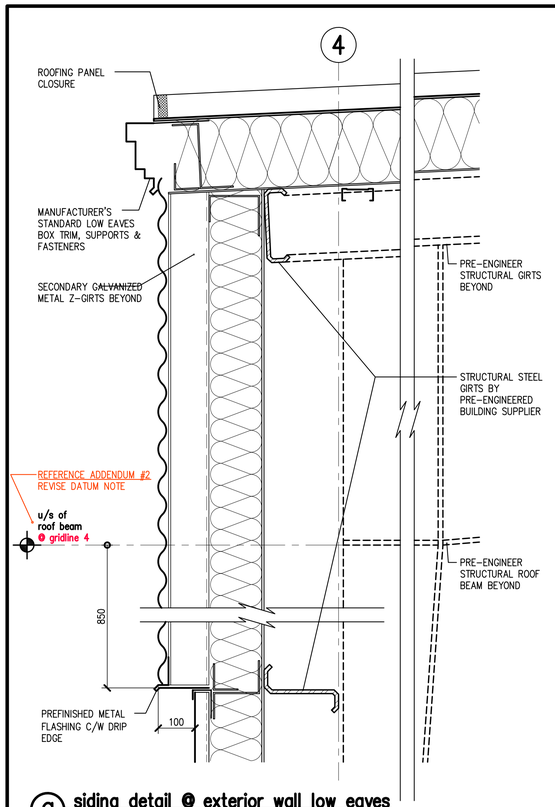
Appendix A: Site Photos

Well Monitoring Borehole #3.

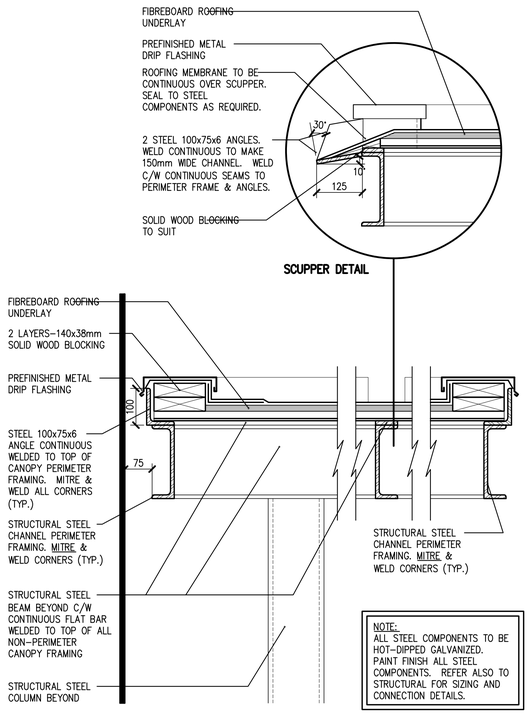
Wet Sandy silt soil


Circle Lak
Circle Lake Rd
Rd
Wallace Rd
Wallace Rd
Wallace Rd
Wallace R
Ontario Northland

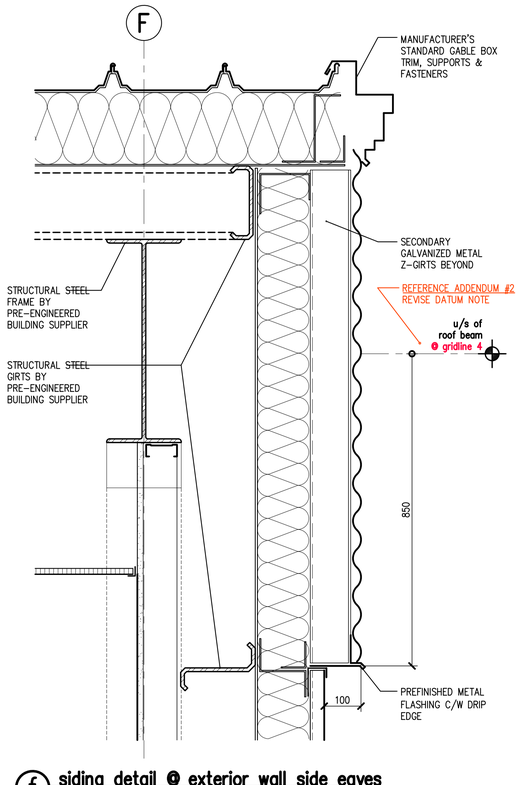
Appendix B: Site Drawing;



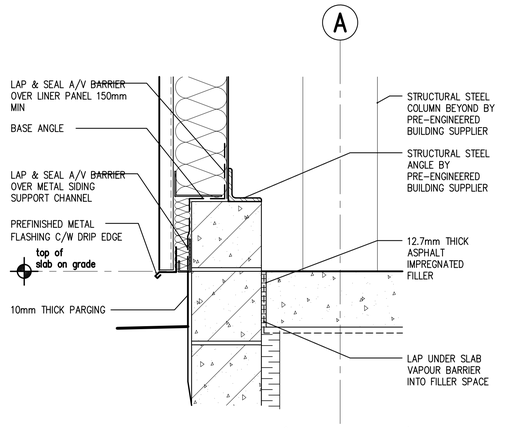
a siding detail @ exterior wall low eaves
SCALE: 1:7.5



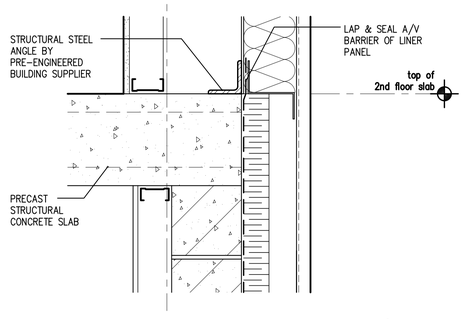
c entrance canopy details
SCALE: 1:7.5



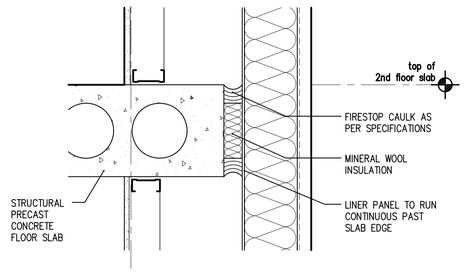
f siding detail @ exterior wall side eaves
SCALE: 1:7.5



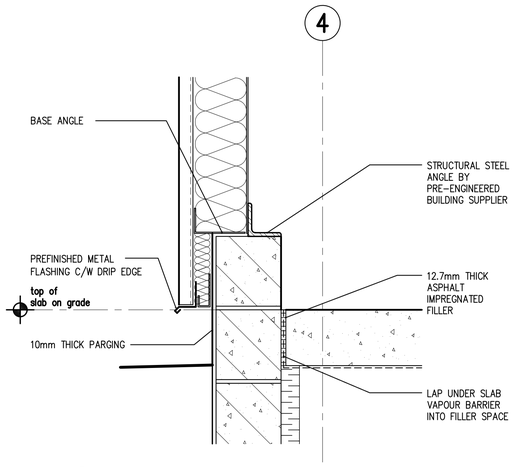
j foundation @ exterior wall (south & north)
SCALE: 1:7.5



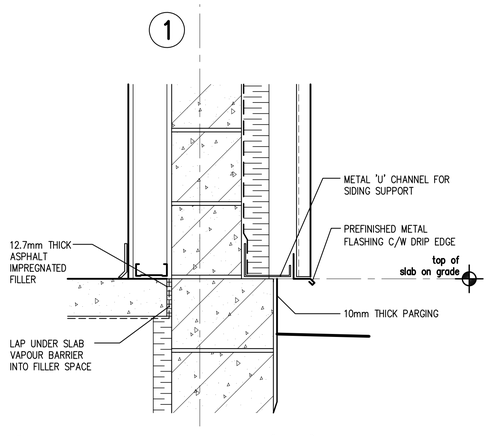
d exterior wall panel @ intermediate slab / block
SCALE: 1:7.5



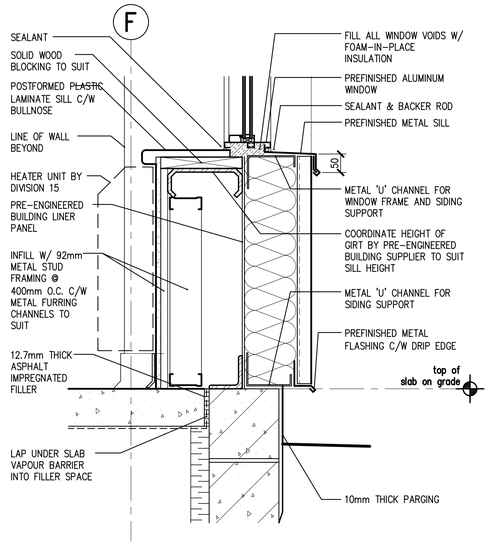
g exterior wall panel @ intermeidate floor slab
SCALE: 1:7.5



b typical foundation @ exterior walls
SCALE: 1:7.5



e foundation @ exterior wall (east)
SCALE: 1:7.5



h aluminum window sill / foundation @ exterior wall (north)
SCALE: 1:7.5

AS-BUILTS

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

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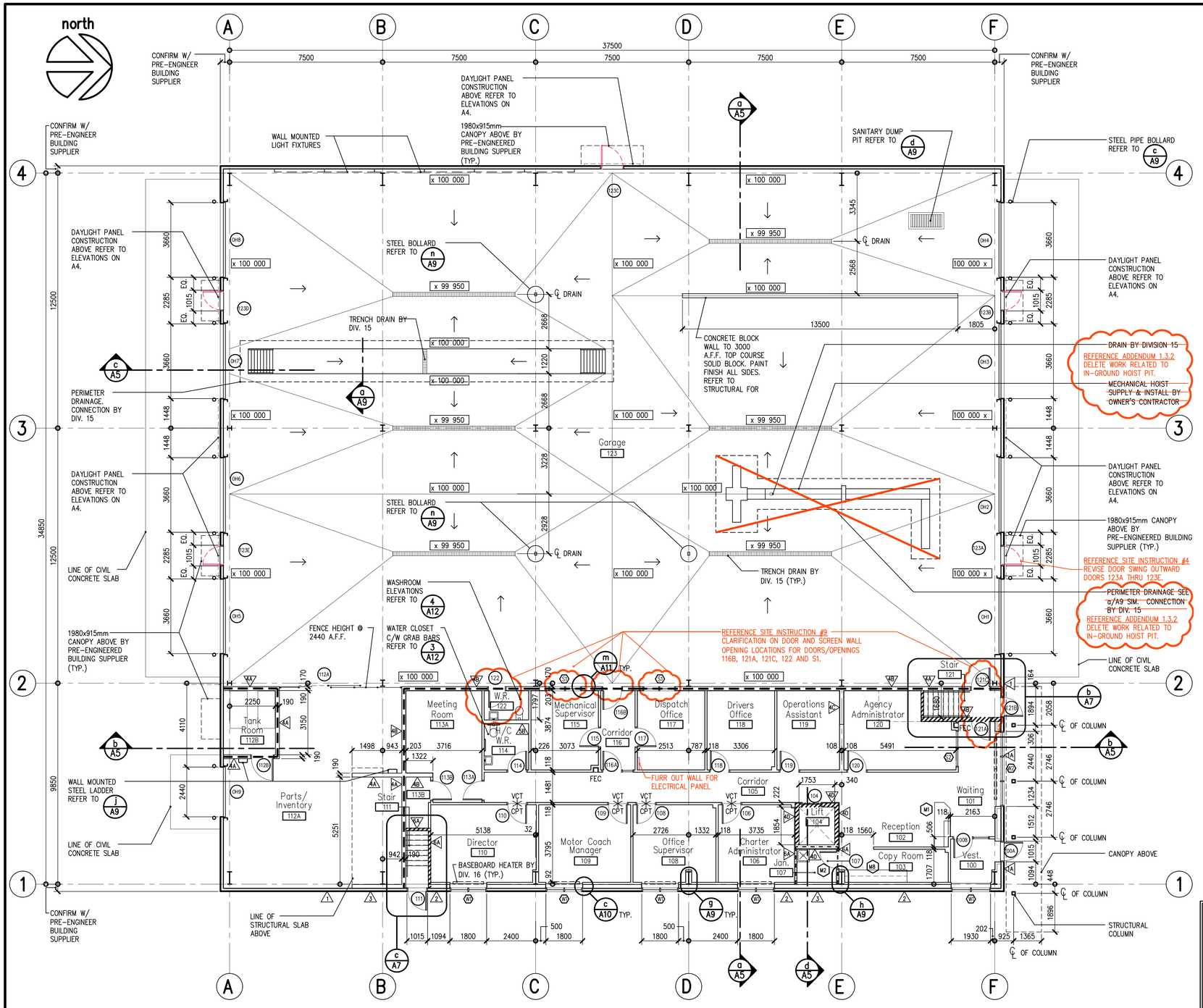
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-DT-RD
Drawn By:	a.b-p.
Scale:	as noted

Building Details

Drawing No: A8



Legend:

- Lobby / 100 — INDICATES ROOM NAME AND NUMBER. REFER TO ROOM FINISH SCHEDULE
- a / A0 — INDICATES BUILDING SECTION REFERENCE; SECTION NUMBER; DRAWING WHERE SECTION LOCATED
- b / a A0 c — INDICATES ELEVATION REFERENCE; ELEVATION NUMBER; DRAWING WHERE ELEVATION LOCATED
- 1 — INDICATES GRID LINE REFERENCE
- INDICATES DIMENSION TAKEN TO GRID LINE REFERENCE ONLY.
- INDICATES DIMENSION TAKEN TO OTHER THAN GRID LINE REFERENCE.
- 1 — INDICATES WALL TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA DRAWING A2.
- 1 — INDICATES FLOOR TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA ON DRAWING A2.
- 1 — INDICATES ROOF TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA ON DRAWING A2.
- 100 — INDICATES DOOR NUMBER. REFER TO DOOR SCHEDULE DRAWING c/A3.
- 03 — INDICATES WINDOW NUMBER. REFER TO WINDOW SCHEDULE DRAWING d/A3.
- VCT / CPT — INDICATES FLOOR FINISH TRANSITION. REFER TO ROOM FINISH SCHEDULE ON b/A3.
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 2 HOUR FIRE SEPARATION
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 1 HOUR FIRE SEPARATION
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 3/4 HOUR FIRE SEPARATION
- M# — INDICATES MILLWORK ITEMS, REFER TO MILLWORK SCHEDULE ON DRAWING e/A3.
- FEC — FIRE EXTINGUISHER CABINET
- FD — INDICATES FLOOR DRAIN. SLOPE FLOOR TO DRAIN. REFER TO MECHANICAL DRAWINGS FOR LOCATION.
- S.B.O. — SUPPLIED BY OTHERS. INSTALLATION TO BE INCLUDED IN CONTRACT.
- x 100 000 — INDICATES ELEVATION OF FINISHED FLOOR FOR DRAINAGE OF SLAB TO TRENCH DRAINS
- INDICATES SLOPE DIRECTION OF FLOOR SLAB

General Notes:

1. READ ARCHITECTURAL DRAWINGS IN CONJUNCTION WITH CIVIL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
2. EXTERIOR DIMENSIONS ARE TAKEN FROM O/S FACE OF METAL CLADDING TO O/S FACE OF METAL CLADDING UNLESS NOTED OTHERWISE.
3. INTERIOR DIMENSIONS ARE TAKEN FROM O/S FACE OF GYPSUM WALLBOARD TO O/S FACE OF GYPSUM WALLBOARD UNLESS NOTED OTHERWISE.
4. EXTERIOR WALLS OF GARAGE ARE WALL TYPE 1 UNLESS ARE EXISTING OR NOTED OTHERWISE.
5. INTERIOR WALLS ARE WALL TYPE 3A UNLESS NOTED OTHERWISE.
6. ALL NON RATED WALLS ON GROUND FLOOR TO EXTEND TO U/S OF PRECAST CONCRETE SLAB. ALL NON-RATED WALLS ON SECOND FLOOR TO EXTEND 150mm ABOVE FINISHED CEILNGS AND BRACE TO U/S OF SLAB/ROOF ASSEMBLY AS REQUIRED, UNLESS NOTED OTHERWISE.
7. ALL WALLS DESIGNATED AS FIRE SEPARATIONS AND SMOKE SEPARATIONS TO EXTEND TO U/S OF PRECAST FLOOR SLABS/STEEL ROOF SYSTEM. FIRE STOP ALL JOINTS AS SPECIFIED IN SECTION 07270, FIRESTOPPING AND SMOKE SEALS.
8. STRUCTURAL STEEL SHOWN IN DRAWINGS ARE APPROXIMATE. ACTUAL SIZES AND MEMBER TYPES MAY VARY BY PRE-ENGINEERED BUILDING SUPPLIER.

NOTES:

–PRE-ENGINEERED STRUCTURAL STEEL SIZE & CONFIGURATION SHOWN IS APPROXIMATE. GENERAL CONTRACTOR TO COORDINATE ALL ACTUAL STRUCTURAL STEEL SIZES & LOCATIONS COMPLY W/ GENERAL INTENT SHOWN.

–IN GROUND HOIST (BY OWNER) INCLUDES CAST-IN-PLACE STRUCTURAL MEMBERS & CONDUIT. CONTRACTOR TO COORDINATE AND SEQUENCE THE PLACEMENT OF HOIST COMPONENTS REQUIRED TO BE CAST-IN-PLACE.

AS-BUILTS

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

Construction Data

EXTERIOR WALLS

1 — PREFINISHED METAL SIDING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-3.5 (R-20); PREFINISHED METAL LINER PANEL; PRE-ENGINEERED BUILDING WALL GIRTS

1A — PREFINISHED METAL SIDING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-3.5 (R-20); PREFINISHED METAL LINER PANEL; 92mm METAL STUD FRAMING @ 400mm O.C. MAXIMUM; 12.7mm GYPSUM WALLBOARD

2 — PREFINISHED METAL SIDING; GALVANIZED METAL Z-GIRTS; 90mm RIGID INSULATION RSI-3.5 (R-20); A/V BARRIER MEMBRANE; 190mm CONCRETE BLOCK; 92mm METAL STUD FRAMING @ 400 O.C. MAX; 12.7mm GYPSUM WALLBOARD

3 — SAME AS 2 BUT DELETE METAL STUD FRAMING AND GYPSUM

FOUNDATION WALLS

3A — 10mm DAMP PROOFING; 190mm PARGING TO 300mm BELOW FINISHED GRADE; 50mm STRUCTURAL CONCRETE BLOCK FOUNDATION WALL; EXTRUDED POLYSTYRENE INSULATION TO 1200mm BELOW FINISHED GRADE

3B — 10mm DAMP PROOFING; 290mm PARGING TO 300mm BELOW FINISHED GRADE; 50mm STRUCTURAL CONCRETE BLOCK FOUNDATION WALL; EXTRUDED POLYSTYRENE INSULATION TO 1200mm BELOW FINISHED GRADE

INTERIOR WALLS – RATED WALLS REFER TO G.N. # 6 & 7

4A — 190mm CONCRETE BLOCK (MINIMUM 75% SOLID)
2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4B — SAME AS 4A BUT ADD 1 LAYER OF 12.7mm GYPSUM WALLBOARD LAMINATED DIRECTLY TO BLOCK ONE SIDE
2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4C — SAME AS 4A BUT ADD 2 LAYERS OF 12.7mm GYPSUM WALLBOARD (LAMINATE ONE EACH SIDE)
2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4D — 190mm CONCRETE BLOCK; 19mm METAL FURRING @ 400mm O.C.; 12.7mm GYPSUM WALLBOARD
3/4 HOUR OR 1 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20 AS INDICATED ON PLANS

4E — SAME AS 4D BUT REVISE METAL FURRING TO 92mm METAL STUDS @ 400mm O.C.
1 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

5A — 12.7mm GYPSUM WALLBOARD; 92mm METAL STUD FRAMING @ 400mm O.C. MAXIMUM; 90mm FIBREGLASS BATT INSULATION; 12.7mm GYPSUM WALLBOARD

5B — SAME AS 5A BUT REVISED METAL STUDS TO 152mm

6A — SAME AS 5A BUT REVISE BOTH LAYERS OF GYPSUM TO 15.9mm TYPE 'X'
1 HOUR RATED FIRE SEPARATION BY ULC # W407

6B — SAME AS 6A BUT REVISE METAL STUDS TO 152mm

FLOOR ASSEMBLIES

1A — 150mm HARDENER; 0.254mm CONCRETE SLAB ON GRADE; POLYETHYLENE VAPOUR BARRIER; GRANULAR BASE/SUB-BASE

1B — 100mm CONCRETE SLAB ON GRADE; 0.254mm POLYETHYLENE VAPOUR BARRIER; GRANULAR BASE/SUB-BASE

2 — 6mm (MIN.) CONCRETE LEVELLING SKIM COAT; 250mm STRUCTURAL CORE SLAB; SUSPENDED FINISHED CEILING AS NOTED ON REFLECTED CEILING PLANS
3/4 HOUR FIRE SEPARATION BY EQUIVALENT CONCRETE THICKNESS IN ACCORDANCE WITH SUPPLEMENTARY OBC.

ROOF ASSEMBLIES

1 — PREFINISHED SHEET METAL ROOFING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-4.6 (R-26); PREFINISHED METAL LINER PANEL; PRE-ENGINEERED BUILDING ROOF PURLINS

ONTC

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No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-FP1-RD
Drawn By:	a.b-p.
Scale:	as noted

Ground Floor Plan & Construction Data

Drawing No: A2

Appendix C: Test Pit Explanation Form and Test Pit Logs

RECORD OF BORE HOLE #1

PAGE: 1 OF 4

PROJECT	Addition - Coach Maintenance Building			ENGINEER	LS
CLIENT	ONR - North Bay	TEST PIT METHOD	Drill	LOGGED BY	TR
PROJECT NO.	STS 2023-0095	DRILLER	Landcore	LOCATION	567 Wallace Road, North Bay, ON.	COMPILED BY	JM
ELEVATION	0.0	COORD.	N/A	BORING DATE	August 8th, 2023	CHECKED BY	L.Shaba

SAMPLE TYPES

AU	Auger	RC	Rock Core
BU	Bulk	SS	Split Spoon
GS	Grab	TW	Thin Walled Open (Shelby)
		WS	Wash Sample

ABBREVIATIONS

P.P.	Pocket Penetrometer	P.L.	Point Load Strength Index (f_{50})	C	Consolidation
U.W.	Wet Unit Weight	RQD	Rock Quality Designation	DS	Direct Shear
PT	Standard Proctor Test	SCR	Solid Core Recovery	GS	Grain Size Analysis
		k	Permeability		

Depth (m) / Depth (ft)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	RECOVERY (%)	SPT "N" VALUES or RQD	WELL / PIEZOMETER INSTALLATION	ELEVATION (m)	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / UNDRAINED SHEAR STRENGTH (kPa) (50 100 150 200 250)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT (kN/m3)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0	Gravel Surface											
	Mixed Gravel (Granulars) [Compact to Dense]		1	GS/TW	71	30 / 47				11.5	2078	
1.52m 5'-0"												
	Grey Silty Sand [Very Dense]		2	GS/TW	48	85				12.2		
			3	GS/TW	50	99				10.5		
4.57m 15'-0"												
	Saturated Silty Sand		4									Trapped Groundwater observed at 18'-6"
	Trapped Groundwater											0 62 26 12
6.10m 20'-0"	End of Excavation									17.2		

Scale of 10 Ticks = 5ft (1.52m)

RECORD OF BORE HOLE #2

PAGE: 2 OF 4

PROJECT	Addition - Coach Maintenance Building			ENGINEER	LS
CLIENT	ONR - North Bay	TEST PIT METHOD	Drill	LOGGED BY	TR
PROJECT NO.	STS 2023-0095	DRILLER	Landcore	LOCATION	567 Wallace Road, North Bay, ON.	COMPILED BY	JM
ELEVATION	N/A	COORD.	N/A	BORING DATE	August 8th/2023	CHECKED BY	L.Shaba

SAMPLE TYPES

AU Auger
BU Bulk
GS Grab
RC Rock Core
SS Split Spoon
TW Thin Walled Open (Shelby)
WS Wash Sample

ABBREVIATIONS

P.P. Pocket Penetrometer
U.W. Wet Unit Weight
PT Standard Proctor Test
P.L. Point Load Strength Index (f_{50})
RQD Rock Quality Designation
SCR Solid Core Recovery
k Permeability
C Consolidation
DS Direct Shear
GS Grain Size Analysis

Depth (m) / Depth (ft)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	RECOVERY (%)	SPT "N" VALUES or RQD	WELL / PIEZOMETER INSTALLATION	ELEVATION (m)	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / UNDRAINED SHEAR STRENGTH (kPa) (50 100 150 200 250)	PLASTIC LIMIT W_P	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W_L	WATER CONTENT (%) (20 40 60)	UNIT WEIGHT (kN/m3)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0	Gravel Surface														
	Sand & Gravel [Dense to Very Dense]		1	GS/TW	67	30 / 70					10.2				
1.52m															
5'-0"	Sand & Silt [Very Dense]		2	GS/TW	21	59					10.0				
3.05m															
10'-0"	Trapped Groundwater — Silty Sand [Very Dense]		3	GS/TW	21	102					17.1			1988	0 75 14 11
4.88m															
16'-0"	End of Excavation - Refusal														

Trapped Groundwater observed at 12'-6"

Scale of 10 Ticks = 5ft (1.52m)

RECORD OF BORE HOLE #3

PROJECT	Addition - Coach Maintenance Building			ENGINEER	LS
CLIENT	ONR - North Bay	TEST PIT METHOD	Drill	LOGGED BY	TR
PROJECT NO.	STS 2023-0095	DRILLER	Landcore	LOCATION	567 Wallace Road, North Bay, ON.	COMPILED BY	JM
ELEVATION	N/A	COORD.	N/A	BORING DATE	August 8th/2023	CHECKED BY	L.Shaba

SAMPLE TYPES

AU	Auger	RC	Rock Core
BU	Bulk	SS	Split Spoon
GS	Grab	TW	Thin Walled Open (Shelby)
		WS	Wash Sample

ABBREVIATIONS

P.P.	Pocket Penetrometer	P.L.	Point Load Strength Index (f_{50})	C	Consolidation
U.W.	Wet Unit Weight	RQD	Rock Quality Designation	DS	Direct Shear
PT	Standard Proctor Test	SCR	Solid Core Recovery	GS	Grain Size Analysis
		k	Permeability		

Depth (m) / Depth (ft)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	RECOVERY (%)	SPT "N" VALUES or RQD	WELL / PIEZOMETER INSTALLATION	ELEVATION (m)	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / UNDRAINED SHEAR STRENGTH (kPa) (50 100 150 200 250)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT (kN/m3)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0	Gravel Surface											
	Silty Sand [Dense to Very Dense]		1	TW	77	31 / 67				9.7		
			2	GS/TW	75	68 / 84				7.9	2029	
3.05m 10'-0"	Grey Silt [Very Dense]		3	TW	17	102				11.4		0 51 32 17
4.72m 15'-6"	End of Excavation - Refusal									13.1		

Scale of 10 Ticks = 5ft (1.52m)

RECORD OF BORE HOLE #4

PAGE: 4 OF 4

PROJECT	Addition - Coach Maintenance Building			ENGINEER	LS
CLIENT	ONR - North Bay		TEST PIT METHOD Drill	LOGGED BY	TR
PROJECT NO.	STS 2023-0095	DRILLER Landcore	LOCATION 567 Wallace Road, North Bay, ON.	COMPILED BY	TC
ELEVATION	N/A	COORD. N/A	BORING DATE August 8th / 2023	CHECKED BY	L.Shaba

SAMPLE TYPES
AU Auger
BU Bulk
GS Grab
RC Rock Core
SS Split Spoon
TW Thin Walled Open (Shelby)
WS Wash Sample

ABBREVIATIONS
P.P. Pocket Penetrometer
U.W. Wet Unit Weight
PT Standard Proctor Test
P.L. Point Load Strength Index (f_{50})
RQD Rock Quality Designation
SCR Solid Core Recovery
k Permeability
C Consolidation
DS Direct Shear
GS Grain Size Analysis

Depth (m) / Depth (ft)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	RECOVERY (%)	SPT "N" VALUES or RQD	WELL / PIEZOMETER INSTALLATION	ELEVATION (m)	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / UNDRAINED SHEAR STRENGTH (kPa) (UNCONFINED, POCKET PENETR., FIELD VANE, LAB VANE; 50 100 150 200 250)	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT — WATER CONTENT (%) (20 40 60)	UNIT WEIGHT (kg/m3)	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0	Gravel Surface											
1.17m	Mixed Sand (Granulars)		1									
3'-10"	Silty Sand		2	GS						10.3	1776	0 60 28 12
4.11m												
13'-6"	End of Excavation - Refusal											

Scale of 10 Ticks = 5ft (1.52m)

Appendix D: Chemical Laboratory Report

TESTMARK Laboratories Ltd.
Committed to Quality and Service

CERTIFICATE OF ANALYSIS

Client:	Lad & Georgina Shaba	Work Order Number:	508854
Company:	Shaba Testing Services	PO #:	
Address:	77 Gov't Rd East Kirkland Lake, ON, P2N 1A4	Regulation: Project #:	None STS 2023-0095 ON Maintenace Facility
Phone:	(705) 567-4187	DWS #:	
Email:	shabatesting@shabatesting.com	Sampled By:	Temi Fakorede
Date Order Received:	8/10/2023	Analysis Started:	8/14/2023
Arrival Temperature:	21 °C	Analysis Completed:	8/17/2023

WORK ORDER SUMMARY

ANALYSES WERE PERFORMED ON THE FOLLOWING SAMPLES. THE RESULTS RELATE ONLY TO THE ITEMS TESTED.

Sample Description	Lab ID	Matrix	Type	Comments	Date Collected	Time Collected
BH-01-10 FT DEPTH	1915000	Soil	None		8/10/2023	12:00 AM
BH-01-20 FT	1915001	Soil	None		8/10/2023	12:00 AM
BH-02 5 FT	1915002	Soil	None		8/10/2023	12:00 AM

METHODS AND INSTRUMENTATION

THE FOLLOWING METHODS WERE USED FOR YOUR SAMPLE(S):

Method	Lab	Description	Reference
Anions Soil (A5)	Garson	Determination of Anions in Soil	Modified from SW846-9056A
Cond Soil (R12)	Garson	Determination of conductivity in soil (1:2)	Modified from EPA SW846-9050A
Moisture (A99)	Garson	Determination of Percent Moisture	In-House
pH Soil (A2.0)	Garson	Determination of soil pH by Ion Selective Electrode	Modified from EPA SW-846 9045D
RedOx - Soil (T06)	Mississauga	Determination of RedOx Potential of Soil	Modified from APHA-2580B
Resistivity Soil (R12)	Garson	Determination of Resistivity in Soil (1:2)	Modified from Carter 18.3
Special Testing (A99)	Garson	Special Testing	In-House
Sulphide/S (R98)	Garson	Determination of Sulphide in Soil	In-House

1470 Government Rd, Kirkland Lake, ON, P2N 3J1
Phone: (705) 642-3361 Fax: (705) 642-3222 Web: www.testmark.ca

CERTIFICATE OF ANALYSIS

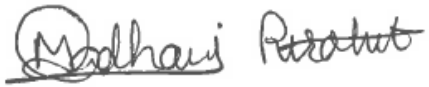
Shaba Testing Services

Work Order Number: 508854

REPORT COMMENTS

The Corrosivity Index for all samples based on the AWWA C-105 system are, depending on Moisture:
Poor Drainage, continuously wet: 2
Fair Drainage, generally moist: 1
Good Drainage, generally dry: 0

This report has been approved by:



Madhavi Purohit, M.Sc.
Laboratory Director

WORK ORDER RESULTS

Sample Description	BH - 01 - 10 FT DEPTH		BH - 01 - 20 FT		BH - 02 5 FT		
Sample Date	8/10/2023 12:00 AM		8/10/2023 12:00 AM		8/10/2023 12:00 AM		
Lab ID	1915000		1915001		1915002		
Anions	Result	MDL	Result	MDL	Result	MDL	Units
Chloride	58.2	0.4	18.1	0.4	5.8	0.4	µg/g
Sulphate	6	2	4	2	8	2	µg/g

Sample Description	BH - 01 - 10 FT DEPTH		BH - 01 - 20 FT		BH - 02 5 FT		
Sample Date	8/10/2023 12:00 AM		8/10/2023 12:00 AM		8/10/2023 12:00 AM		
Lab ID	1915000		1915001		1915002		
Custom Analysis	Result	MDL	Result	MDL	Result	MDL	Units
Custom Analysis	SeeComments	N/A	SeeComments	N/A	SeeComments	N/A	NA

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CERTIFICATE OF ANALYSIS

Shaba Testing Services

Work Order Number: 508854

Sample Description	BH - 01 - 10 FT DEPTH		BH - 01 - 20 FT		BH - 02 5 FT		
Sample Date	8/10/2023 12:00 AM		8/10/2023 12:00 AM		8/10/2023 12:00 AM		
Lab ID	1915000		1915001		1915002		
General Chemistry	Result	MDL	Result	MDL	Result	MDL	Units
% Moisture	9.8	0.1	15.6	0.1	7.7	0.1	%
Conductivity	141 [139]	1	101	1	76	1	µS/cm
pH	4.97 [5.06]	N/A	7.35	N/A	5.08	N/A	pH
RedOx (vs. S.H.E.)	385 [386]	N/A	308	N/A	461	N/A	mV
Resistivity	7100	N/A	9940	N/A	13200	N/A	ohm-cm
Sulphide	<0.3 [<0.3]	0.3	<0.3	0.3	<0.3	0.3	µg/g

LEGEND

Dates: Dates are formatted as mm/dd/year throughout this report.

MDL: Method detection limit or minimum reporting limit.

[ ]: Results for laboratory replicates are shown in square brackets immediately below the associated sample result for ease of comparison.

Organic Soil Analysis: Data reported for organic analysis in soils samples are corrected for moisture content.

Quality Control: All associated Quality Control data is available on request.

Field Data: Reports containing Field Parameters represent data that has been collected and provided by the client. Testmark is not responsible for the validity of this data which may be used in subsequent calculations.

Sample Condition Deviations: A noted sample condition deviation may affect the validity of the result. Results apply to the sample(s) as received.

ICPMS Dustfall Insoluble: The ICPMS Dustfall Insoluble Portion method analyzes only the particulate matter from the Dustfall Sampler which is retained on the analysis filter during the Dustfall method.

Regulation Comparisons: Disclaimer: Please note that regulation criteria are provided for comparative purposes, however the onus on ensuring the validity of this comparison rests with the client.

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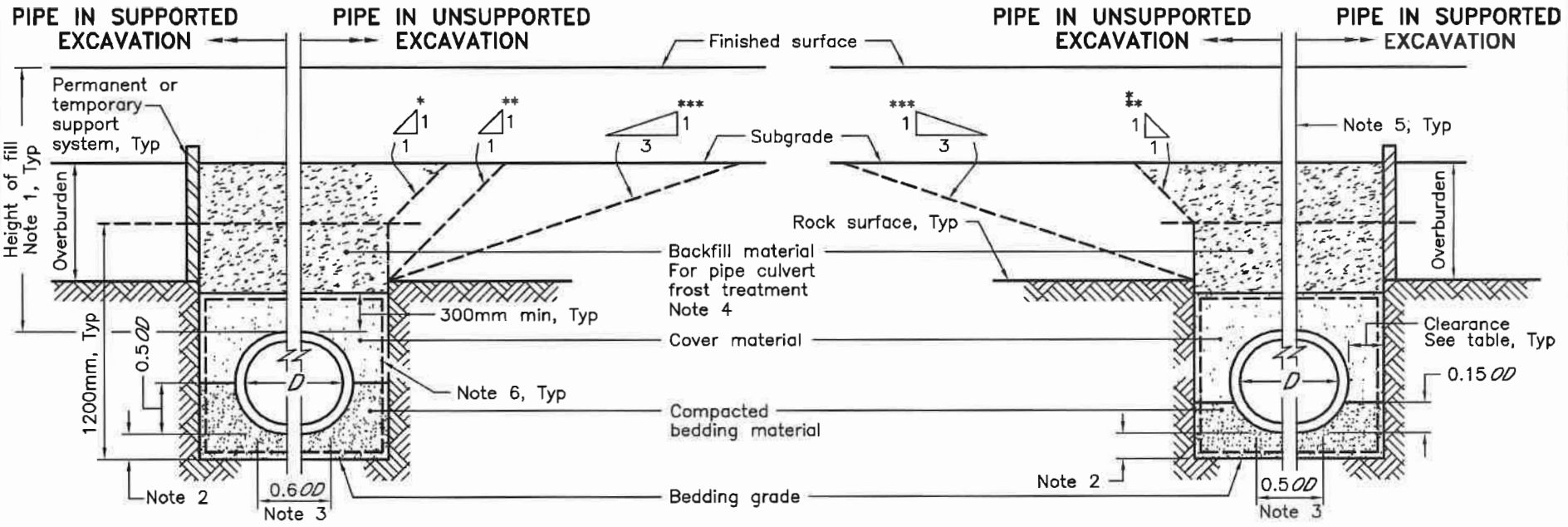
Phone: (705) 642-3361 Fax: (705) 642-3222 Web: www.testmark.ca

Appendix E: OPSDs



CLASS B BEDDING **CLASS C BEDDING**

NOTES:

1 Height of fill is measured from the finished surface to top of pipe.
2 The minimum bedding depth below the pipe shall be 0.25*D*. In no case shall this dimension be less than 150mm or greater than 300mm.
3 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
4 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
5 Condition of excavation is symmetrical about centreline of pipe.
6 Embedment material shall be wrapped in non–woven geotextile when specified.

A Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
B Fractured rock shall be treated as Type 1 soil.
C All dimensions are in metres unless otherwise shown.

LEGEND:

D – Inside diameter
OD – Outside diameter
* – Type 1 or 2 soil
** – Type 3 soil
*** – Type 4 soil

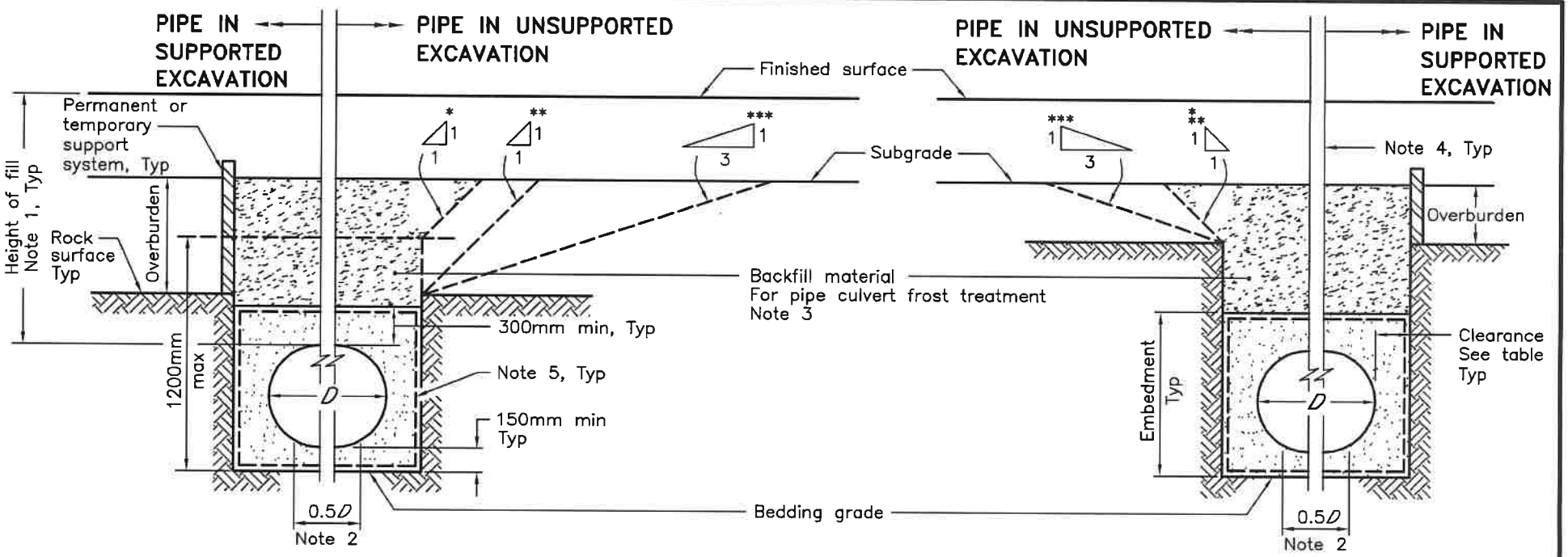
CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

ONTARIO PROVINCIAL STANDARD DRAWING

RIGID PIPE BEDDING, COVER, AND BACKFILL ROCK EXCAVATION

Nov 2015 | Rev 3

OPSD 802.033



ORIGINAL ROCK < 1200mm ABOVE TRENCH BOTTOM

ORIGINAL ROCK ≥ 1200mm ABOVE TRENCH BOTTOM

NOTES:

1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
5 Embedment material shall be wrapped in non–woven geotextile when specified.

A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C Fractured rock shall be treated as Type 1 soil.
D All dimensions are in metres unless otherwise shown.

LEGEND:

D – Inside diameter
* – Type 1 or 2 soil
** – Type 3 soil
*** – Type 4 soil

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

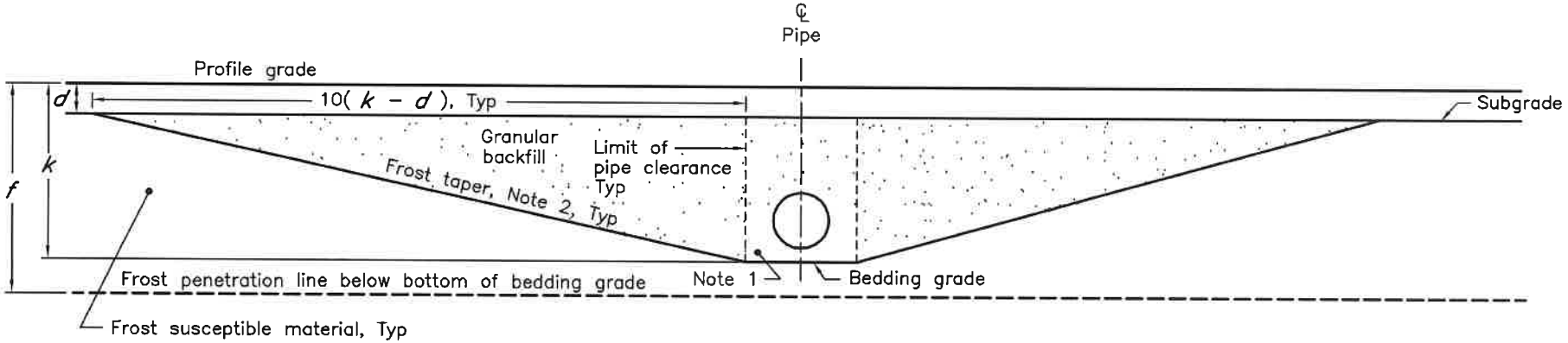
ONTARIO PROVINCIAL STANDARD DRAWING

FLEXIBLE PIPE EMBEDMENT AND BACKFILL ROCK EXCAVATION

Nov 2014 | Rev 3

ONTARIO STANDARDS · MUNICIPAL – PROVINCIAL · OPS

OPSD 802.013



FROST TREATMENT
RIGID AND FLEXIBLE PIPE

NOTES:

1 Pipe embedment or bedding, cover, and backfill shall be according to:
   a) Flexible OPSD 802.010, 802.013, 802.014, 802.020, 802.023, and 802.024.
   b) Rigid – OPSD 802.030, 802.031, 802.032, 802.033, 802.034, 802.050, 802.051, 802.052, 802.053, and 802.054.
2 Frost tapers shall start at bedding grade.

LEGEND:

d –depth of roadbed granular
k –depth of frost treatment below profile grade
f –depth of frost penetration below profile grade

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev	3
FROST TREATMENT – PIPE CULVERTS FROST PENETRATION LINE BELOW BEDDING GRADE			
	OPSD 803.030		

TAB 8

NORTHSHORE ENGINEERING
& DRAFTING SERVICES
184 McNaughton Ave.
North Bay ON. P1C 1G7
TEL 705-495-0981
FAX 705-497-7425
ns@northshore-eng.com

ONTC
North Bay, ON **Nov 17, 2023**
Esmail Zougari **NS#231998**

Project: ONTC Coach Maintenance Facility
Review of existing roof structure (west side) for installation of proposed roofing system

As part of the ONTC proposal to install a new roofing system over the east portion of the existing coach facility roof from peak to eave (west side from gridline 3 to1), Northshore Engineering has been commissioned by the ONTC to complete a structural review/analysis of the existing roof structure in the affected area. The purpose of this review is to ensure the existing structure in its current condition is adequate to support the additional loads associated with the new roofing system.

Northshore Engineering reviewed the existing structural drawings for the building and performed visual site review of the existing structure. The structure in its current condition does not show any signs of deterioration at time of inspection. The existing structure is a pre-engineered steel building by Braemar Building Systems. The roof framing is comprised of 10” cold form steel purlins spaced at approximately 1300mm centers (+/-) supported by six structural steel moment frames spaced at 7500mm centers.

The existing roof structure was analyzed using the provided roofing component loads for the new roof system (see Design Roofing detail) in addition to the existing roof loads and the required snow/rain loads as per the latest (2012) Ontario Building Code. Based on this analysis, the roof structure in its current condition is adequate to support the additional roof load associated with the new roofing system.

Note: Existing structural information is based on drawings prepared by Braemar Building System (Job Number: B5-996) dated August 2005, Halsall Engineers-Consultants dated Oct 2006, and Mitchell Architects dated Aug 2006.

Brody Mann, P. Eng.

Professional Engineers
Ontario

Authorized by the Association of Professional Engineers of Ontario to offer professional engineering services

PART 3 – RFP SPECIFICATIONS
SCHEDULE 3-A-3
QUESTIONS AND ANSWERS FOR CONTRACTORS

Please refer to the questions below from the previous RFP in 2023:

RE: Clarifications/Questions

Item 1: The Main floor drawings were provided by Mitchell. Can the full drawing package for all sections (civil, structural, M&E) be provided so we can see the structural composition of the building? Also, if there are shop drawings or drawings of the existing pre-engineered building, please provide those as well.

Answer: Please find the drawing package attached at the end of this section Schedule 3-A-3 at Tab 1.

Item 2: Will a building permit be required?

Answer: ONTC will not require a building permit. Other required permits shall be provided by the contractor.

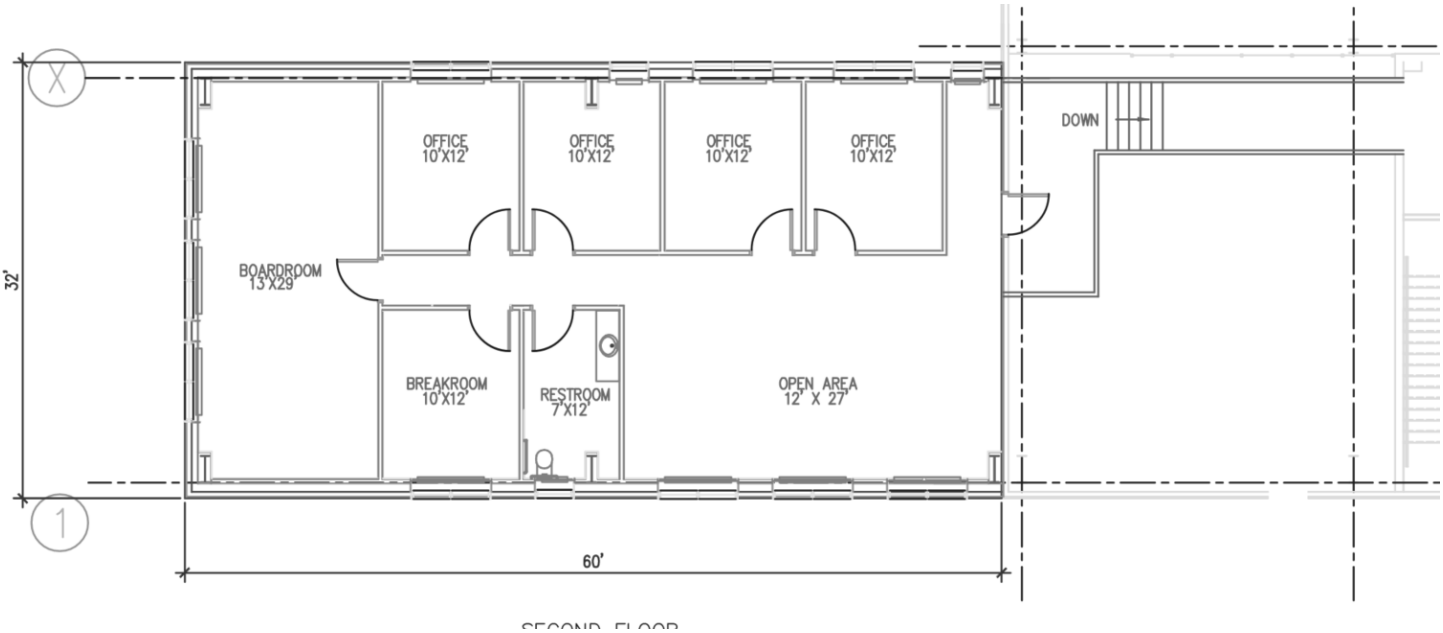
Item 3: Who is responsible for groundwork testing and sampling?

Answer: The successful contractor will be required to perform soil, compaction, concrete and other required tests.

Item 4: Does ONTC has a survey or reports on species at risk for this property and project?

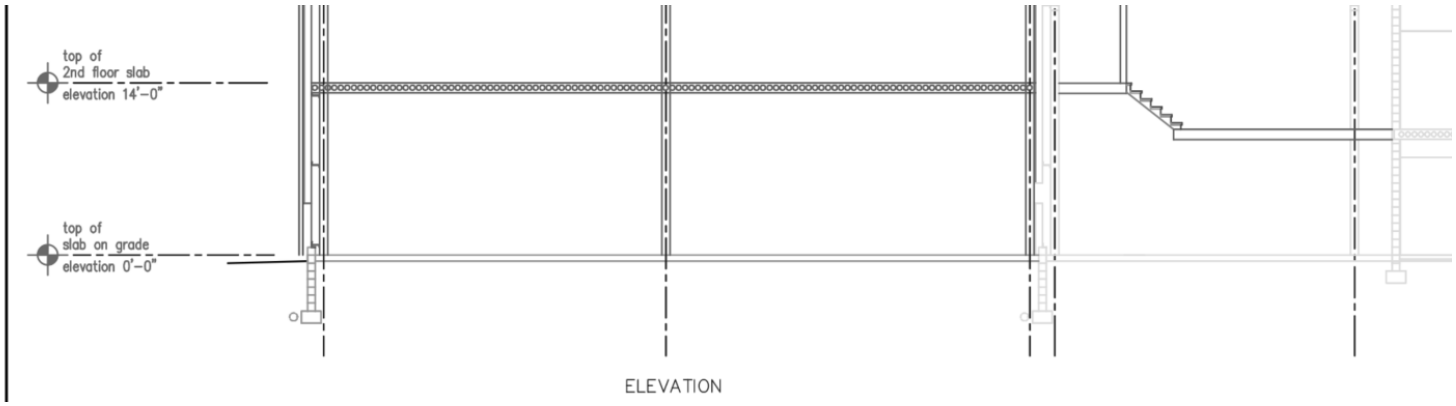
Answer: No. We are not aware of any species at risk on property where the project is to be completed.

Item 5: The RFP requests the proponents to review and determine if an additional emergency exit stair from the new second floor is required. After review, another emergency exit from the second floor is required. Our question is, can ONTC please provide an alternate or updated general floor plan on where they would like this stairwell to be provided, since the stairwell will be taking space away from the floor layout provided for the second floor. Is it acceptable to take room out of the open area shown as an example?



Answer: We could have the emergency exit taken out from the boardroom on the window side.

Item 6: Please confirm the clear distance required between the top of the new slab on grade and the underside of the second floor (finishes? Or lighting? Or structure). Is there a minimum distance that ONTC requires for their needs to perform properly on the ground floor? The drawing in the RFP shows the floor-to-floor requirements but not the clear distance below required. The RFP also mentions to align with the other main stores building, but the overall requirement is not that clear.



Answer: 14’8” top to slab.

Item 7: Can a row of interior columns on the ground floor be used or does the main floor shop area need to be completely open? I.e., clear span?

Answer: The main floor needs to be completely open.

…/3

Item 8: Please provide a list and details regarding the items to be stored in the new warehouse and main stores as noted below.

- Complete detailed review of items to be stored in the new warehouse and the Main Stores with ONTC and incorporate into design and construction to ensure all items are safely stored.

Answer: This is for warehousing space; everything will be on skids and put on racking for skids. Example 4x45gl drums on a skid weigh roughly 1600lbs. We have a rack of windshields that weights an estimated 7000lbs, and we have a forklift that will move around and be stored in the space. Skids are usually 3'x4'.

Item 9: Please confirm that the note from the RFP shown here is intended to mean that both siding types and profiles that are on the existing building are to be used on the new addition.

- Ensure exterior wall materials match current building color, type pattern.

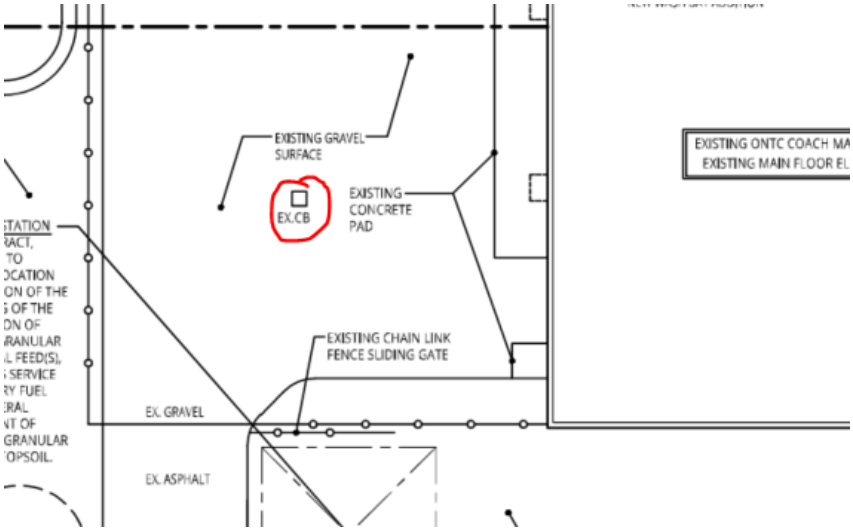
Answer: This requirement is intended to mean that both siding types and profiles that are on the existing building are to be used on the new addition

Item 10: What is the intent of the item below, regarding workstation receptacle? Is this one receptacle? Or are new ONTC supplied and installed workstations to be wired up after they are installed? If so, please provide information on the workstations (type, qty, location). Is data required and how much?

- Install receptacle for all workstation (cubicles), offices and boardroom.

Answer: The intent of the above item is to ensure that the design provides for suitable quantities of receptacles in all rooms and open walls to suit the intended use (office spaces).

Item 11: It appears that the existing catch basin that is shown to be on the west side of the new addition may need to be relocated. Does ONTC have any private locates to show all of the services and underground items? Please advise what u/g services and utilities exist below the area where the new construction will be.



Answer: Contractor to provide their own locates. The existing catch basin is clear of the location where the new extension will be.

Item 12: Please confirm if any AODA requirements will be required for this building addition?

Answer: It is ONTC's intent to provide accessible workspaces. The Contractor shall carry the cost and complete an Architectural review to ensure the new addition will provide compliance with AODA requirements.

Item 13: The geotechnical report provided by Shaba shows a SLS bearing value of 100 Kpa at 4'-6" depth. The geotechnical reports for the previous wash bay project and the existing building project have a higher SLS of 150 Kpa but at 6'-0" depth and our designers want to ask if they can use the SLS of 150 Kpa at 6'-0" depth in their design?

Answer: Shaba Testing Services Ltd. advised that they have concerns about the high-water table that was encountered during the drilling. The water table of course does fluctuate. If the 150 Pa was appropriate for the Wash Bay, it can likely be used for the addition as well.

END OF SECTION

TAB 1

STORM MANHOLE & CATCHBASIN SCHEDULE

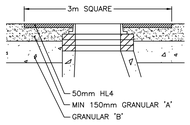
STRUCTURE IDENTIFICATION	OPSD NUMBER	TOP OF GRATE	INVERTS	COMMENTS
CBMH1	701.010	208.89	SW 206.93 E 207.00 N 207.00	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 400.110)
CBMH2	701.010	208.89	E 207.44 S 207.36	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 400.110)
CBMH3	701.010	209.10	E 207.65 W 207.62	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 400.110)
CB4	705.010	209.15	W 207.81	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 400.110)
CB5	705.010	209.10	W 207.18	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 400.110)
MH6	701.010	209.00	NE 206.77 SW 206.71 SE 206.77	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 401.010). SEE NOTE 2 BELOW
MH7	STORMCEPTOR STC 300	209.00	E 206.69 W 206.66	c/w FROST STRAPS (OPSD 701.100) AND GRATE (OPSD 401.010) SEE NOTE 1 BELOW

NOTE
1. INSTALLED RODENT GRATE ON OUTLET PIPE FROM MH 7
2. INSTALLED RODENT GRATE ON INLET PIPE TO MH 6 FROM POND. SEE DETAIL FOR STRUCTURE INFORMATION

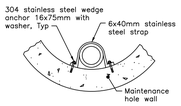
SANITARY MANHOLE SCHEDULE

STRUCTURE IDENTIFICATION	OPSD NUMBER	TOP OF GRATE	INVERTS	COMMENTS
MHA1	701.010	209.51	EX. S 206.91 EX. N 206.93 W 207.00	SEE NOTE BELOW
AT BUILDING			207.84	CONFIRM INVERT WITH MECANICAL DWG'S AND FINAL LOCATION OF PIPE END

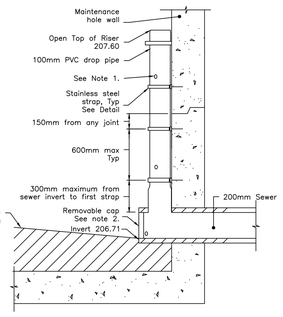
NOTE:
CONTRACTOR CONFIRMED THE EXISTING INVERT ELEVATIONS WITH THE ENGINEER PRIOR TO INSTALLING SEWER. CITY FORCES ON SITE TO OBSERVE CONNECTION. BENCH MANHOLE AS PER OPSD 701.021



ASPHALT PAD AT STRUCTURES
N.T.S.



FASTENER DETAIL



1. Drill 2 – 10mm (120° apart) every 300mm starting at the invert (after assembly)
2. Removable cap must be water tight when inserted.

OUTLET STRUCTURE DETAIL

BENCHMARK

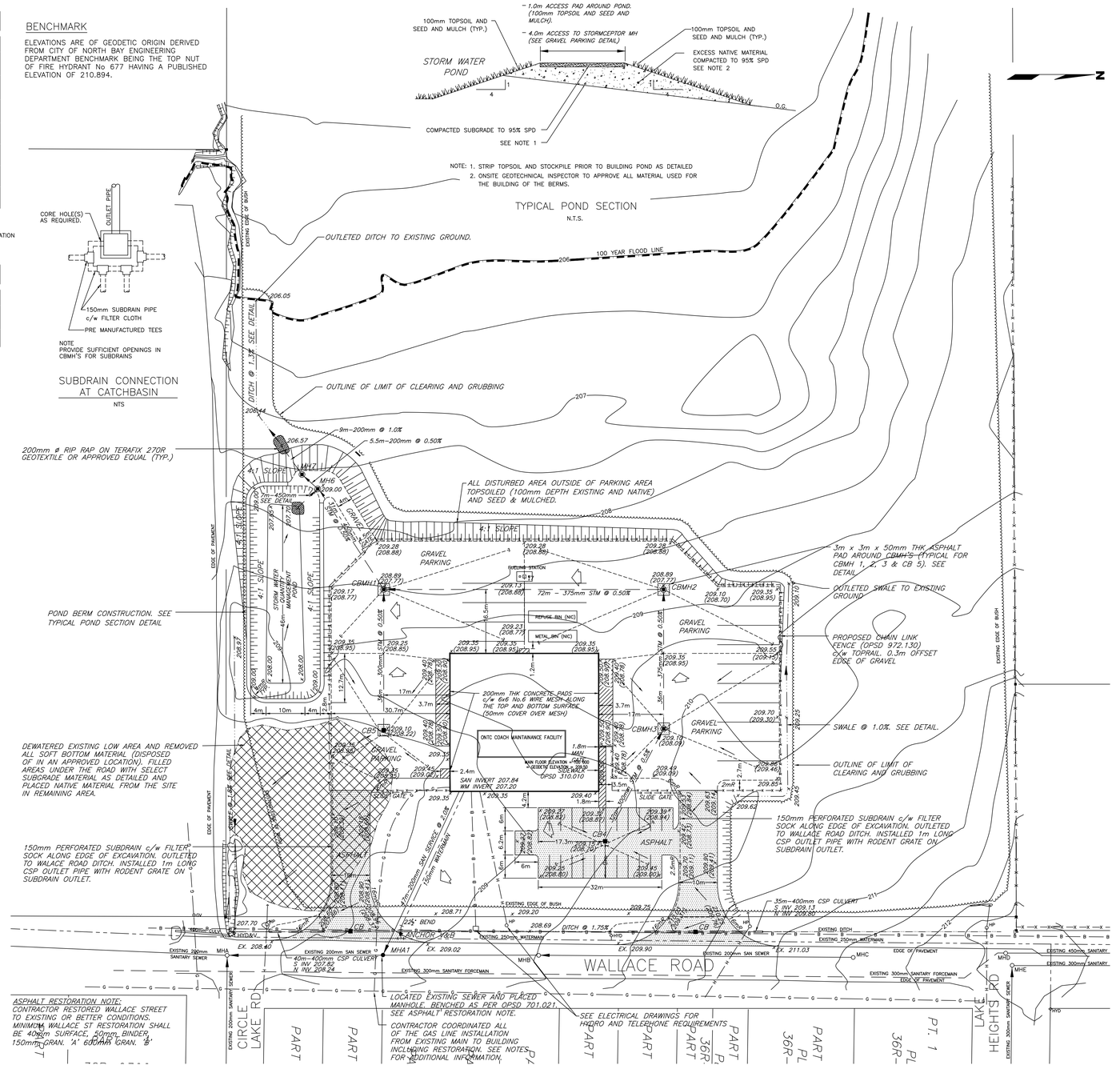
ELEVATIONS ARE OF GEODETIC ORIGIN DERIVED FROM CITY OF NORTH BAY ENGINEERING DEPARTMENT BENCHMARK BEING THE TOP NUT OF FIRE HYDRANT No 677 HAVING A PUBLISHED ELEVATION OF 210.894.

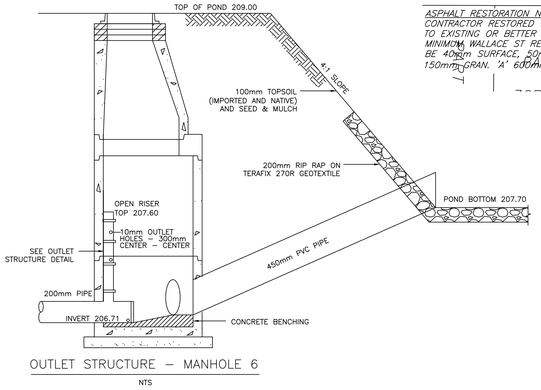
NOTE
PROVIDE SUFFICIENT OPENINGS IN CBMH'S FOR SUBDRAINS

SUBDRAIN CONNECTION AT CATCHBASIN
NTS

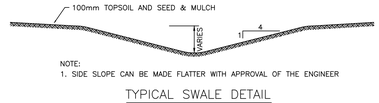
NOTE: 1. STRIP TOPSOIL AND STOCKPILE PRIOR TO BUILDING POND AS DETAILED
2. ONSITE GEOTECHNICAL INSPECTOR TO APPROVE ALL MATERIAL USED FOR THE BUILDING OF THE BERMS.

TYPICAL POND SECTION
N.T.S.



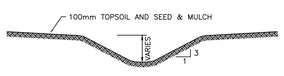


OUTLET STRUCTURE – MANHOLE 6
NTS

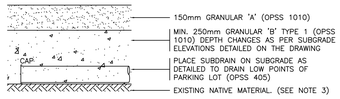


NOTE:
1. SIDE SLOPE CAN BE MADE FLATTER WITH APPROVAL OF THE ENGINEER

TYPICAL SWALE DETAIL
NTS

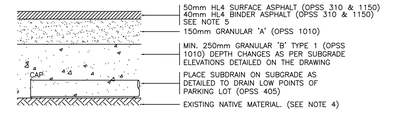


TYPICAL DITCH DETAIL
NTS



NOTES:
1. ALL GRANULAR MATERIAL AND SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS
2. SUBDRAIN SHALL BE 150mm PERFORATED PE PIPE c/w FILTER CLOTH SOCK CAP SHALL BE AS PER MANUFACTURER OF SUBDRAIN. (OPSD 405)
3. WHERE THE EXISTING NATIVE MATERIAL IS BELOW THE PROPOSED ROAD/PARKING LOT SUBGRADE ELEVATION THE CONTRACTOR MAY USE EXCESS SELECT NATIVE MATERIAL TO BUILD UP PARKING LOT/ROAD PRIOR TO PLACING GRANULAR 'B' SUBBASE BUT MUST BE SUPERVISED BY THE PROJECT GEOTECHNICAL CONSULTANT.

GRAVEL PARKING AREA CONSTRUCTION
N.T.S.



NOTES:
1. PROVIDE 10:1 SLOPE ON THE SUBGRADE AT THE ENTRANCES OFF OF WALLACE DRIVE TO MINIMIZE DIFFERENTIAL HEAVING.
2. ALL GRANULAR MATERIAL AND SUBGRADE SHALL BE COMPACTED AS PER SPECIFICATIONS
3. SUBDRAIN SHALL BE 150mm PERFORATED PE PIPE c/w FILTER CLOTH SOCK CAP SHALL BE AS PER MANUFACTURER OF SUBDRAIN. (OPSD 405)
4. WHERE THE EXISTING NATIVE MATERIAL IS BELOW THE PROPOSED ROAD/PARKING LOT SUBGRADE ELEVATION THE CONTRACTOR MAY USE EXCESS SELECT NATIVE MATERIAL TO BUILD UP PARKING LOT/ROAD PRIOR TO PLACING GRANULAR 'B' SUBBASE MATERIAL BUT MUST BE SUPERVISED BY THE PROJECT GEOTECHNICAL CONSULTANT.
5. ONLY SURFACE ASPHALT SHALL BE PAVED IN FRONT PAKING LOT.

ENTRANCE ROADS & FRONT PARKING AREA CONSTRUCTION
N.T.S.

LEGEND

- PROPOSED SILT FENCE (OPSD 219.110)
- PROPOSED 150mm PERFORATED SUBDRAIN c/w FILTER CLOTH SOCK AND CAP
- PROPOSED FENCE
- PROPOSED SWALE/DITCH
- MINOR STORM EVENT SURFACE FLOW DIRECTION
- MAJOR STORM EVENT SURFACE WATER OVERFLOW DIRECTION
- PROPOSED SLOPE GRADING (SLOPE AS INDICATED)
- (211.76) PROPOSED SUBGRADE ELEVATION AT SPOT ELEVATION INDICATED
- 212.30 PROPOSED SPOT ELEVATION
- MH / CB PROPOSED STORM SEWER SYSTEM
- PROPOSED BUSH LINE
- AREA REQUIRING DEWATERING AND SOFT MATERIAL REMOVAL AND FILLED WITH SELECT NATIVE OR IMPORTED MATERIAL
- PROPOSED AREA REQUIRING 200mm ø RIP RAP ON TERAFIX 270R GEOTEXTILE
- PROPOSED AREA INDICATING LOCATION OF ASPHALT PAVING
- PROPOSED CONC. SWK & PAD TO BE INCLUDED IN CIVIL CONTRACTOR WORK
- PROPOSED GRADE BREAK IN ASPHALT
- EXISTING 100 YR FLOOD LINE

NOTES

1. THE POSITION OF POLE LINES, CONDUITS, SEWERS, WATERMAIN, AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES ARE NOT NECESSARILY SHOWN ON THE DRAWINGS AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM THEMSELVES OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE DONE TO THEM.
2. CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT AND/OR RELOCATION OF EXISTING UTILITIES DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE AND COMPLY WITH THE REQUIREMENTS OF ALL UTILITIES WHEN CROSSING OR WORKING NEAR THEIR PLANT.
3. ALL TOPSOIL LOCATED IN AREAS THAT WILL BE DISTURBED DURING CONSTRUCTION SHALL BE STRIPPED AND STOCKPILED IN A LOCATION FOUND BY THE CONTRACTOR AND APPROVED BY THE CONTRACT ADMINISTRATOR. SILT FENCE WILL BE PLACED AROUND THE STOCKPILE TO PREVENT SILT FROM MOVING OFF SITE. ANY SILT FENCE DETAILED ON THE DRAWINGS MUST BE INSTALLED PRIOR TO ANY WORK STARTING ON THE SITE.
4. THIS CIVIL DRAWING MUST BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, AND LANDSCAPE DRAWINGS. ANY DISCREPANCIES MUST BE INDICATED TO THE CONTRACT ADMINISTRATOR FOR CLARIFICATION.
5. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE ACCURACY OF THE BENCHMARK AND ELEVATIONS PRIOR TO CONSTRUCTION. ALL LOCATIONS OF STORM STRUCTURES AND THE PARKING LOT GRADES WILL BE PROVIDED TO THE CIVIL CONTRACTOR USING COORDINATES TIED TO THE EXISTING SURVEY MONUMENTS LOCATED AROUND THE EXISTING BUILDING. EXISTING TOPOGRAPHICAL INFORMATION TAKEN FROM SURVEY PLAN PRODUCED BY GOODRIDGE WALKER LIMITED DATED 2004-01-07.
6. SEWER BEDDING SHALL BE AS PER 802.010 AND GRANULAR BEDDING AND COVER SHALL BE GRANULAR 'A'. AS PER OPSS 1010. ALL STORM SEWER SHALL BE PVC DR35 OR CONCRETE AS PER CSA 257.2 65-D. ALL SANITARY SEWER SHALL BE PVC DR35.
7. WATERMAIN PIPE SHALL BE PVC DR18 CONFORMING TO AWWA 900 AND CERTIFIED TO CSA B137.3 WITH DUCTILE IRON FITTINGS CONFORMING TO AWWA C110. THRUST BLOCKS AS PER OPSD 1103.010 SHALL BE USED FOR ALL BENDS, TEES, ETC. VALVE SHALL CONFORM TO C500 OR C509. APPROVED MANUFACTURERS ARE MUELLER OR CLOW. CONTRACTOR MUST INSTALL, DISINFECT, SWAB, TEST, ETC. AS PER OPSS 701 (DATED APRIL 2004). MINIMUM COVER OVER WATERMAIN PIPE IS 2.0m
8. CONTRACTOR SHALL USE ANY EXCESS NATIVE MATERIAL FROM THE VARIOUS CONSTRUCTION ACTIVITIES TO PROVIDE THE GRADING AS INDICATED. ALL EXCESS MATERIAL TO THESE OPERATIONS SHALL BE DISPOSED OF WITHIN THE EXISTING LOW AREA IN THE SOUTH WEST CORNER AS INDICATED AND ANY EXCESS MATERIAL SHALL BE HAULED OFF SITE TO A LOCATION FOUND BY THE CONTRACTOR. THERE WILL BE NO COMPENSATION FOR IMPORTING MATERIAL TO PROVIDE GRADING AROUND PROPOSED BUILDING AND ON THE POND BERMS. CONTRACTOR SHALL ROUGH GRADE STOCKPILED TOPSOIL TO A DEPTH OF MINIMUM 100mm ON ALL DISTURBED AREAS ONCE THE SURFACE GRADE HAS BEEN APPROVED BY THE CONTRACT ADMINISTRATOR. CONTRACTOR WILL IMPORT TOPSOIL IF THERE IS NOT SUFFICIENT TOPSOIL TO PLACE AS INDICATED. NO ADDITIONAL PAYMENT OR CLAIM WILL BE PROVIDED TO THE CONTRACTOR FOR IMPORTING SELECT SUBGRADE MATERIAL OR TOPSOIL. SEE THE LANDSCAPE PLAN FOR LOCATIONS REQUIRING PLANTING, SOD AND/OR HYDRAULICALLY SEEDED AREAS.
9. FOR THE GAS LINE SIZE REQUIRED THE CONTRACTOR MUST REFER TO THE MECHANICAL DRAWINGS AND COORDINATE ALL INSTALLATION WITH THE LOCAL AUTHORITY AND MECHANICAL CONTRACTOR. GENERAL CONTRACTOR MUST PROVIDE ALL TRENCHING AND BACKFILLING FOR THE GAS MAIN. UNION GAS TO INSTALL MAIN AS DETAILED.
10. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORTS FOR THE LOCATION OF ALL THE BOREHOLES AND THEIR DESCRIPTIONS. IT IS CLEARLY UNDERSTOOD THAT THE INFORMATION WAS ACCUMULATED FOR DESIGN PURPOSES ONLY AND ANY INTERPRETATION ON THEM BY THE TENDERER IS SOLELY THE RESPONSIBILITY OF THE TENDERER

no.	revisions	date
3	AS CONSTRUCTED	SEPT, 2006
2	ISSUED FOR TENDER	MAY 6, 2005
1	PRELIMINARY WORKING DRAWINGS	MAR. 19, 2004

Verify dimensions and details and report all discrepancies to Architect. Do not scale drawings.

ORIGINAL SIGNED BY DAVID DIETRICH 4 MAY 2005

KMK Consultants Limited

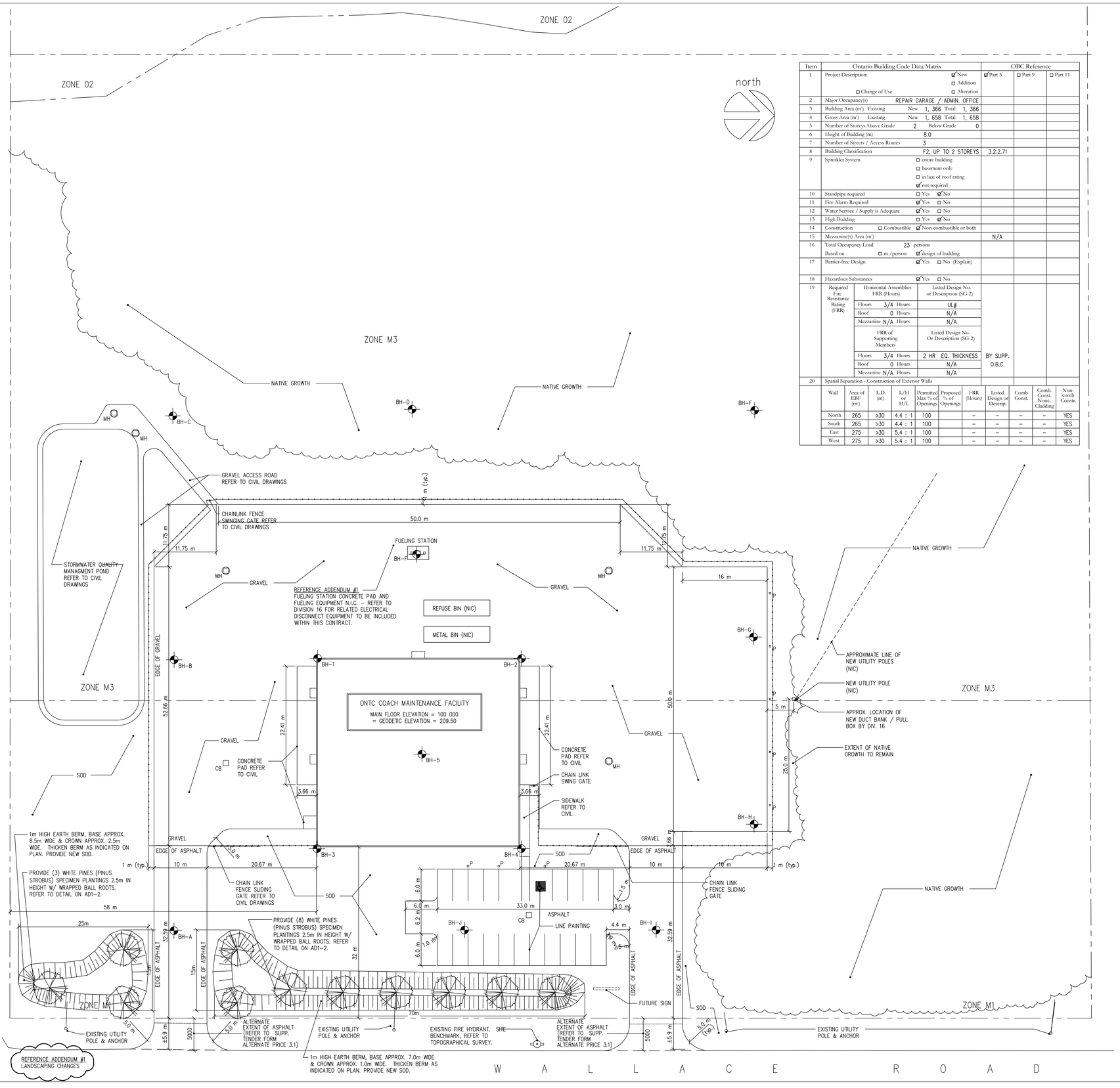
KMK FILE REFERENCE No. : 2576-A-1

Mitchell Associates architect inc.
124a Main Street East, North Bay, Ontario, P1B 1A8, Voice 705.474 3250 Facsimile 705.474 0737

ONTC
Coach Maintainance Facility
North Bay, Ontario

SITE SERVICING & GRADING PLAN

Date: FEB 2004
Scale: 1:500
Project No.:
Drawn By: G.Mc.
Library No.:
Drawing No.: C100



Item	Ontario Building Code Data Matrix			OBC Reference		
1	Project Description: ☐ Change of Use		☑ New ☐ Addition ☐ Alteration	☑ Part 3	☐ Part 9	☐ Part 11
2	Major Occupancy(s)		REPAIR GARAGE / ADMIN. OFFICE			
3	Building Area (m²) Existing	New 1, 366	Total 1, 366			
4	Gross Area (m²) Existing	New 1, 658	Total 1, 658			
5	Number of Storeys Above Grade	2	Below Grade 0			
6	Height of Building (m)		8.0			
7	Number of Streets / Access Routes		3			
8	Building Classification		F2, UP TO 2 STOREYS	3.2.2.71		
9	Sprinkler System		☐ entire building ☐ basement only ☐ in lieu of roof rating ☑ not required			
10	Standpipe required		☐ Yes ☑ No			
11	Fire Alarm Required		☑ Yes ☐ No			
12	Water Service / Supply is Adequate		☑ Yes ☐ No			
13	High Building		☐ Yes ☑ No			
14	Construction ☐ Combustible		☑ Non-combustible or both			
15	Mezzanine(s) Area (m²)			N/A		
16	Total Occupancy Load 23 persons Based on ☐ m²/person		☑ design of building			
17	Barrier-free Design		☑ Yes ☐ No (Explain)			
18	Hazardous Substances		☑ Yes ☐ No			
19	Required Fire Resistance Rating (FRR)	Horizontal Assemblies FRR (Hours)	Listed Design No. or Description (SG-2)	BY SUPP. O.B.C.		
		Floors 3/4 Hours	UL#			
		Roof 0 Hours	N/A			
		Mezzanine N/A Hours	N/A			
		FRR of Supporting Members	Listed Design No. Or Description (SG-2)			
		Floors 3/4 Hours	2 HR EQ. THICKNESS			
		Roof 0 Hours	N/A			
		Mezzanine N/A Hours	N/A			
20	Spatial Separation - Construction of Exterior Walls					

Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Descrip.	Comb Const.	Comb. Const. None. Cladding	Non-comb Constr.
North	265	>30	4.4 : 1	100		–	–	–	–	YES
South	265	>30	4.4 : 1	100		–	–	–	–	YES
East	275	>30	5.4 : 1	100		–	–	–	–	YES
West	275	>30	5.4 : 1	100		–	–	–	–	YES

AS-BUILTS

Legend:

INDICATES CHAIN LINK FENCE REFER TO CIVIL DRAWINGS

BH- # INDICATES BORE HOLE (BH) LOCATION. REFER TO ONTC BUS GARAGE GEOTECHNICAL INVESTIGATION.

P INDICATES PARKING PLUG-IN BOLLARD
CONFIRM LOCATIONS W/ CONSULTANT
REFER TO ELECTRICAL DRAWINGS FOR DETAILS

CB INDICATES CATCH BASIN REFER TO CIVIL DRAWINGS

MH INDICATES CATCH BASIN MANHOLE REFER TO CIVIL DRAWINGS

General Notes:

1. BOREHOLE INFORMATION AS CONDUCTED BY: MERLEX ENGINEERING LTD. REPORT #04/01/04003, DATED: MARCH, 2004.
2. SURVEY INFORMATION TAKEN FROM TOPOCRAPHICAL SURVEY PLAN DRAWING DATED JANUARY 13, 2004 PROVIDED BY GOODRIDGE WALKER LTD., OLS.
3. CONTRACTOR TO CONFIRM LOCATION OF ALL EXISTING SITE SERVICES.

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

ONTC

Motor Coach Maintenar & Administration Facili North Bay ON.

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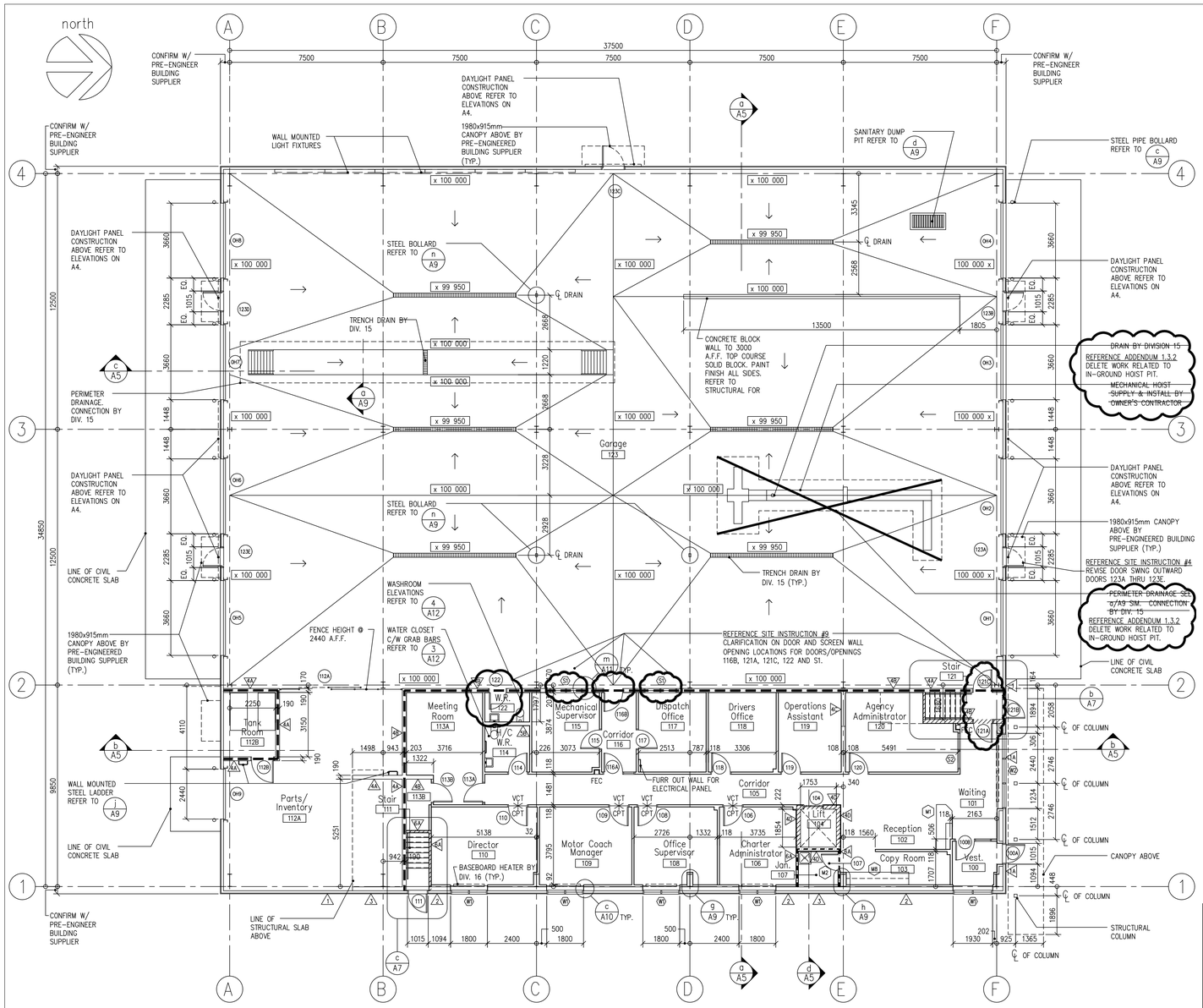
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-SP1-RD
Drawn By:	a.b-p.
Scale:	as noted

Site Plan

Drawing No: A1



NOTES:

-PRE-ENGINEERED STRUCTURAL STEEL SIZE & CONFIGURATION SHOWN IS APPROXIMATE. GENERAL CONTRACTOR TO COORDINATE ALL ACTUAL STRUCTURAL STEEL SIZES & LOCATIONS COMPLY W/ GENERAL INTENT SHOWN.

-IN GROUND HOIST (BY OWNER) INCLUDES CAST-IN-PLACE STRUCTURAL MEMBERS & CONDUIT. CONTRACTOR TO COORDINATE AND SEQUENCE THE PLACEMENT OF HOIST COMPONENTS REQUIRED TO BE CAST-IN-PLACE.

Legend:

- Lobby / 100 — INDICATES ROOM NAME AND NUMBER. REFER TO ROOM FINISH SCHEDULE
- a / A0 — INDICATES BUILDING SECTION REFERENCE; SECTION NUMBER; DRAWING WHERE SECTION LOCATED
- b / a A0 c — INDICATES ELEVATION REFERENCE; ELEVATION NUMBER; DRAWING WHERE ELEVATION LOCATED
- 1 — INDICATES GRID LINE REFERENCE
- INDICATES DIMENSION TAKEN TO GRID LINE REFERENCE ONLY.
- INDICATES DIMENSION TAKEN TO OTHER THAN GRID LINE REFERENCE.
- 1 — INDICATES WALL TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA DRAWING A2.
- 1 — INDICATES FLOOR TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA ON DRAWING A2.
- 1 — INDICATES ROOF TYPE CONSTRUCTION. REFER TO CONSTRUCTION DATA ON DRAWING A2.
- 100 — INDICATES DOOR NUMBER. REFER TO DOOR SCHEDULE DRAWING c/A3.
- S1 — INDICATES WINDOW NUMBER. REFER TO WINDOW SCHEDULE DRAWING d/A3.
- VCT / CPT — INDICATES FLOOR FINISH TRANSITION. REFER TO ROOM FINISH SCHEDULE ON b/A3.
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 2 HOUR FIRE SEPARATION
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 1 HOUR FIRE SEPARATION
- INDICATES WALL ASSEMBLY CONSTRUCTED AS A 3/4 HOUR FIRE SEPARATION
- M# — INDICATES MILLWORK ITEMS, REFER TO MILLWORK SCHEDULE ON DRAWING e/A3.
- FEC — FIRE EXTINGUISHER CABINET
- FD — INDICATES FLOOR DRAIN. SLOPE FLOOR TO DRAIN. REFER TO MECHANICAL DRAWINGS FOR LOCATION.
- S.B.O. — SUPPLIED BY OTHERS. INSTALLATION TO BE INCLUDED IN CONTRACT.
- x 100 000 — INDICATES ELEVATION OF FINISHED FLOOR FOR DRAINAGE OF SLAB TO TRENCH DRAINS
- INDICATES SLOPE DIRECTION OF FLOOR SLAB

General Notes:

1. READ ARCHITECTURAL DRAWINGS IN CONJUNCTION WITH CIVIL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
2. EXTERIOR DIMENSIONS ARE TAKEN FROM O/S FACE OF METAL CLADDING TO O/S FACE OF METAL CLADDING UNLESS NOTED OTHERWISE.
3. INTERIOR DIMENSIONS ARE TAKEN FROM O/S FACE OF GYPSUM WALLBOARD TO O/S FACE OF GYPSUM WALLBOARD UNLESS NOTED OTHERWISE.
4. EXTERIOR WALLS OF GARAGE ARE WALL TYPE 1 UNLESS ARE EXISTING OR NOTED OTHERWISE.
5. INTERIOR WALLS ARE WALL TYPE 4A UNLESS NOTED OTHERWISE.
6. ALL NON RATED WALLS ON GROUND FLOOR TO EXTEND TO U/S OF PRECAST CONCRETE SLAB. ALL NON-RATED WALLS ON SECOND FLOOR TO EXTEND 150mm ABOVE FINISHED CEILINGS AND BRACE TO U/S OF SLAB/ROOF ASSEMBLY AS REQUIRED, UNLESS NOTED OTHERWISE.
7. ALL WALLS DESIGNATED AS FIRE SEPARATIONS AND SMOKE SEPARATIONS TO EXTEND TO U/S OF PRECAST FLOOR SLABS/STEEL ROOF SYSTEM. FIRE STOP ALL JOINTS AS SPECIFIED IN SECTION 07270, FIRESTOPPING AND SMOKE SEALS.
8. STRUCTURAL STEEL SHOWN IN DRAWINGS ARE APPROXIMATE. ACTUAL SIZES AND MEMBER TYPES MAY VARY BY PRE-ENGINEERED BUILDING SUPPLIER.

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

AS-BUILTS

Construction Data

EXTERIOR WALLS

1 — PREFINISHED METAL SIDING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-3.5 (R-20); PREFINISHED METAL LINER PANEL; PRE-ENGINEERED BUILDING WALL GIRTS

1A — PREFINISHED METAL SIDING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-3.5 (R-20); PREFINISHED METAL LINER PANEL; 92mm METAL STUD FRAMING @ 400mm O.C. MAXIMUM; 12.7mm GYPSUM WALLBOARD

2 — PREFINISHED METAL SIDING; GALVANIZED METAL Z-GIRTS; 90mm RIGID INSULATION RSI-3.5 (R-20); A/V BARRIER MEMBRANE; 190mm CONCRETE BLOCK; 92mm METAL STUD FRAMING @ 400 O.C. MAX; 12.7mm GYPSUM WALLBOARD

3 — SAME AS 2 BUT DELETE METAL STUD FRAMING AND GYPSUM

FOUNDATION WALLS

3A — 10mm DAMP PROOFING; 190mm PARGING TO 300mm BELOW FINISHED GRADE; 50mm STRUCTURAL CONCRETE BLOCK FOUNDATION WALL; EXTRUDED POLYSTYRENE INSULATION TO 1200mm BELOW FINISHED GRADE

3B — 10mm DAMP PROOFING; 290mm PARGING TO 300mm BELOW FINISHED GRADE; 50mm STRUCTURAL CONCRETE BLOCK FOUNDATION WALL; EXTRUDED POLYSTYRENE INSULATION TO 1200mm BELOW FINISHED GRADE

INTERIOR WALLS – RATED WALLS REFER TO G.N. # 6 & 7

4A — 190mm CONCRETE BLOCK (MINIMUM 75% SOLID)

2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4B — SAME AS 4A BUT ADD 1 LAYER OF 12.7mm GYPSUM WALLBOARD LAMINATED DIRECTLY TO BLOCK ONE SIDE

2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4C — SAME AS 4A BUT ADD 2 LAYERS OF 12.7mm GYPSUM WALLBOARD (LAMINATE ONE EACH SIDE)

2 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

4D — 190mm CONCRETE BLOCK; 19mm METAL FURRING @ 400mm O.C.; 12.7mm GYPSUM WALLBOARD

3/4 HOUR OR 1 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20 AS INDICATED ON PLANS

4E — SAME AS 4D BUT REVISE METAL FURRING TO 92mm METAL STUDS @ 400mm O.C.

1 HOUR RATED FIRE SEPARATION BY ONTARIO CONCRETE BLOCK ASSOCIATION SIZE CODE 20

5A — 12.7mm GYPSUM WALLBOARD; 92mm METAL STUD FRAMING @ 400mm O.C. MAXIMUM; 90mm FIBREGLASS BATT INSULATION; 12.7mm GYPSUM WALLBOARD

5B — SAME AS 5A BUT REVISED METAL STUDS TO 152mm

6A — SAME AS 5A BUT REVISE BOTH LAYERS OF GYPSUM TO 15.9mm TYPE 'X'

1 HOUR RATED FIRE SEPARATION BY ULC # W407

6B — SAME AS 6A BUT REVISE METAL STUDS TO 152mm

FLOOR ASSEMBLIES

1A — 150mm HARDENER; CONCRETE SLAB ON GRADE; 0.254mm POLYETHYLENE VAPOUR BARRIER; GRANULAR BASE/SUB-BASE

1B — 100mm CONCRETE SLAB ON GRADE; 0.254mm POLYETHYLENE VAPOUR BARRIER; GRANULAR BASE/SUB-BASE

2 — 6mm (MIN.) CONCRETE LEVELLING SKIM COAT; 250mm STRUCTURAL CORE SLAB; SUSPENDED FINISHED CEILING AS NOTED ON REFLECTED CEILING PLANS

3/4 HOUR FIRE SEPARATION BY EQUIVALENT CONCRETE THICKNESS IN ACCORDANCE WITH SUPPLEMENTARY OBC.

ROOF ASSEMBLIES

1 — PREFINISHED SHEET METAL ROOFING; THERMAL SUB-GIRTS; FIBREGLASS BLANKET INSULATION RSI-4.6 (R-26); PREFINISHED METAL LINER PANEL; PRE-ENGINEERED BUILDING ROOF PURLINS

ONTC

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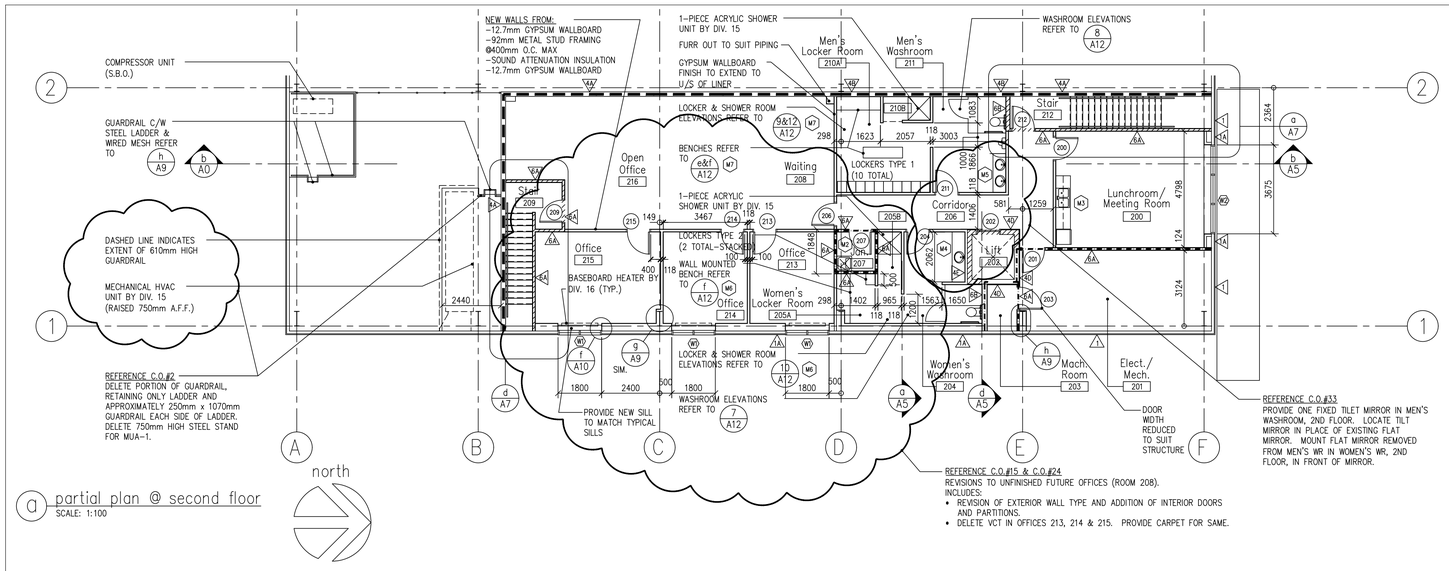
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-FP1-RD
Drawn By:	a.b-p.
Scale:	as noted

Ground Floor Pl & Construction Data

Drawing No: A2



(a) partial plan @ second floor
SCALE: 1:100

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS		CEILING		REMARKS
				MATERIAL	FINISH	MATERIAL	FINISH	
100	VESTIBULE	VCT	RB	GWB	PT	ACT	–	
101	WAITING	VCT	RB	GWB	PT	ACT	–	
102	RECEPTION	VCT	RB	GWB	PT	ACT	–	
103	COPY ROOM	VCT	RB	GWB	PT	ACT	–	
104	LIFT	RT	–	–	–	–	–	
105	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
106	OFFICE	CPT	RB	GWB	PT	ACT	–	
107	JANITOR	VCT	RB	GWB	PT	ACT	–	
108	OFFICE	CPT	RB	GWB	PT	ACT	–	
109	OFFICE	CPT	RB	GWB	PT	ACT	–	
110	OFFICE	CPT	RB	GWB	PT	ACT	–	
111	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1–PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDINGS
112A	PARTS & INVENT.	CONC.	–	CB/LIN.	PT/PREF.	–	–	COLOURED CONC. HARDENER
112B	TANK ROOM	CONC.	–	CB/LIN.	PT/PREF.	CONC.	PT	COLOURED CONC. HARDENER
113A	MEETING ROOM	VCT	RB	GWB	PT	ACT	–	
113B	CLOSET	VCT	RB	GWB	PT	GWB	PT	
114	WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 3/A12
115	OFFICE	VCT	RB	GWB	PT	ACT	–	
116	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
117	OFFICE	VCT	RB	GWB	PT	ACT	–	
118	OFFICE	VCT	RB	GWB	PT	ACT	–	
119	OFFICE	VCT	RB	GWB	PT	ACT	–	
120	OFFICE	VCT	RB	GWB	PT	ACT/GWB	–/PT	
121	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1–PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDING
122	WASHROOM	VCT	CT	CB/GWB	PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 4/A12
123	GARAGE BAYS	CONC.	–	CB/LIN.	PT/PREF.	–	–	COLOURED CONC. HARDENER PT FINISH WASH BAY WALL
200	LUNCH ROOM	VCT	RB	GWB	PT	ACT	–	
201	MECH./ ELECT.	CONC.	SEALER	GWB	PT	ACT	–	
202	LIFT	RT	–	–	–	–	–	
203	MACHINE ROOM	CONC.	RB	CB GWB LIN.	PT PT PREF.	ACT	–	
204	WOMEN'S WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 7/A12
205A	WOMEN'S LOCKER ROOM	VCT	RB	GWB	PT	ACT	–	
205B	SHOWER	CT	CT	CT	–	GWB	PT	CT TO U/S OF CEILING SEE – 10/A12
206	CORRIDOR	VCT	RB	GWB	PT	ACT	–	
207	JANITOR	VCT	RB	GWB	PT	ACT	–	
208	UNFINISHED FUTURE OFFICES	VCT	RB	GWB	PT	ACT	–	
209	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1–PIECE RUBBER STAIR TREAD/ RISER/NOSING C/W NOSING @ LANDING
210A	MEN'S LOCKER ROOM	VCT	RB	GWB	PT	ACT	–	
210B	SHOWER	CT	CT	CT	–	GWB	PT	CT TO U/S OF CEILING SEE – 11/A12
211	MEN'S WASHROOM	VCT	RB	CT/GWB	–/PT	ACT	–	EXTENT OF CT SEE ELEVATIONS – 8/A12
212	STAIR	RB * / VCT @ LANDINGS	RB @ LANDINGS	CB GWB LIN.	PT PT PREF.	ACT	–	PT – ALL STEEL STAIR COMP. * 1–PIECE RUBBER STAIR TREAD/ RISER/NOSING

LEGEND
ACT ACOUSTICAL CEILING TILE
CPT CARPET
CB CONCRETE BLOCK
CT CERAMIC TILE
GWB GYPSUM WALL BOARD
PT PAINT
LIN. EXT. WALL SYSTEM LINER
RB RUBBER BASE
RT RUBBER TILE
VCT VINYL COMPOSITE TILE
PREF. PREFINISHED
– NONE

(b) room finish schedule

DOOR NO.	DOOR(S) W X H X T	ELEV.	MATERIAL	FINISH	LABEL	FRAME(S) ELEV.	MATERIAL	FINISH	DETAILS HEAD	JAMB	SILL	REMARKS
100A	915x2150x45	B	TBAL	AN	–	1	TBAL	AN	d/A11	f/A11	e/A11	EXTERIOR DOOR, H/C POWER OPERATOR
100B	915x2150x45	B	AL	AN	–	2	AL	AN	p/A11	p/A11	–	SIDELITE, H/C POWER OPERATOR
104	BY MANUF.	–	–	PT	45 MIN.	–	–	PT	–	–	–	SEE LIFT SPECIFICATIONS
106	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
107	813x2150x45	A	SC	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
108	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
109	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
110	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
111	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
112A	1830x3000	–	–	–	–	–	–	–	–	–	–	SLIDING DOOR BY MESH PARTITION SUPPLIER
112B	1067x2150x45	A	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
113A	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
113B	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
114	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
115	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
116A	915x2150x45	B	HM	PT	–	3	HM	PT	n/A11	n/A11	–	SIDELITE, CLOSER
116B	915x2150x45	C	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
117	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
118	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
119	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
120	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
121A	915x2150x45	C	HM	PT	45 MIN.	1	HM	PT	k/A11 sim	m/A11 sim.	–	CLOSER
121B	915x2150x45	B	TBAL	AN	–	1	TBAL	AN	d/A11	f/A11	e/A11	EXTERIOR DOOR KEYPAD + CLOSER
121C	915x2150x45	C	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
122	915x2150x45	A	HM	PT	90 MIN.	1	HM	PT	k/A11	m/A11	–	CLOSER
123A	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123B	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123C	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123D	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
123E	915x2150x45	A	IHM	PT	–	1	IHM	PT	a/A11	c/A11	b/A11	EXTERIOR DOOR, CLOSER
200	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
201	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
202	BY MANUF.	–	–	PT	45 MIN.	–	–	PT			–	SEE LIFT SPECIFICATIONS
203	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
204	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
206	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	–
207	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
209	915x2150x45	A	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
211	915x2150x45	A	SC	PT	–	1	HM	PT	n/A11	n/A11	–	CLOSER
212	915x2150x45	C	HM	PT	45 MIN.	1	HM	PT	n/A11	n/A11	–	CLOSER
0H1	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H2	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H3	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H4	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H5	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H6	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H7	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H8	3660x4270x45	E	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR
0H9	2440x2440x45	D	PREM.	PREF.	–	–	HM	PT	g/A11	j/A11	h/A11	MOTORIZED, OVERHEAD DOOR

LEGEND
AN ANODIZED
PREM. PREMANUFACTURED
HM HOLLOW METAL
PT PAINT
IHM INSULATED HOLLOW METAL
SC SOLID CORE WOOD
TBAL THERMALLY BROKEN ALUMINUM
PREF. PREFINISHED
PREM. PREMANUFACTURED

NOTE: FOR ALL DOOR & FRAME ELEVATIONS REFER TO ELEVATIONS ON DRAWING g/A4.

REFERENCE ADDENDUM #1
REVISED DOOR AND FRAME INFORMATION

(c) door schedule

WINDOW NO.	SIZE W X H	HEAD (AFF)	ELEV.	MATERIAL	FINISH	LABEL	REMARKS
W1	1800 x 1600	2200	W1	TBAL	AN	–	C/W AWNING SASH
W2	4800 x 1600	2200	W2	TBAL	AN	–	C/W AWNING SASH
S1	1590 x 1400	2200	S1	HM	PT	1.5 HR	–
S2	1800 x 1400	2200	S2	HM	PT		–

LEGEND
AL ALUMINUM
TBAL THERMALLY BROKEN ALUMINUM
– NONE
AN ANODIZED
IHM INSULATED HOLLOW METAL
HM HOLLOW METAL
PT PAINT

NOTE: FOR ALL WINDOW & SCREEN ELEVATIONS REFER TO ELEVATIONS ON DRAWING e/A5

(d) window & screen schedule

MILLWORK NO.	ROOM NO.	DESCRIPTION	DETAIL NO.
M1	102	RECEPTION COUNTER	1/A12
M2	107	JANITOR CLOSET ELEVATIONS	6/A12
M3	200	LUNCHROOM COUNTER	5/A12
M4	204	WOMEN'S WASHROOM ELEVATIONS	7/A12
M5	211	MEN'S WASHROOM ELEVATIONS	8/A12
M6	205A, 205B	WOMEN'S LOCKER/SHOWER ROOM BENCHES & ELEVATIONS	10/A11
M7	210A, 210B	MEN'S LOCKER/SHOWER ROOM BENCHES & ELEVATIONS	9/A12 & 12/A12
M8	103	COPY ROOM COUNTER	11/A12

NOTE: ALL DETAILS REFERENCED ABOVE TO BE FOUND ON DRAWINGS A12

(e) millwork schedule

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2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-FP1-RD
Drawn By:	a.b-p.
Scale:	as noted

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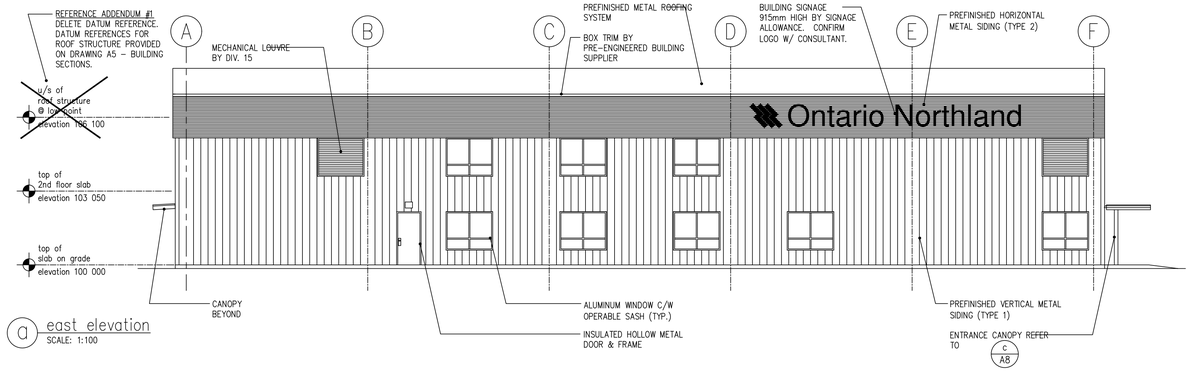
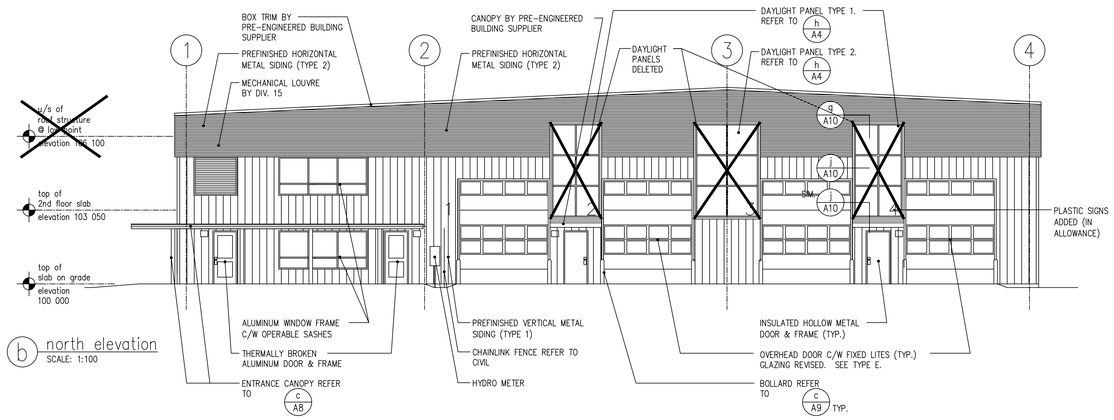
Second Floor Pl & Schedules

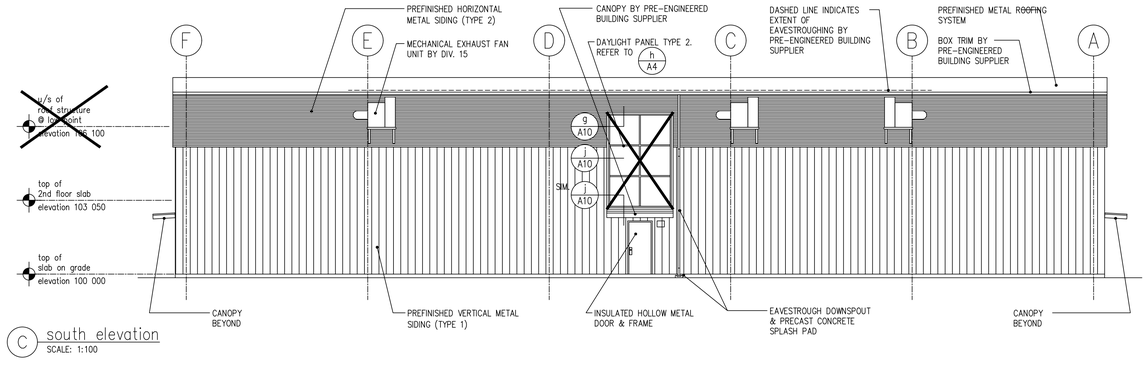
Drawing No: A3



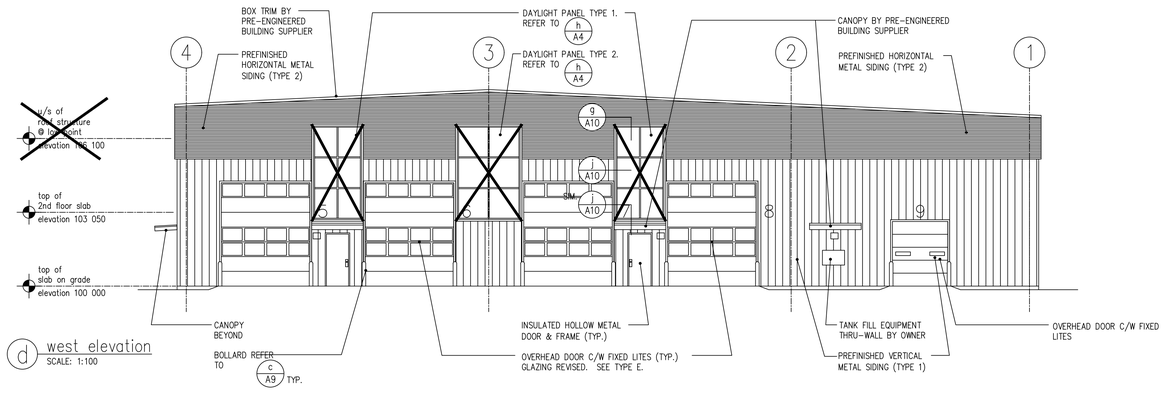
a east elevation
SCALE: 1:100



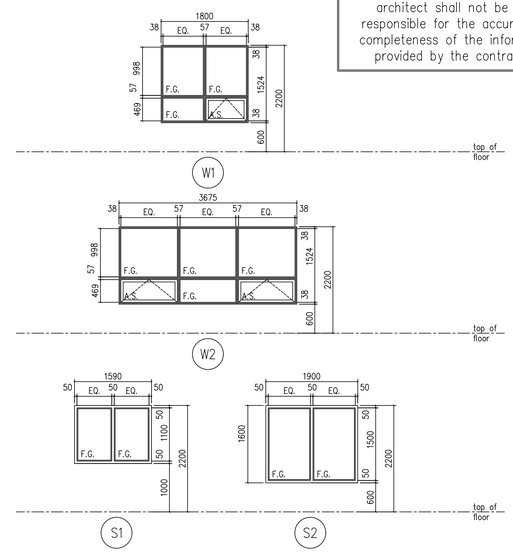
b north elevation
SCALE: 1:100



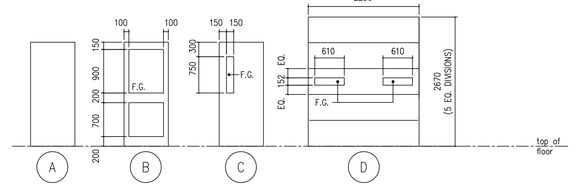
c south elevation
SCALE: 1:100

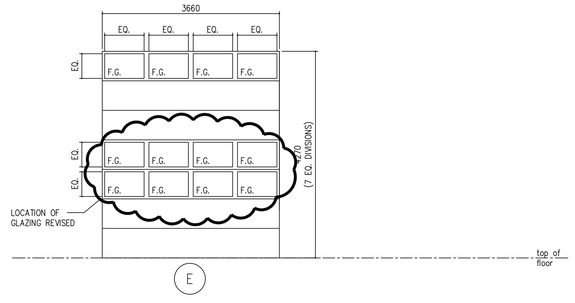


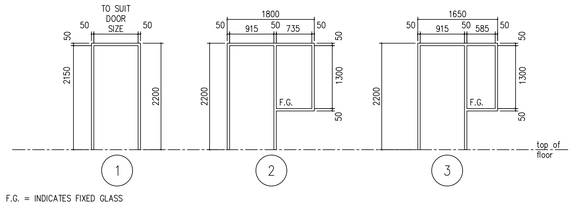
d west elevation
SCALE: 1:100



f window frame elevations
SCALE: 1:50







F.G. = INDICATES FIXED GLASS

g door & door frame elevations
SCALE: 1:50

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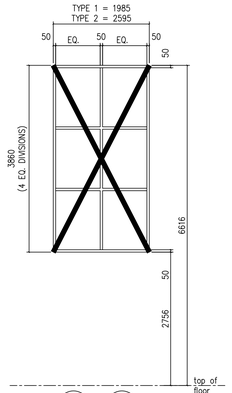

h daylight panel elevations
SCALE: 1:50

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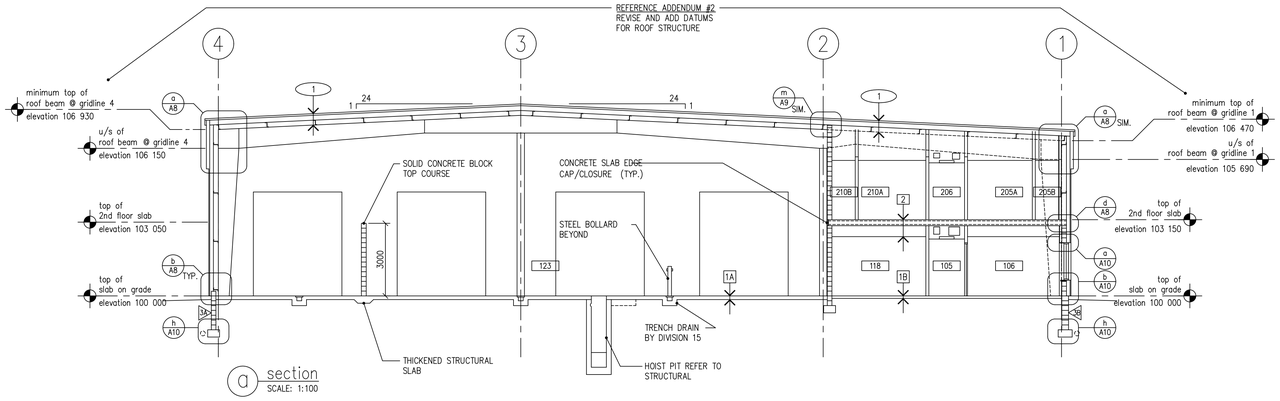
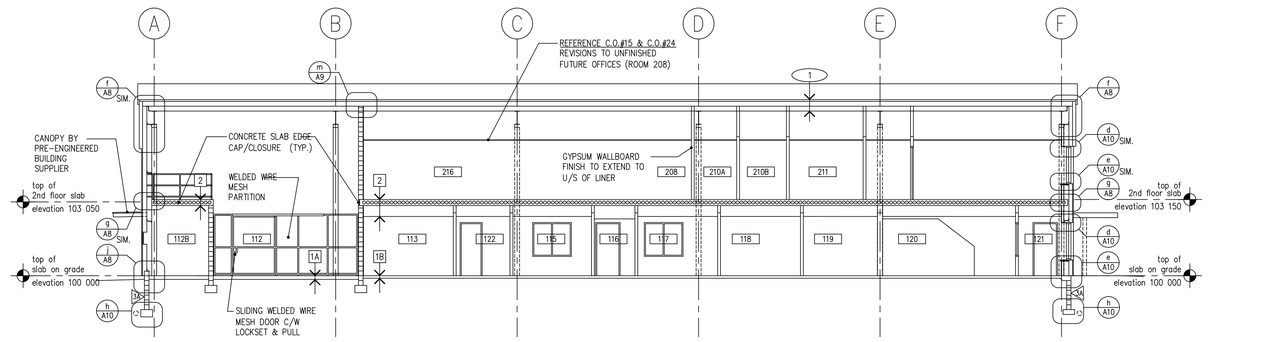
Project No:	20381
Library No:	20381-EL1-RD
Drawn By:	a.b-p.
Scale:	as noted

Elevations & Frames/Panels

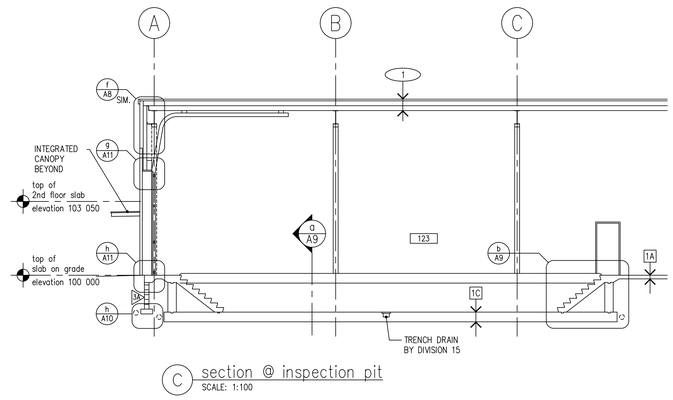
Drawing No:
A4



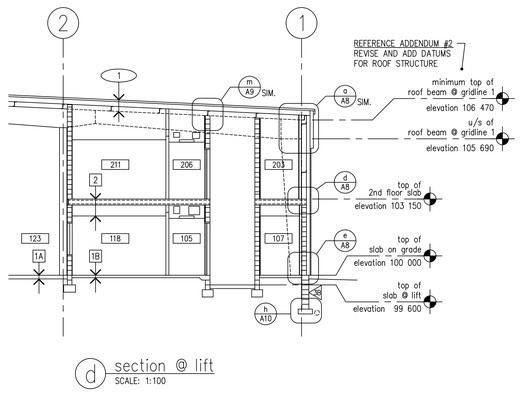
a section
SCALE: 1:100



b section @ offices
SCALE: 1:100



c section @ inspection pit
SCALE: 1:100



d section @ lift
SCALE: 1:100

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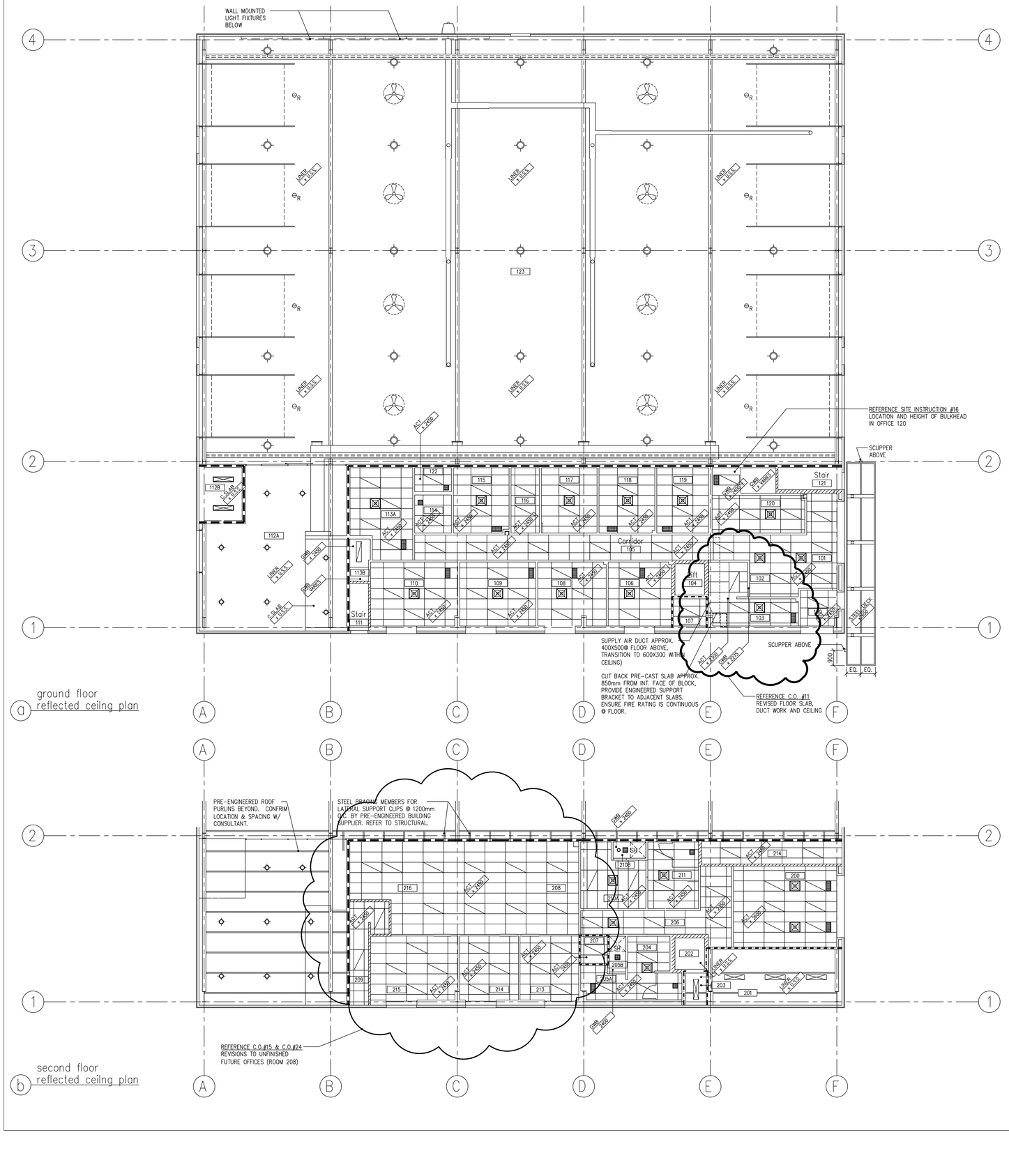
Project No:	20381
Library No:	20381-BS1-RD
Drawn By:	a.b-p.
Scale:	as noted

Sections

Drawing No: A5



Legend:

- INDICATES CEILING MATERIAL AND HEIGHT ABOVE FINISHED FLOOR. U.S.S. INDICATES UNDERSIDE OF STRUCTURE.
- INDICATES RECESSED FLOURESCENT LIGHT FIXTURE
- INDICATES SURFACE MOUNTED FLOURESCENT LIGHT FIXTURE
- INDICATES SUSPENDED LIGHT FIXTURE
- INDICATES SURFACE MOUNTED ROTATING LIGHT FIXTURE
- INDICATES RECESSED MECHANICAL DIFFUSER
- INDICATES RECESSED MECHANICAL GRILLE
- INDICATES SUSPENDED MECHANICAL RADIANT TUBE HEATER
- INDICATES SUSPENDED MECHANICAL FAN
- INDICATES SHOWER UNIT

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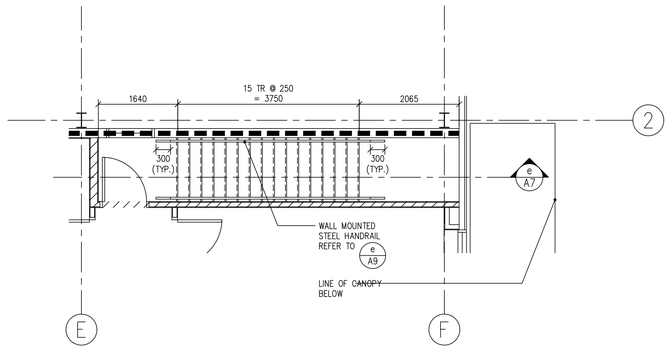
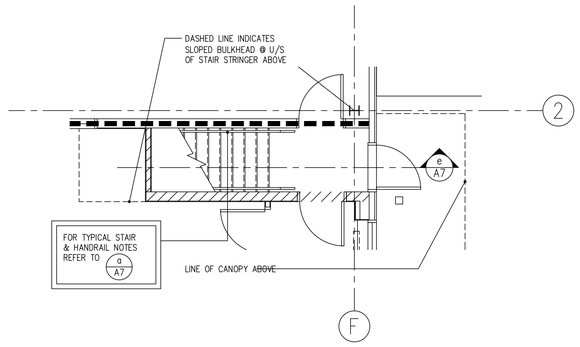
Project No:	20381
Library No:	20381-RCP1-RD
Drawn By:	a.b-p.
Scale:	as noted

Reflected Ceiling Plans

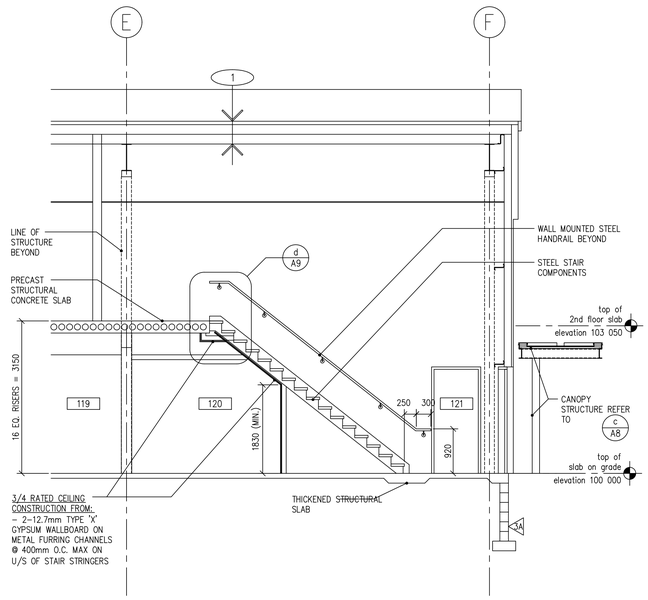
Drawing No: A6



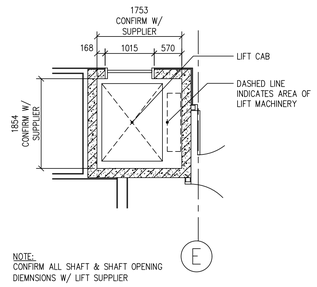
a stair 1 plan @ second floor
SCALE: 1:50



b stair 1 plan @ ground floor
SCALE: 1:50

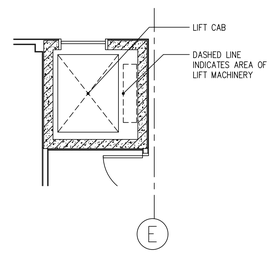


e section @ stair 1
SCALE: 1:50



NOTE:
CONFIRM ALL SHAFT & SHAFT OPENING
DIEMNSIONS W/ LIFT SUPPLIER

g lift plan @ second floor
SCALE: 1:50



h lift plan @ ground floor
SCALE: 1:50

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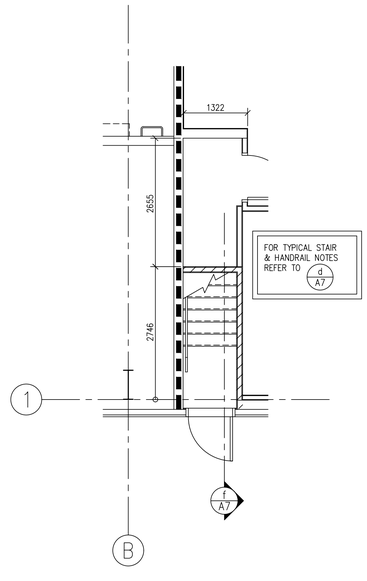
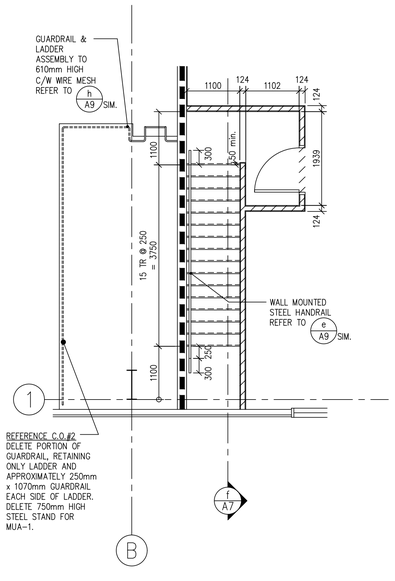
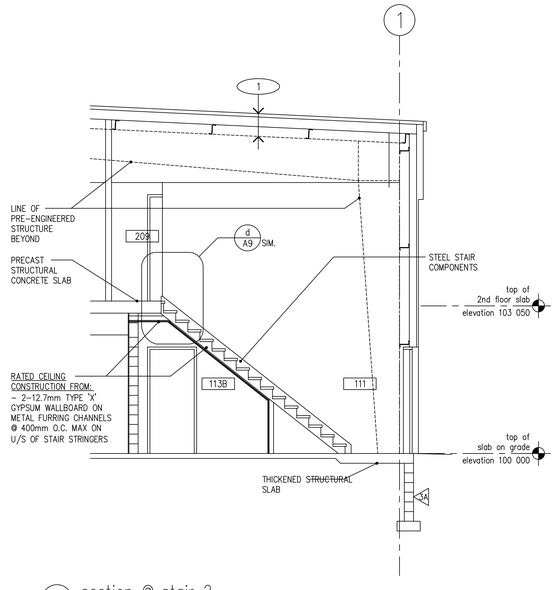


c stair 2 plan @ ground floor
SCALE: 1:50



d stair 2 plan @ second floor
SCALE: 1:50



f section @ stair 2
SCALE: 1:50

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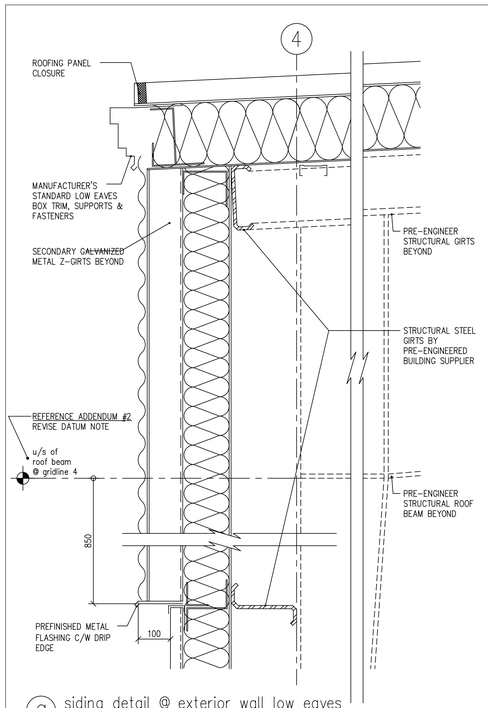
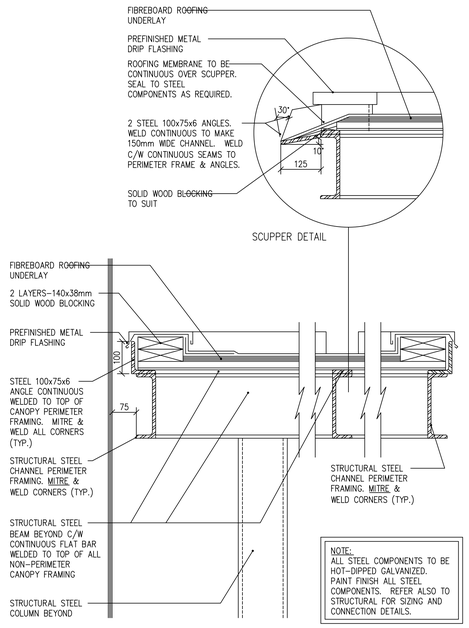
Project No:	20381
Library No:	20381-BU-RD
Drawn By:	a.b-p.
Scale:	as noted

Detail Plans & Sections

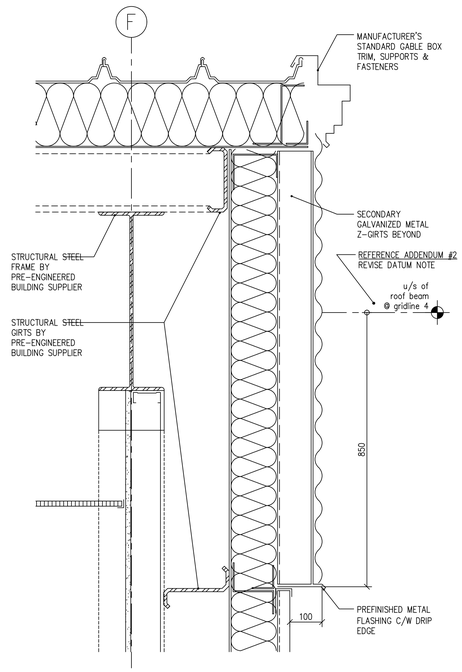
Drawing No: A7



a siding detail @ exterior wall low eaves
SCALE: 1:7.5

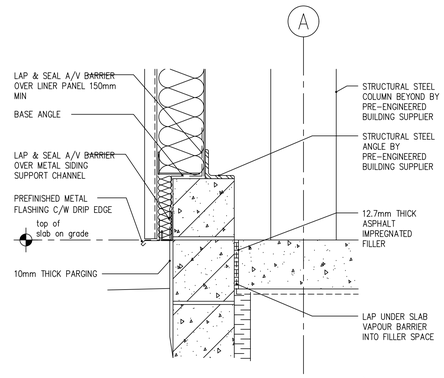


c entrance canopy details
SCALE: 1:7.5

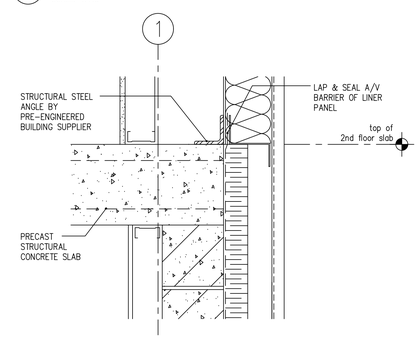


f siding detail @ exterior wall side eaves
SCALE: 1:7.5

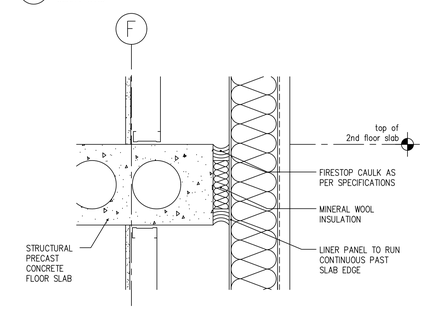
AS-BUILTS



j foundation @ exterior wall (south & north)
SCALE: 1:7.5



d exterior wall panel @ intermediate slab / block
SCALE: 1:7.5



g exterior wall panel @ intermeidate floor slab
SCALE: 1:7.5

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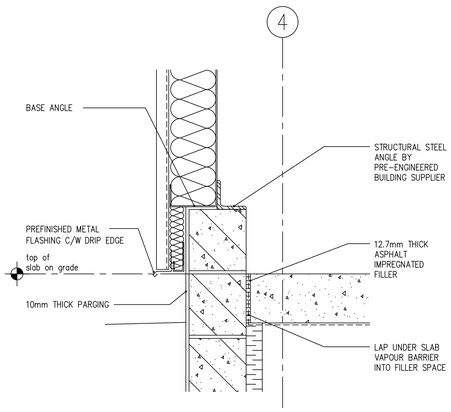
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

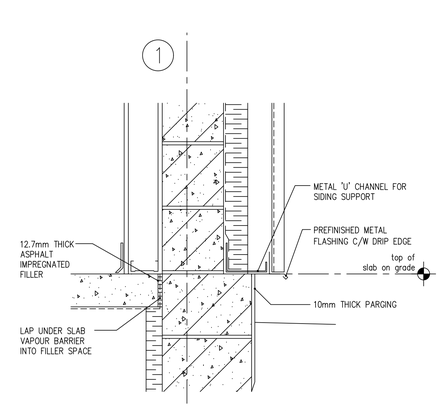
Project No:	20381
Library No:	20381-DT-RD
Drawn By:	a.b-p.
Scale:	as noted

Building Details

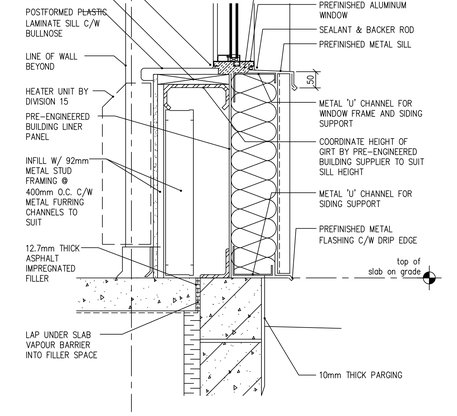
Drawing No: A8



b typical foundation @ exterior walls
SCALE: 1:7.5



e foundation @ exterior wall (east)
SCALE: 1:7.5



h aluminum window sill / foundation @ exterior wall (north)
SCALE: 1:7.5

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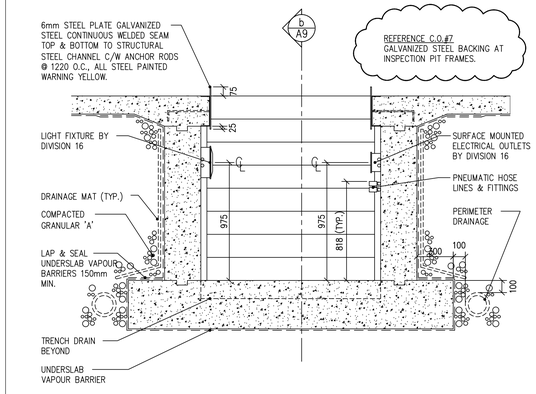
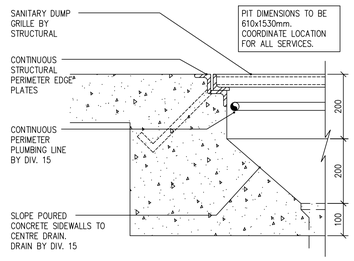
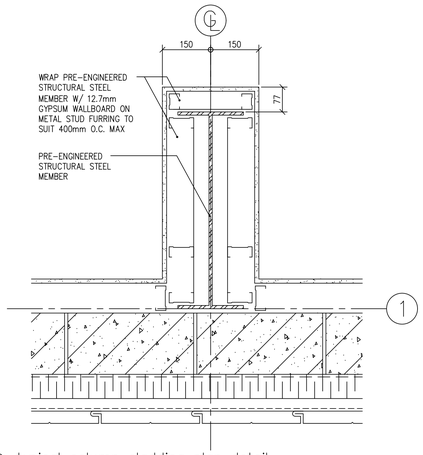


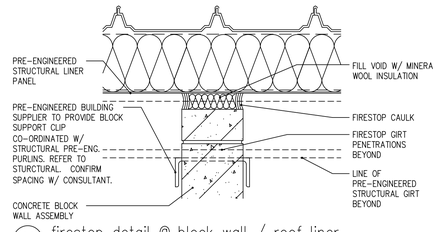
a inspection pit sections
SCALE: 1:20



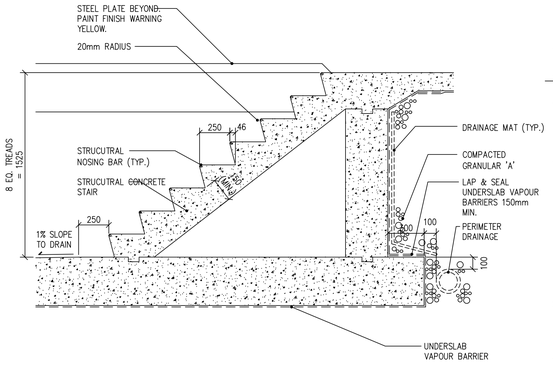
d sanitary dump pit detail
SCALE: 1:7.5



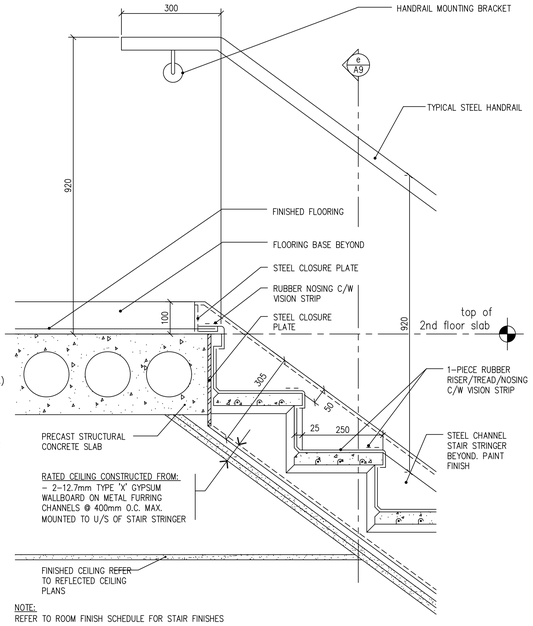
g typical column cladding plan detail
SCALE: 1:7.5



m firestop detail @ block wall / roof liner
SCALE: 1:7.5

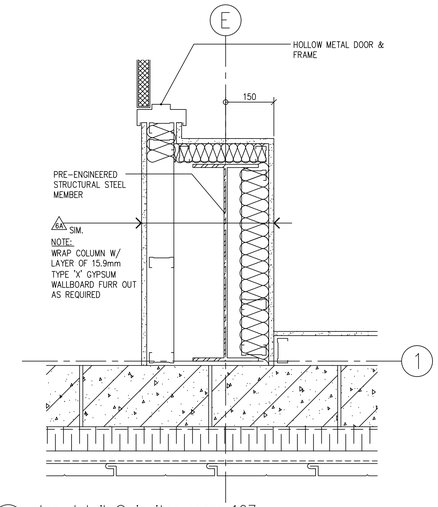


b inspection pit sections
SCALE: 1:20

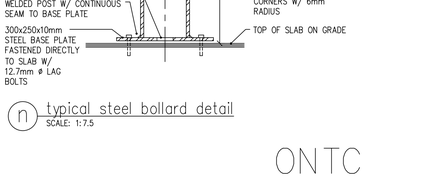


NOTE:
REFER TO ROOM FINISH SCHEDULE FOR STAIR FINISHES

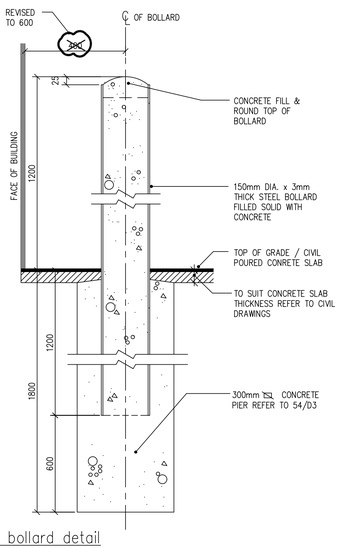
e typical stair detail
SCALE: 1:7.5



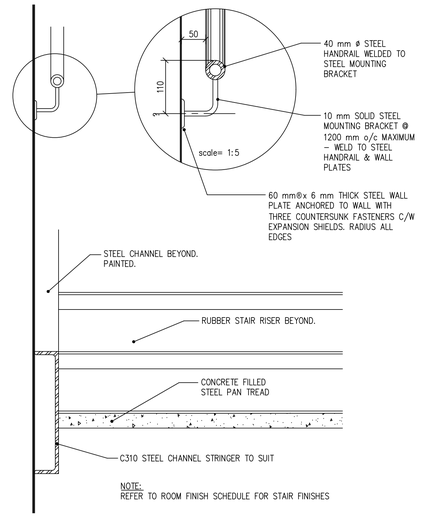
h plan detail @ janitor room 107
SCALE: 1:7.5



n typical steel bollard detail
SCALE: 1:7.5

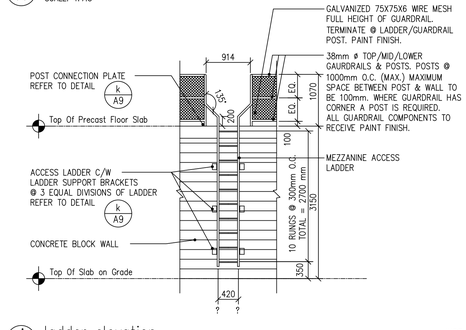


c typical bollard detail
SCALE: 1:7.5

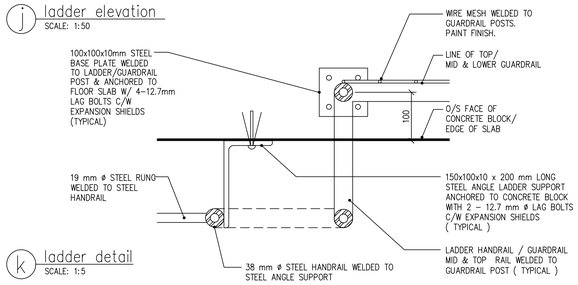


NOTE:
REFER TO ROOM FINISH SCHEDULE FOR STAIR FINISHES

f typical stair & handrail detail
SCALE: 1:7.5



j ladder elevation
SCALE: 1:50



k ladder detail
SCALE: 1:5

AS-BUILTS

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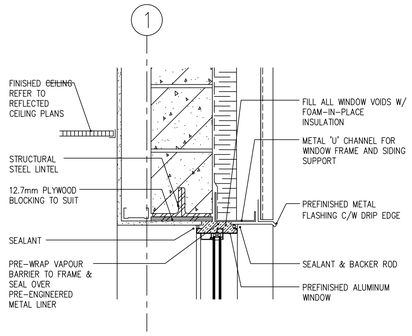
Project No:	20381
Library No:	20381-DT-RD
Drawn By:	a.b-p.
Scale:	as noted

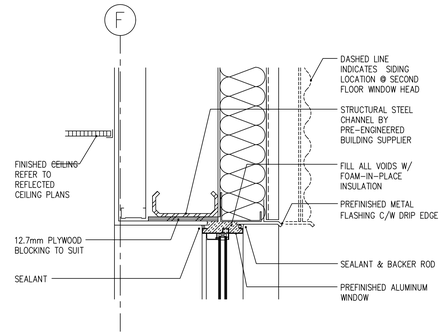
Building Details Cont'd

Drawing No: A9

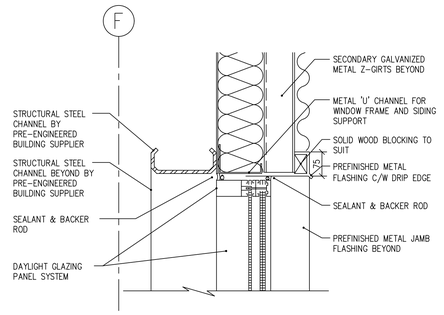
AS-BUILTS



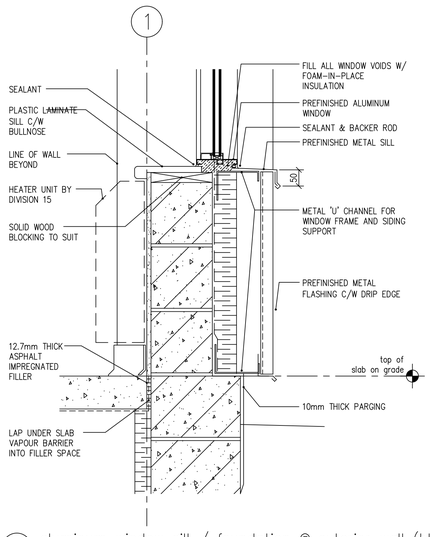
a aluminum window head @ exterior wall (block)
SCALE: 1:7.5



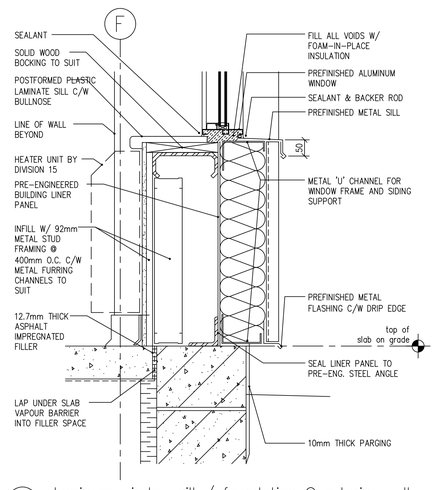
d aluminum window head @ exterior wall
SCALE: 1:7.5



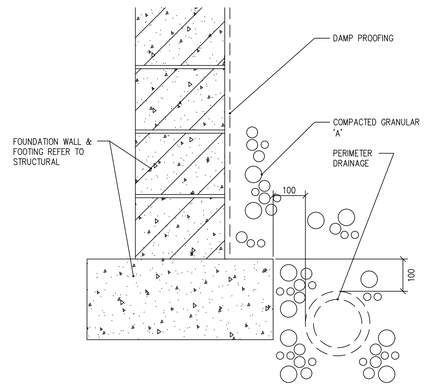
g daylighting panel head detail
SCALE: 1:7.5



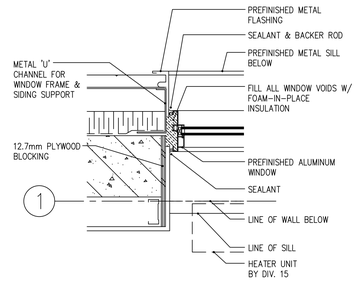
b aluminum window sill / foundation @ exterior wall (block)
SCALE: 1:7.5



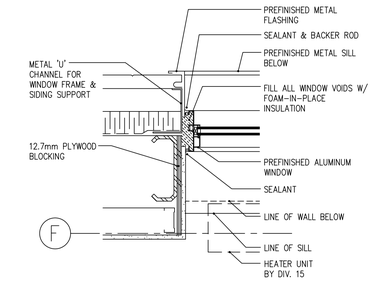
e aluminum window sill / foundation @ exterior wall
SCALE: 1:7.5



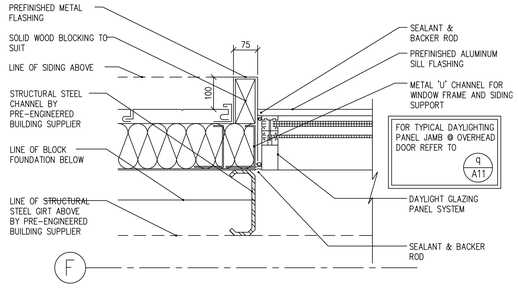
h typical foundation perimeter drainage detail
SCALE: 1:7.5



c aluminum window jamb @ exterior wall (block)
SCALE: 1:7.5



f aluminum window jamb @ exterior wall
SCALE: 1:7.5



j daylighting panel jamb detail
SCALE: 1:7.5

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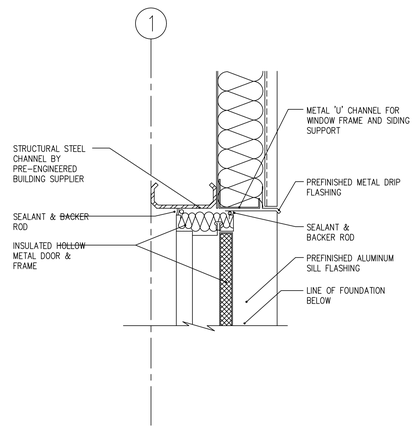
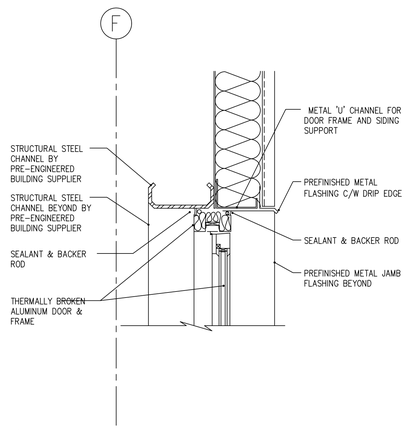
Project No:	20381
Library No:	20381-DT-RD
Drawn By:	a.b-p.
Scale:	as noted

Typical Exterior Window Details

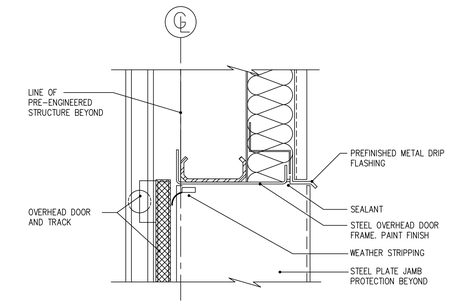
Drawing No: A10



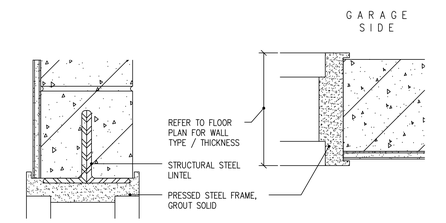
a typical insulated hollow metal door head
SCALE: 1:7.5



d thermally broken aluminum door head
SCALE: 1:7.5

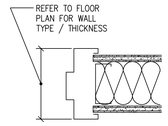


g overhead door head
SCALE: 1:7.5

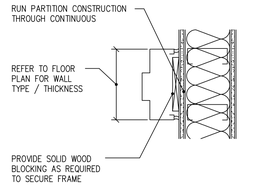


k hollow metal frame head @ block
SCALE: 1:5

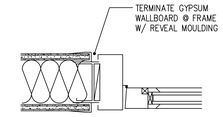
m hollow metal frame jamb @ block
SCALE: 1:5



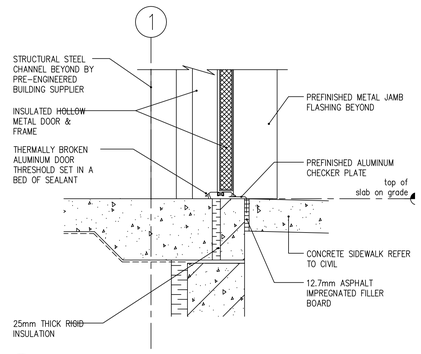
n hollow metal frame jamb / head
SCALE: 1:5



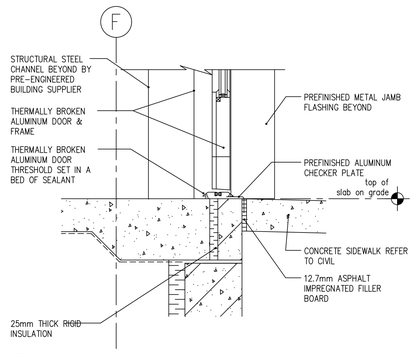
o hollow metal jamb @ interior partition
SCALE: 1:5



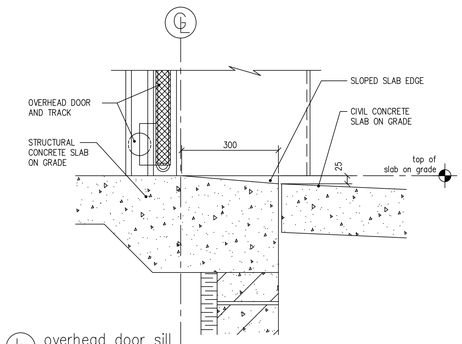
p aluminum frame jamb / head
SCALE: 1:5



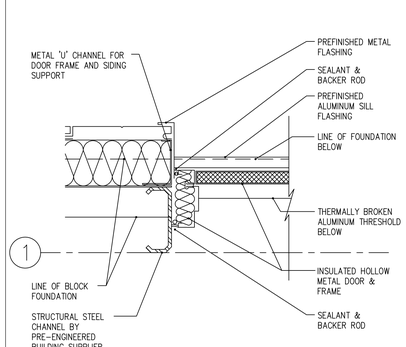
b typical insulated hollow metal door sill
SCALE: 1:7.5



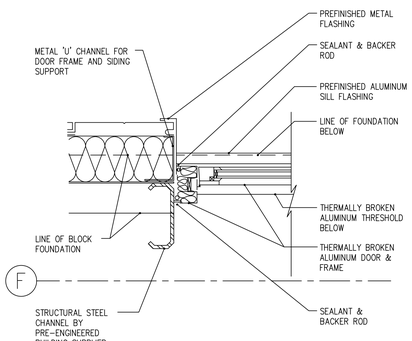
e thermally broken aluminum door sill
SCALE: 1:7.5



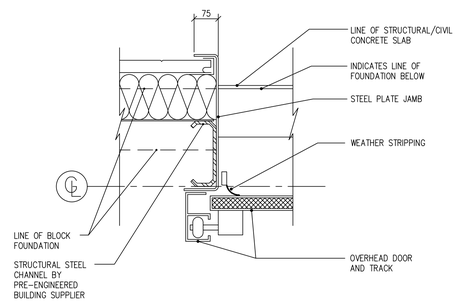
h overhead door sill
SCALE: 1:7.5



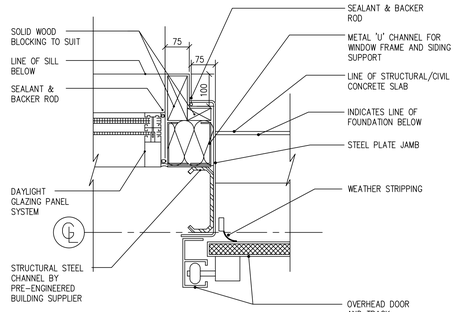
c typical insulated hollow metal door jamb
SCALE: 1:7.5



f thermally broken aluminum door jamb
SCALE: 1:7.5



j overhead door jamb
SCALE: 1:7.5



g overhead door / daylighting panel jamb
SCALE: 1:7.5

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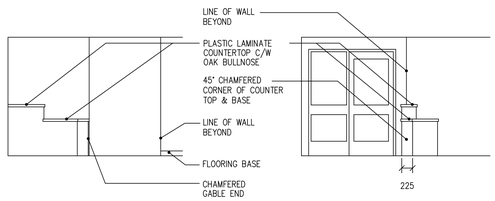
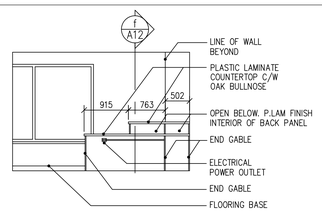
Project No:	20381
Library No:	20381-DT-RD
Drawn By:	a.b-p.
Scale:	as noted

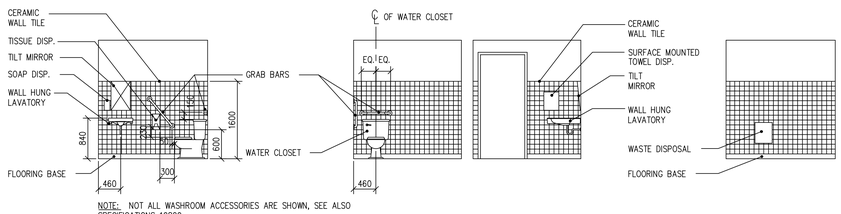
Exterior Door & Interior Frame Details

Drawing No: A11



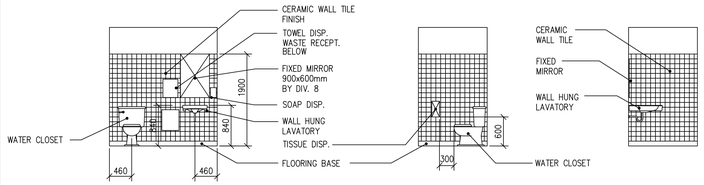


1 reception counter
SCALE: 1:50



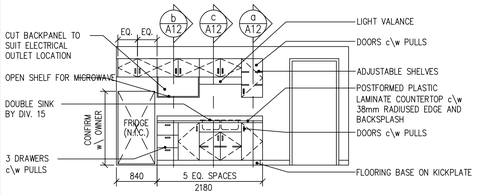
NOTE: NOT ALL WASHROOM ACCESSORIES ARE SHOWN, SEE ALSO SPECIFICATIONS 10800

3 h/c washroom 114
SCALE: 1:50

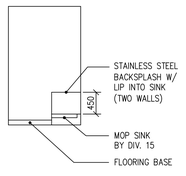


NOTE: NOT ALL WASHROOM ACCESSORIES ARE SHOWN, SEE ALSO SPECIFICATIONS 10800

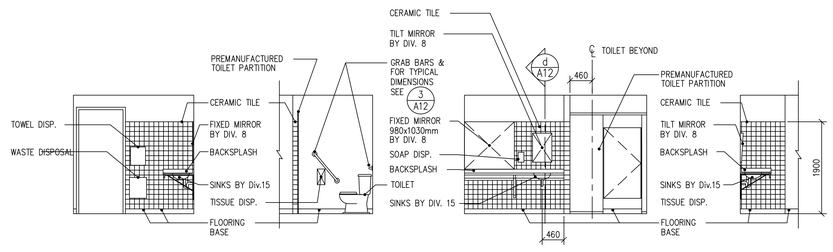
4 washroom 122
SCALE: 1:50



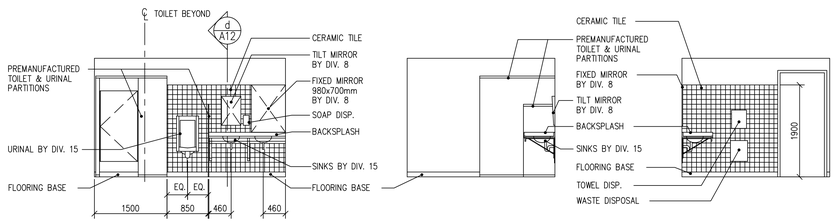
5 lunch/meeting room counter
SCALE: 1:50



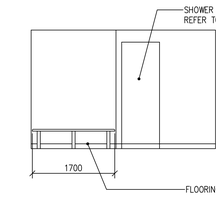
6 janitor rooms 107 & 207
SCALE: 1:50

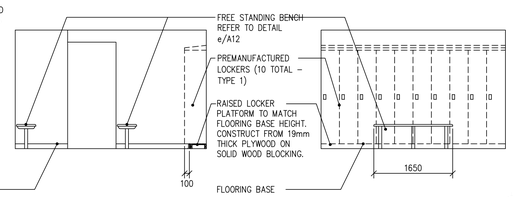


7 women's washroom 204
SCALE: 1:50

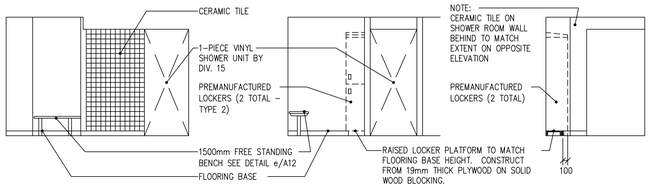


8 men's washroom 211
SCALE: 1:50

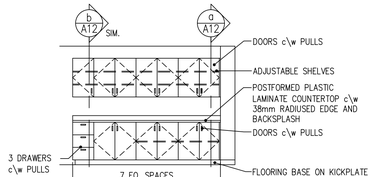




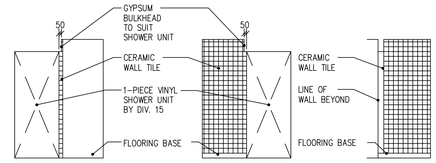
9 men's locker room elevations
SCALE: 1:50



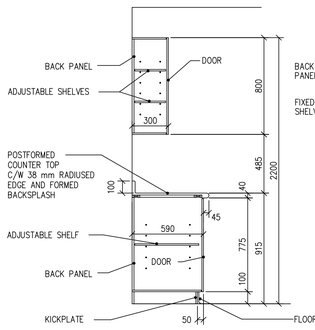
10 women's locker room & shower elevations
SCALE: 1:50



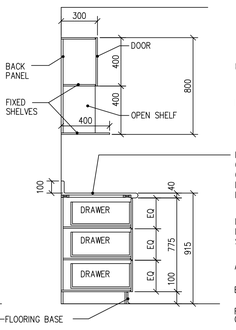
11 copy room counter
SCALE: 1:50



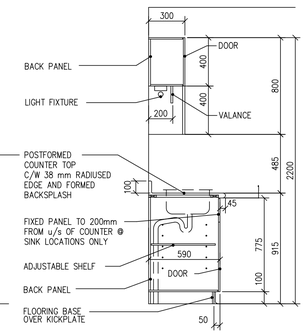
12 shower 210B
SCALE: 1:50



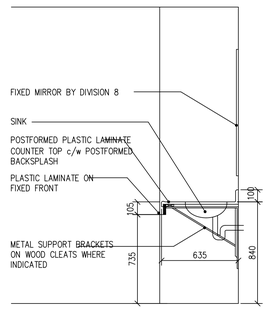
a counter section
SCALE 1:20



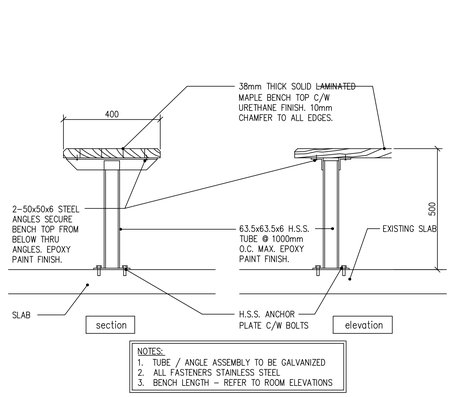
b drawer section
SCALE 1:20



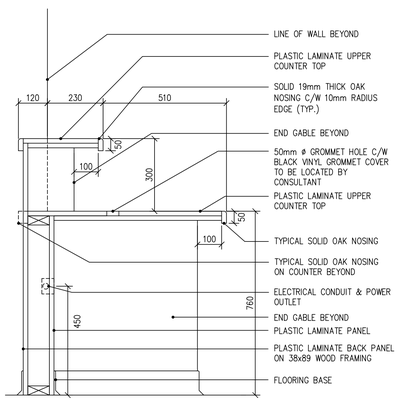
c sink section
SCALE 1:20



d counter section
SCALE 1:20



e section / elevation
SCALE 1:7.5



f reception counter
SCALE 1:7.5

NOTE: FINISH ALL EXPOSED EDGES OF LAMINATE

AS-BUILTS

The revisions to these documents, reflecting the significant changes in the Work made during construction, are based on data furnished by the contractor to the architect. The architect shall not be held responsible for the accuracy or completeness of the information provided by the contractor.

ONTC

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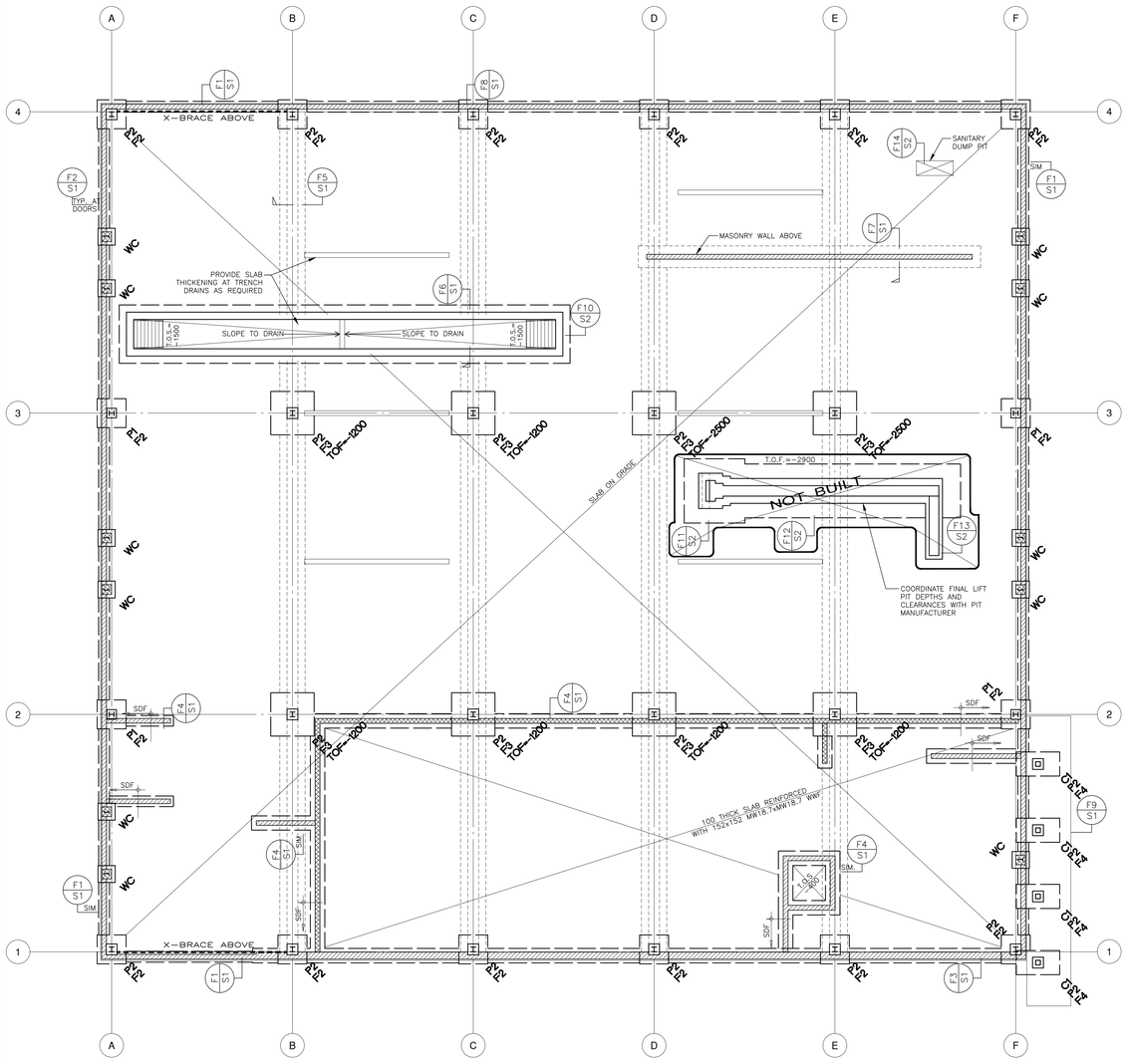
No.	Issue	Date
1	60% COMPLETE WORKING DRAWINGS	MAR. 30, 2004
2	ISSUED FOR TENDER	MAY. 06, 2005
3	AS-BUILT RECORD DRAWINGS	AUG. 2006

Project No:	20381
Library No:	20381-MW1-RD
Drawn By:	a.b-p.
Scale:	as noted

Millwork Elevatio & Details

Drawing No: A12



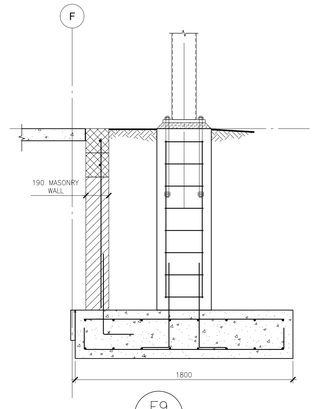
FOUNDATION AND GROUND FLOOR FRAMING PLAN
SCALE 1:100

FOUNDATION AND GROUND FLOOR PLAN NOTES

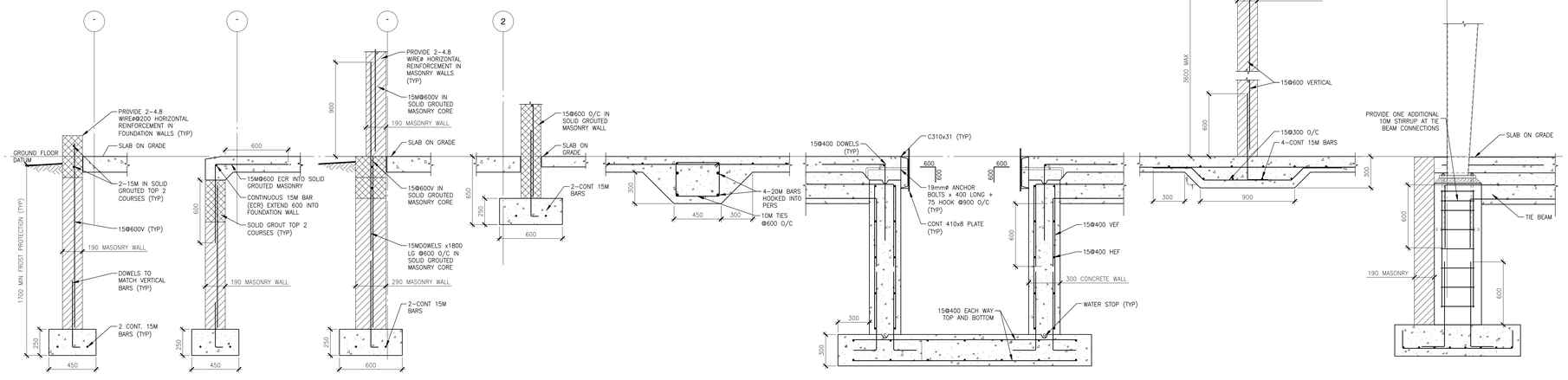
1. SEE GENERAL REQUIREMENTS ON DRAWING S3.
2. SEE THIS DRAWING FOR FOOTING SCHEDULE.
3. SEE DRAWING S3 FOR TYPICAL DETAILS.
4. GROUND FLOOR DATUM ELEVATION IS100.00 (GEODETIC 209.50).
5. UNLESS OTHERWISE NOTED ON PLAN OR DETAILS, THE FOLLOWING DATA APPLY:
   - .1 TOP OF SLAB IS 0.0 FROM DATUM ELEVATION.
   - .2 FRAMED AREAS: DESIGN LIVE LOAD IS 6.0 kN/m2 FOR GARAGE AND. AND 4.8 kN/m2 FOR OFFICES.
   - .3 SET TOPS OF COLUMN AND WALL FOOTINGS AT ELEVATION -1600.
   - .4 PROVIDE CONCRETE WALL AND MASONRY WALL FOOTINGS AS PER TYPICAL DETAILS.
   - .5 PROVIDE 150 THICK CONCRETE SLAB-ON-GRADE WITH 10M BARS AT 300 EACH WAY PLACED 75 mm BELOW TOP OF SLAB.
   - .6 SET TOPS OF PIERS AT -150.
6. GROUT BASE PLATES AND BEARING PLATES PRIOR TO PLACING LOADS ON STEELWORK.
7. "C1" ON PLAN DENOTES HSS203x203x8.0 COLUMN AND 350x25x350 BASE PLATE WITH 4 25ø THREADED ANCHOR BOLTS x 600 LONG. PROVIDE DOUBLE NUT AT EACH ANCHOR BOLT. CONNECT COLUMN TO BASE PLATE FOR Mf=50kN.m. SET U/S BASEPLATE AT +50 ON 50mm GROUT.
8. AT GRIDLINES 1/A, 1/B, 4/A, 4/B, 3/B, 3/C, 3/D, AND 3/E, PROVIDE 4-20ø ANCHOR BOLTS X 750 LONG + 75x75x10 PLATE WITH DOUBLE NUT AT BOTTOM OF ANCHOR BOLT. AT ALL OTHER COLUMNS, PROVIDE 4 20ø ANCHOR BOLTS x 500 LONG + 75 HOOK.
9. "WC" ON PLAN DENOTES WIND COLUMN BY PRE-ENGINEERED BUILDING SUPPLIER. PROVIDE 2 20ø ANCHOR BOLTS x 400 LG + 75 HOOK. PROVIDE 400x400 (MINIMUM) MASONRY PIERS SOLID FILLED WITH GROUT. PROVIDE MINIMUM 150 PROJECTION TO MATCH STRIP FOOTING THICKNESS BEYOND EDGE OF MASONRY PIER.
10. PRIOR TO COMMENCEMENT OF FOUNDATION CONSTRUCTION COORDINATION OF FOUNDATION DESIGN AND PRE-ENGINEERED BUILDING SYSTEM MUST BE COMPLETED THROUGH SUBMISSION OF BUILDING SHOP DRAWINGS FOR REVIEW BY THE STRUCTURAL ENGINEER.

FOOTING AND PIER SCHEDULE

FOOTING					PIER		
MARK	SIZE	DEPTH	REINFORCING	MAX. LOAD (kN)	MARK	SIZE	REINFORCING
					P1	450x550	4-20V 10@300 TIES
F2	1200x1200	300	8-15M BEW (++)	210	P2	450x550	4-20V 10@300 TIES
F3	1800x1800	400	10-15M BEW (++)	480			
F4	1000x1800	400	15@250 TEW 15@250 BEW(++)				



F9 / S1 SCALE 1:20



F1 / S1 SCALE 1:20 — F2 / S1 TYPICAL SECTION AT DOOR SCALE 1:20 — F3 / S1 SCALE 1:20 — F4 / S1 SCALE 1:20 — F5 / S1 SCALE 1:20 — F6 / S1 SCALE 1:20 — F7 / S1 SCALE 1:20 — F8 / S1 SCALE 1:20

north

no.	revisions	date
4	AS BUILTS	OCT. 5, 2006
3	ISSUED FOR TENDER	MAY 6, 2005
2	FINAL COORDINATION	APR. 15, 2004
1	PRELIMINARY WORKING DRAWINGS	MAR. 19, 2004

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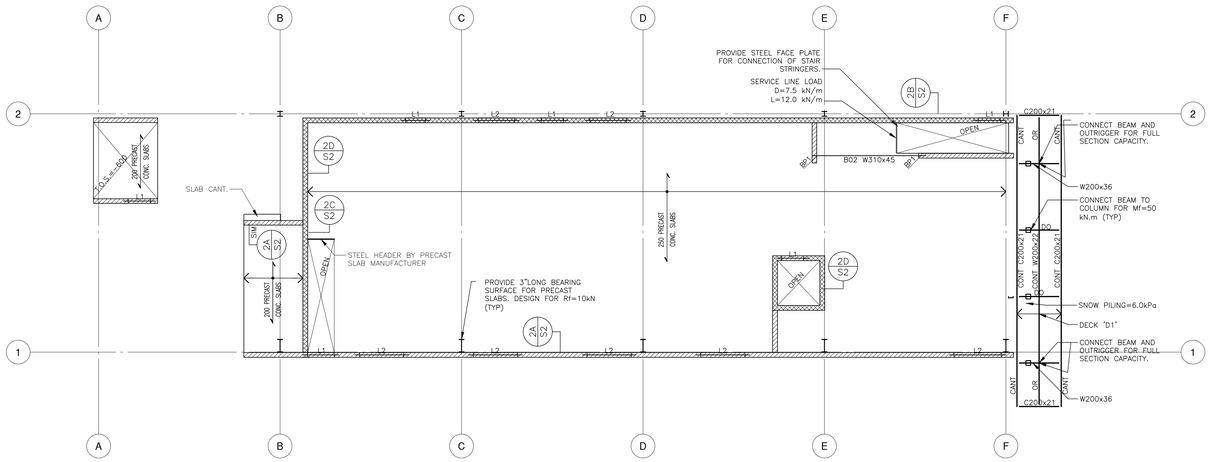
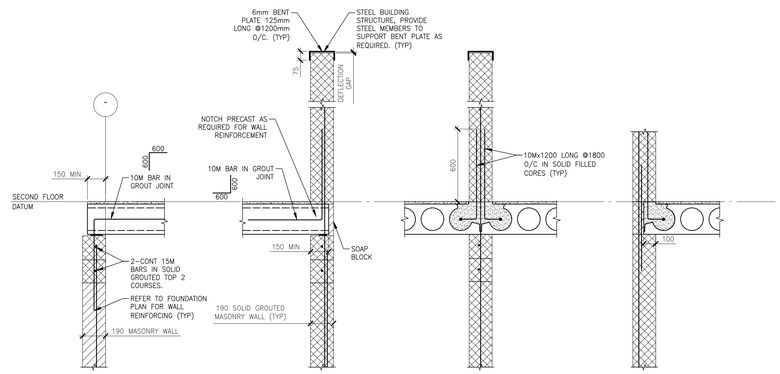
North Bay, Ontario

FOUNDATION PLAN & SECTIONS

Date: October 2006 Drawn By: MWH
Scale: AS SHOWN Library No.:
Project No.: 204sS027 Drawing No.: S1



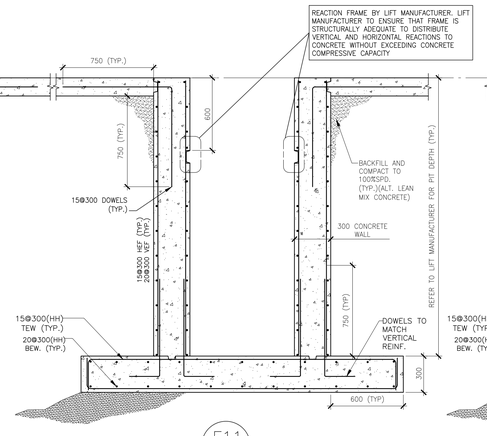
SECOND FLOOR FRAMING PLAN
SCALE 1:100

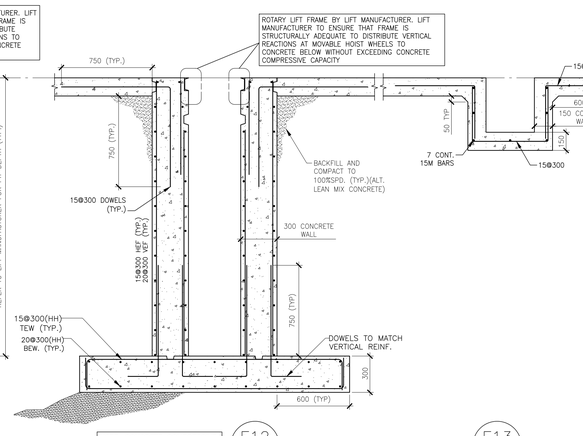


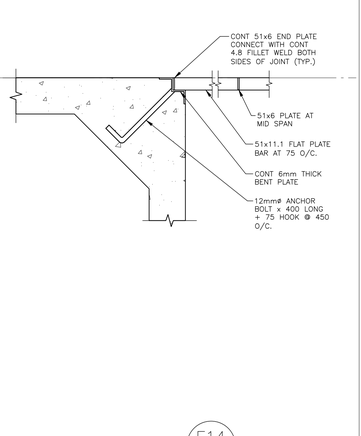
SECOND FLOOR PLAN NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING S3.
2. SEE DRAWING S3 FOR TYPICAL DETAILS.
3. SECOND FLOOR DATUM ELEVATION IS 103.150.
4. UNLESS OTHERWISE NOTED ON PLANS OR DETAILS, THE FOLLOWING DATA APPLY:
   - .1 TOP OF SLAB IS 0.0 FROM DATUM ELEVATION.
   - .2 DISTANCE TO TOP OF SLAB FROM DATUM ELEVATION IS NOTED THUS +/-X ON PLAN.
   - .3 SET TOPS OF STEEL JOISTS AND BEAMS -250 FROM DATUM ELEVATION.
   - .4 DESIGN LIVE LOAD IS 2.4 kN/m2.
   - .5 DESIGN LIVE LOAD FOR CORRIDORS AND STAIRS IS 4.8 kN/m2 AND FOR OTHER AREAS IS 2.4 kN/m2. DESIGN DEAD LOAD INCLUDES A PARTITION ALLOWANCE OF 1.0 kN/m2.
   - .6 TRIM ALL SIDES OF FRAMED OPENINGS IN FLOOR AS REQUIRED BY HOLLOW CORE MANUFACTURER.
5. PROVIDE SKIM COAT CONCRETE TOPPING OVER PRECAST SLABS.
6. UNLESS OTHERWISE NOTED, DESIGN PRECAST SLABS FOR SDL + LL = 2.2 + LL. SEE PLANS FOR ADDITIONAL POINT LOADS AND WALL LOADS. DO NOT ASSUME TOPPING IS COMPOSITE FOR DESIGN PURPOSES.
7. 'L1' ON PLAN DENOTES 2L89x89x7.9. PROVIDE 200 LONG BEARING PAD AND SOLID GROUT 2 COURSES UNDER EACH END.
8. 'L2' ON PLAN DENOTES 2L152x89x7.9. PROVIDE 200 LONG BEARING PAD AND SOLID GROUT 2 COURSES UNDER EACH END.
9. DECK 'D1' ON PLAN DENOTES: METAL CORRUGATED WALL CLADDING: VICWEST 2⅝"x ⅜", 0.91mm BASE STEEL NOMINAL THICKNESS OR APPROVED EQUAL.
10. "OR" ON PLAN DENOTES W200x22 OUTRIGGER.
11. "BP1" ON PLAN DENOTES 170x20x275 BEARING PLATE WITH 2-19mmΦ ANCHOR BOLTS x400 LONG 75 HOOK.
12. APPLY GALVANIZING TO EXPOSED EXTERIOR STEEL MEMBERS INCLUDING EXTERIOR CANOPY COLUMNS, BEAMS, CAP PLATES, BASE PLATES AND STIFFENERS.

north







no.	revisions	date
4	AS BUILTS	OCT. 5, 2006
3	ISSUED FOR TENDER	MAY 6, 2005
2	FINAL COORDINATION	APR. 15, 2004
1	PRELIMINARY WORKING DRAWINGS	MAR. 19, 2004

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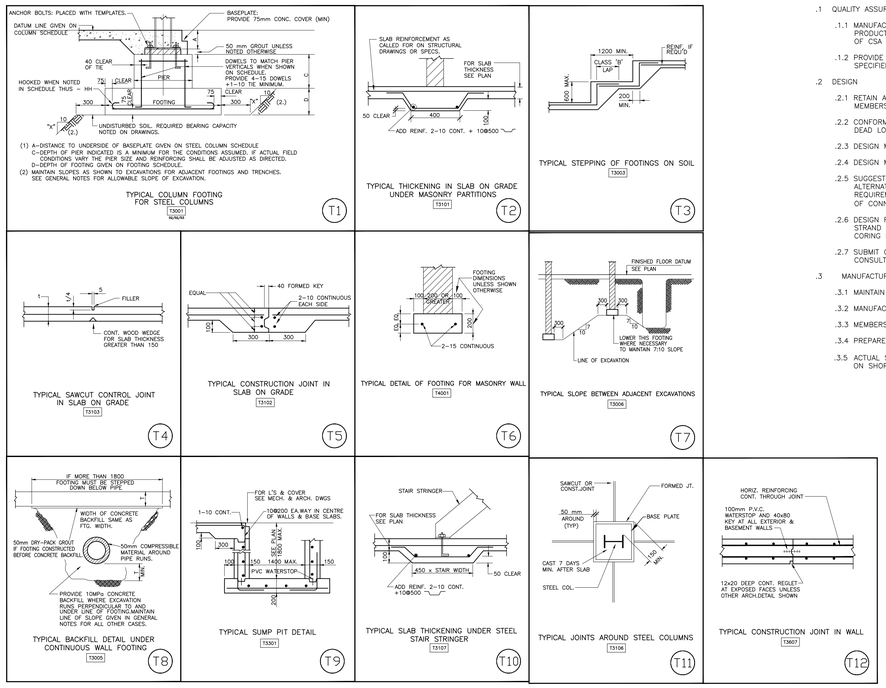
SECOND FLOOR PLAN & SECTIONS

Date: October 2006 Drawn By: MWH
Scale: AS SHOWN Library No.:
Project No.: 204sS027 Drawing No.: S2



GENERAL NOTES

1. CHECK ALL DIMENSIONS ON STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL DRAWINGS. REPORT ANY INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE THESE DRAWINGS.
2. STRUCTURAL PLANS SHOW BEARING WALLS AND COLUMNS BELOW THE FLOOR OR ROOF STRUCTURE WITH CONTINUOUS LINES. WALLS AND COLUMNS ABOVE THE FLOOR ARE SHOWN WITH DASHED LINES.
3. "T " SECTIONS ON THE DRAWINGS REFER TO TYPICAL DETAILS ON THIS DRAWING. THEY SHOW STRUCTURAL INTENT RATHER THAN ACTUAL CONDITIONS FOR THIS PROJECT.
4. CARRY ALL FOOTINGS DOWN TO STRATA CAPABLE OF SUPPORTING THE DESIGN BEARING PRESSURES NOTED, BUT NOT LESS THAN 600 mm BELOW ORIGINAL GRADE, AND FOR EXTERIOR FOOTINGS NOT LESS THAN REQUIRED TO PROVIDE A MINIMUM OF 1700 mm FROST PROTECTION.
5. PROTECT FOOTINGS, WALLS, SLABS–ON–GRADE AND ADJACENT SOIL AGAINST FREEZING AND FROST ACTION AT ALL TIMES DURING CONSTRUCTION.
6. THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTINGS OR TRENCHES SHALL NOT EXCEED A RISE OF 7 IN A RUN OF 10.
7. FOOTING STEPS SHALL BE A MINIMUM OF 1200 mm APART. MAXIMUM STEP APPROXIMATELY 600 mm.
8. CENTRE FOOTINGS AND PIERS UNDER CENTROID OF COLUMNS, UNLESS OTHERWISE NOTED.
9. DO NOT BACKFILL AGAINST WALLS RETAINING EARTH UNTIL ELEMENTS PROVIDING LATERAL SUPPORT ARE COMPLETED. PLACE BACKFILL SIMULTANEOUSLY ON BOTH SIDES OF OTHER WALLS BELOW GRADE.
10. HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE WALLS ARE NOT PERMITTED, EXCEPT WHERE SHOWN ON THESE DRAWINGS. LEAVE CHASES AND POCKETS IN WALLS FOR SEATING OF SLABS AND BEAMS.
11. REINFORCING FOR CONCRETE CURBS NOT COVERED BY SECTION OR PLAN SHALL BE 10@400 DOWELS + 2–10H.
12. REINFORCING FOR CONCRETE BASES UNDER EQUIPMENT NOT COVERED BY SECTION OR PLAN SHALL BE 10@300 EA. WAY PLACED 50mm BELOW TOP OF CONCRETE.
13. BARS MARKED CONTINUOUS SHALL BE TERMINATED IN HOOKS AND DEVELOPED BY CLASS B LAPS WHERE SPLICED.
14. PROVIDE CONTINUOUS GALVANIZED VERTICAL DOVETAIL ANCHOR SLOTS IN ALL CONCRETE SURFACES AT ABUTTING MASONRY WALLS AND AT 600 mm CENTRES IN ALL CONCRETE SURFACES WITH MASONRY VENEER.
15. STANDARD LINTELS: PROVIDE STANDARD LINTELS OVER ALL OPENINGS IN MASONRY WALLS AND PARTITIONS AS FOLLOWS:

    FOR WALLS REQUIRING MASONRY BLOCK LINTELS, FILL 200 mm DEEP LINTEL BLOCKS WITH 20 MPa CONCRETE REINFORCED WITH 1–10 TOP AND BOTTOM FOR EACH 100 mm OF WALL THICKNESS, OR PORTION THEREOF, FOR OPENINGS UP TO 1200 mm WIDE. BETWEEN 1200 mm AND 2000 mm, USE 1–15 AS ABOVE.

    FOR WALLS REQUIRING STRUCTURAL STEEL LINTELS, USE 1L – 90x 90x8 FOR EACH 100 mm OF WALL THICKNESS FOR OPENINGS UP TO 1200 mm WIDE. BETWEEN 1200 mm AND 2000 mm, USE 1L – 125x90x8 AS ABOVE. WELD OR BOLT MULTIPLE ANGLES TOGETHER.

    PROVIDE MINIMUM 200 mm BEARING FOR BLOCK LINTELS AND 150mm BEARING FOR STEEL LINTELS. CHECK ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS REQUIRING STANDARD LINTELS WHICH ARE NOT NECESSARILY SHOWN ON THE STRUCTURAL DRAWINGS.

    SPECIAL LINTELS: PROVIDE SPECIAL LINTELS AS PER LINTEL SCHEDULE AT LOCATIONS GIVEN ON PLAN.
16. UNLESS OTHERWISE NOTED, FILL ALL CHANNEL BLOCK BOND BEAMS WITH 20 MPa CONCRETE REINFORCED WITH 1 – 10 TOP AND BOTTOM CONTINUOUS.
17. UNLESS OTHERWISE NOTED, ALL BEARING BEAMS SHALL HAVE A MINIMUM BEARING OF 200 mm, AND LINTELS SHALL HAVE A MINIMUM BEARING OF 150 mm. VOIDS IN MASONRY UNITS UNDER BEAMS AND JOISTS SHALL BE PREFILLED WITH GROUT FOR A MINIMUM VERTICAL DEPTH OF 600mm AND A LENGTH OF 400 mm, UNLESS OTHERWISE NOTED. USE 75% SOLID BLOCKS FOR FILLING. DO NOT USE MORTAR TO FILL MASONRY UNITS.
18. MINIMUM CONCRETE COVER TO REINFORCING BARS, IN mm, UNLESS OTHERWISE NOTED:

FOOTINGS	75 TO BOTTOM BARS, 50 TO TOP BARS
PIERS	50 TO TIES
SLABS	25
WALLS	40 TO SURFACES EXPOSED TO GROUND OR EXTERIOR 20 TO PROTECTED SURFACES

19. MASONRY WALL REINFORCING:
    - –USE DEFORMED WIRE JOINT REINFORCEMENT.
    - –LAP SPLICE VERTICAL REBARS 650mm AND HORIZONTAL REBARS 900mm.
    - –LAP SPLICE JOINT REINFORCEMENT 300mm.
    - –ADD 1–15 AROUND EACH OPENING EXCEEDING 1000mm IN WIDTH OR HEIGHT AND EXTEND BARS 900mm EACH WAY BEYOND OPENINGS.

MATERIAL AND DESIGN DATA

1. STRUCTURAL DESIGN IS IN ACCORDANCE WITH ONTARIO BUILDING CODE 1997, INCLUDING AMENDMENTS.
2. FOOTING DESIGN BEARING PRESSURE IS 150 kPa.

   SEE SOILS REPORT PREPARED BY: MERLEX ENGINEERING LTD.
   REPORT NUMBER: 04/01/04003
3. CONCRETE SPECIFIED COMPRESSIVE STRENGTH, f'c, IS 35 MPa EXCEPT FOR:
   EXTERIOR EXPOSED CONCRETE – CLASS C–1 – 35 MPa
4. REINFORCING STEEL: CAN/CSA G30.18M – GRADE 400R
5. STRUCTURAL STEEL: CAN/CSA G40.21M
   - WIDE FLANGES: 350 W
   - HSS SECTIONS: 350W
   - CLASS H FOR 102 mm OR LARGER SECTIONS
   - CLASS C FOR SMALLER SECTIONS
   - ANCHOR BOLTS: 300W
   - ALL OTHER STEEL: 300W
6. STRUCTURAL MASONRY:
   - HOLLOW BLOCK: CSA A165.1 – H/15/A/M
   - SOLID BLOCK: CSA A165.1 – S/15/A/M
   - CONCRETE BRICK: CSA A165.2 – TYPE I–25
   - CLAY BRICK: CAN/CSA A82.1M – GRADE SW
   - MORTAR: CSA A179M – TYPE S
   - GROUT FOR BLOCK CORES: CSA A179M – COARSE GROUT 1:3:2 CEMENT:SAND:PEA–STONE BY VOLUME WITH 200 mm SLUMP
   - ASSUMED MASONRY COMPRESSIVE STRENGTH, f'm, IS:
     HOLLOW BLOCK – 9.8 MPa
     GROUTED HOLLOW BLOCK – 7.5 MPa
     SOLID BLOCK – 7.5 MPa
     SOLID BRICK – 8.8 MPa
   - ASSUMED FLEXURAL TENSILE BOND STRENGTH AT MORTAR JOINTS IS:
     CONCRETE BRICK & BLOCK – 0.45 MPa
     GROUTED HOLLOW BLOCK – 0.70 MPa
     SOLID CLAY BRICK – 0.70 MPa
7. DESIGN LOADS FOR BUILDING STRUCTURE:
   - GRAVITY LOADS AS SHOWN ON PLANS
   - GROUND SNOW LOAD AND ASSOCIATED RAIN LOAD:
     Ss = 2.0 kN/m2 Sr = 0.4 kN/m2
   - WIND PRESSURE: q Ce (Cg Cp) =(0.31)(1.0)(1.3) = 0.40 kN/m2
   - EARTHQUAKE (REINFORCED MASONRY BEARING WALLS):
     vI(SF)(U)/R = (0.05)(1.0)(3.0)(0.6)/(1.5)=0.06

DRAWING LEGEND

UNLESS OTHERWISE NOTED, DESIGN LOADS SHOWN ARE SPECIFIED (WORKING) LOADS. FOR POINT LOADS, IF ONLY ONE LOAD IS GIVEN, CONSIDER IT LIVE LOAD.

LL	LIVE LOAD (kN/m2)
DL	DEAD LOAD (kN/m2)
SDL	SUPERIMPOSED DL (EXCLUDING SELF–WEIGHT) (kN/m2)
P	POINT LOAD (kN)
W	FOR STEEL JOISTS IS DL + LL IN kN/m2
Q	FOR STEEL JOISTS IS DL + LL IN kN/m
WS	FOR PRECAST CONCRETE IS SDL + LL IN kN/m2
Mf	FACTORED MOMENT (kN–m)
MTf	FACTORED TORSION (kN–m)
Vf	FACTORED SHEAR (kN)
Rf	FACTORED VERTICAL REACTION (kN)
Af	FACTORED AXIAL LOAD (kN) + INDICATES TENSION, – INDICATES COMPRESSION
>	DESIGNED MEMBER MARK
±X	DISTANCE TO TOP OF BEAM FROM DATUM ELEVATION OF FLOOR OR ROOF
SDF	STEP DOWN FOOTING IN DIRECTION OF ARROWHEAD
┼┼	HOLES THROUGH STEEL BEAMS
┼┼	HOLES THROUGH CONCRETE BEAMS
TJ	TIE JOIST
DJ	DOUBLE JOIST
CF	STEEL MEMBER CONCRETE FIREPROOFED
H	CONCRETE HAUNCHED DOWN TO BOTTOM FLANGE OF BEAM
#	DENOTES COMPOSITE STEEL BEAM
C= B=	FOR STEEL CONSTRUCTION C AND B DIMENSIONS ON PLAN ARE OFFSET DISTANCES FROM GRID LINE TO CENTRE LINE OF STEEL COLUMN OR BEAM IN DIRECTION OF ARROWHEAD
C= B=	FOR CONCRETE CONSTRUCTION C AN B DIMENSIONS ON PLAN ARE OFFSET DISTANCES FROM GRID LINE TO FACE OF CONCRETE COLUMN OR BEAM IN DIRECTION OF ARROWHEAD
HH,H	REINFORCING BAR HOOKED BOTH ENDS, ONE END
RF	RIGID FRAME MEMBER
DCA	DRILLED CONCRETE ANCHORS
DMA	DRILLED MASONRY ANCHORS
ECR	EPOXY–COATED REINFORCING
ZRP	ZINC–RICH PAINTED STEEL
GALV	GALVANIZED STEEL
CA	COLUMN ABOVE
CAM	CAMBER
REV.CAM	REVERSE CAMBER
VSC	VERTICALLY SLOTTED CONNECTION TO ALLOW FOR DEFLECTION

X	SECTION NUMBER
Y	SECTION DRAWING
Z	INTERNAL REFERENCE

TYPICAL DETAILS

(1) A–DISTANCE TO UNDERSIDE OF BASEPLATE GIVEN ON STEEL COLUMN SCHEDULE
C–DEPTH OF PIER INDICATED IS A MINIMUM FOR THE CONDITIONS ASSUMED. IF ACTUAL FIELD CONDITIONS VARY THE PIER SIZE AND REINFORCING SHALL BE ADJUSTED AS DIRECTED.
D–DEPTH OF FOOTING GIVEN ON FOOTING SCHEDULE.
(2) MAINTAIN SLOPES AS SHOWN TO EXCAVATIONS FOR ADJACENT FOOTINGS AND TRENCHES. SEE GENERAL NOTES FOR ALLOWABLE SLOPE OF EXCAVATION.

TYPICAL COLUMN FOOTING FOR STEEL COLUMNS
T3001
02/02/03
T1

TYPICAL THICKENING IN SLAB ON GRADE UNDER MASONRY PARTITIONS
T3101
T2

TYPICAL STEPPING OF FOOTINGS ON SOIL
T3003
T3

TYPICAL SAWCUT CONTROL JOINT IN SLAB ON GRADE
T3103
T4

TYPICAL CONSTRUCTION JOINT IN SLAB ON GRADE
T3102
T5

TYPICAL DETAIL OF FOOTING FOR MASONRY WALL
T4001
T6

TYPICAL SLOPE BETWEEN ADJACENT EXCAVATIONS
T3006
T7

TYPICAL BACKFILL DETAIL UNDER CONTINUOUS WALL FOOTING
T3005
T8

TYPICAL SUMP PIT DETAIL
T3301
T9

TYPICAL SLAB THICKENING UNDER STEEL STAIR STRINGER
T3107
T10

TYPICAL JOINTS AROUND STEEL COLUMNS
T3106
T11

TYPICAL CONSTRUCTION JOINT IN WALL
T3607
T12

SPECIFICATIONS

1. GENERAL
   - .1 PROVIDE ALL MATERIAL AND LABOUR REQUIRED FOR THE COMPLETION OF THE WORK. BREAKDOWN OF WORK BY TRADE IS FOR GUIDANCE ONLY AND IS NOT NECESSARILY COMPLETE.
2. CODES AND STANDARDS
   - .1 COMPLY WITH THE REQUIREMENTS OF THE ONTARIO BUILDING CODE 1997 AND THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
3. SUBMITTALS
   - .1 SUBMIT FOR REVIEW BEFORE START OF WORK, 4 COPIES OF SHOP DRAWINGS FOR:
     –CONCRETE REINFORCING
     –STRUCTURAL STEEL
     –STEEL DECK
   - .2 SUBMIT CONCRETE MIX DESIGNS BEFORE START OF WORK
4. FOUNDATION CONDITIONS
   - .1 SET FOUNDATIONS ON UNDISTURBED SOIL CAPABLE OF SUPPORTING THE ALLOWABLE BEARING PRESSURES NOTED ON THE DRAWINGS.
   - .2 PRIOR TO PLACING FOOTINGS, BEARING CAPACITY OF EACH FOOTING MUST BE CONFIRMED IN WRITTEN REPORTS BY A GEOTECHNICAL ENGINEER RETAINED BY THE CONTRACTOR. GEOTECHNICAL ENGINEER TO CARRY LIABILITY INSURANCE TO MINIMUM REQUIRED BY PEO. SUBMIT EACH REPORT IMMEDIATELY TO CONSULTANT.
   - .3 DO NOT PLACE CONCRETE IN WATER OR ON FROZEN SOIL.
5. CONCRETE
   - .1 CONFORM TO CSA A23.1–94 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION".
   - .2 USE NEW EXTERIOR PLYWOOD CONFORMING TO CAN/CSA O121–M1978 FOR FORMWORK, EXCEPT FOR ROUGH CONCRETE IN AN UNEXPOSED LOCATION, SUCH AS FOUNDATIONS WHERE USED MATERIAL IS ACCEPTABLE. USE INTERNAL FORM TIES OF ADJUSTABLE METAL DESIGNED TO ACT AS SPREADERS, AND, WHICH WHEN REMOVED, WILL LEAVE NO METAL CLOSER THAN 25 mm (1") TO CONCRETE SURFACE.
   - .3 REINFORCEMENT: USE NEW DEFORMED BAR REINFORCEMENT CONFORMING TO CAN/CSA G30.18–M92 AND OF THE YIELD STRENGTH NOTED ON THE DRAWINGS. EPOXY–COATED BARS SHALL CONFORM TO ASTM D3963M–93. ACCESSORIES, BAR SUPPORTS, AND TIES TO CONFORM TO RISC MANUAL OF STANDARD PRACTICE. PROVIDE EPOXY–COATED CHAIR–BARS AND BOLSTERS AND PLASTIC–COATED TIE WIRES FOR EPOXY–COATED REINFORCING. SUBMIT SHOP DRAWINGS INCLUDING PLACING DIAGRAMS AND BAR LISTS.
   - .4 USE READY–MIXED CONCRETE OF STRENGTH NOTED ON THE DRAWINGS. CONCRETE SHALL CONTAIN A WATER–REDUCING AGENT. CONCRETE SUBJECT TO FREEZING AND THAWING CYCLES SHALL, IN ADDITION, CONTAIN A COMPATIBLE AIR–ENTRAINING AGENT. MAXIMUM COARSE AGGREGATE 20 mm. MAXIMUM SLUMP 100 mm (4"). FOR BONDED TOPPINGS SEE ITEM 5.11.
   - .5 HEAT CONCRETE AND DELIVER AT A TEMPERATURE BETWEEN +15 C AND +27 C, WHENEVER OUTDOOR TEMPERATURE IS LESS THAN +5 C.
   - .6 CONVEY CONCRETE FROM TRUCK TO FINAL LOCATION BY METHODS WHICH WILL PREVENT SEPARATION OR LOSS OF MATERIAL. MAXIMUM FREE FALL 1.5 m (5'–0"). CONSOLIDATE CONCRETE WITH ELECTRICAL VIBRATORS.
   - .7 PROVIDE CONSTRUCTION JOINTS AT 30 m (100 FT) CENTRES MAXIMUM. SAW CUT SLABS–ON–GRADE AT 5 m (17 FT) ON CENTRE EACH WAY BEFORE SHRINKAGE CRACKS CAN FORM. FILL SAWCUTS WITH "LOADFLEX" BY SIKA CANADA AFTER SLAB IS 90 DAYS OLD. FILL OTHER SAWCUTS WITH SAND–CEMENT PASTE.
   - .8 POWER STEEL–TROWEL FINISH EXPOSED FLOORS AND FLOORS WHICH RECEIVE RESILIENT FLOORING OR CARPET. WOOD FLOAT AND BROOM FINISH EXTERIOR SLABS. FLOAT FINISH OTHER SLABS.
   - .9 CURE CONCRETE SURFACES NOT IN CONTACT WITH FORMS BY THE APPLICATION OF A CURING–SEALING COMPOUND CONFORMING TO ASTM C309–97, IMMEDIATELY AFTER DISAPPEARANCE OF SURFACE WATER SHEEN.
   - .10 COLD WEATHER: PROTECT CONCRETE ACCORDING TO CSA–A23.1–94.
   - .11 BONDED CONCRETE TOPPINGS.
     - .11.1 USE READY MIXED CONCRETE WITH MINIMUM COMPRESSIVE STRENGTH OF 25 MPA AT 28 DAYS. SLUMP TO BE BETWEEN 20MM AND 60MM. MAXIMUM COARSE AGGREGATE TO BE:
       - TOPPINGS BETWEEN 25 AND 35MM THICK: 10MM
       - TOPPINGS BETWEEN 35 AND 50MM THICK: 14MM
       - THICKER TOPPINGS: 20MM
       - WHERE TOPPING IS LESS THAN 25MM THICK, NO COARSE AGGREGATE IS ALLOWED AND A BONDING AGENT SHALL BE PROVIDED WITHIN THE MIX AND TO BOND THE TOPPING TO THE SUBSTRATE.
     - .11.2 PLACE BONDED TOPPING OVER HARDENED CONCRETE BASE SLAB IN ACCORDANCE WITH CSA–A23.1, CLAUSE 23.4..
     - .11.3 NOT LESS THAN 24 HOURS PRIOR TO APPLYING CONCRETE TOPPINGS, REMOVE ALL LAITANCE, DIRT, DUST, DEBRIS, GREASE, ROOFING OR OTHER SUBSTANCES THAT WOULD INTERFERE WITH THE BOND BETWEEN THE BASE SLAB AND THE TOPPING USING MECHANICAL REMOVAL BY SCARIFIERS, SCABBLERS, OR GRINDING WHEELS.
     - .11.4 NOTIFY CONSULTANT BEFORE PLACEMENT OF EACH TOPPING.
     - .11.5 BOND TOPPING TO BASE SLAB USING A LATEX MODIFIED GROUT PROCEDURE. USE BONDING AGENT "SURFACRETE CONCRETE" BY SIKA CANADA.
   - .12 PREMIXED GROUT: MINIMUM STRENGTH 40 MPa AT 28 DAYS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS.
   - .13 FLOOR SURFACE HARDERNER:NON–METALLIC, NATURAL GRAY COLOUR, PREMIXED, MOHS HARDNESS 7 OR BETTER. COMPLETE SMALL TEST POUR ON AIR ENTRAINED CONCRETE TO DETERMINE IF BLISTERING OCCURS.
7. PRECAST HOLLOWCORE SLABS
   - .1 QUALITY ASSURANCE
     - .1.1 MANUFACTURE IN A PLANT MEETING THE REQUIREMENTS OF CSA A251, AND CERTIFIED IN THE PRODUCT CATEGORIES TO BE PROVIDED. MANUFACTURE MEMBERS TO MEET THE REQUIREMENTS OF CSA A23.4.
     - .1.2 PROVIDE THE CONSULTANT WITH CERTIFIED COPIES OF RESULTS OF QUALITY CONTROL TESTS SPECIFIED IN CSA A23.4.
   - .2 DESIGN
     - .2.1 RETAIN A PROFESSIONAL ENGINEER, REGISTERED IN THE PROVINCE OF ONTARIO, TO DESIGN THE MEMBERS AND THEIR CONNECTIONS.
     - .2.2 CONFORM TO THE STANDARDS SPECIFIED. DESIGN MEMBERS FOR LIVE LOADS AND SUPERIMPOSED DEAD LOADS SHOWN ON THE DRAWINGS. TOPPINGS SHALL BE CONSIDERED AS NON–STRUCTURAL.
     - .2.3 DESIGN MEMBERS TO PROVIDE A FIRE RATING AS REQUIRED BY ARCHITECT.
     - .2.4 DESIGN MEMBERS FOR HANDLING STRESSES.
     - .2.5 SUGGESTED CONNECTIONS FOR PRECAST CONCRETE UNITS ARE INDICATED ON THE DRAWINGS. ALTERNATIVE CONNECTIONS WILL BE CONSIDERED ON REQUEST IF THEY FULFIL THE SAME DESIGN REQUIREMENTS AND ARE ARCHITECTURALLY ACCEPTABLE. DESIGN, FABRICATION AND INSTALLATION OF CONNECTIONS IS PART OF THIS SECTION'S WORK.
     - .2.6 DESIGN REINFORCEMENT TO ACCOMMODATE OPENINGS. PROVIDE ONE EXTRA PRESTRESSING STRAND IN BOTTOM OF EACH SLAB TO ALLOW FOR POSSIBLE CUTTING OF STRAND DURING CORING FOR PLUMBING FIXTURE DRAIN LINE.
     - .2.7 SUBMIT CALCULATIONS SIGNED AND SEALED BY THE DESIGNER, WHEN REQUESTED BY THE CONSULTANT.
   - .3 MANUFACTURE
     - .3.1 MAINTAIN ALL RECORDS REQUIRED BY CSA A23.1 AND CSA A23.4.
     - .3.2 MANUFACTURE MEMBERS WITHIN AN ENCLOSED PLANT.
     - .3.3 MEMBERS WILL BE EXPOSED. PROVIDE EVEN SURFACES TO RECEIVE GRADE B, PAINT FINISH.
     - .3.4 PREPARE TOPS OF FLOOR SLABS TO RECEIVE FLOOR FINISHES. PROVIDE STEEL TROWEL FINISH.
     - .3.5 ACTUAL SLAB CAMBER AT INSTALLATION SHALL NOT EXCEED CAMBER "AT ERECTION" INDICATED ON SHOP DRAWINGS BY MORE THAN 10%.

7. PRECAST HOLLOWCORE SLABS (CONT'D)
   - .4 ERECTION
     - .4.1 CARRY OUT ERECTION USING THE FORCES OF THE FABRICATOR.
     - .4.2 MAKE ADEQUATE PROVISION FOR ALL LOADS ACTING ON THE STRUCTURE DURING ERECTION. ANY TEMPORARY BRACING WHICH MAY BE REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR.
     - .4.3 GROUT JOINTS ONLY WHEN TEMPERATURE IS AT OR ABOVE +10 C AND WILL REMAIN SO UNTIL GROUT IS CURED. PROVIDE HEAT IF NECESSARY.
     - .4.4 GROUT GAPS BETWEEN TOPS OF BEARING WALLS AND UNDERSIDE OF SLABS DUE TO CAMBER IN SLABS. FILL GAPS SOLID FROM BOTH SIDES.
     - .4.5 LEAVE TOP SURFACE OF MEMBERS READY TO RECEIVE A SKIM COAT.
     - .4.6 PROVIDE SKIM COAT TO PROVIDE LEVEL SURFACE TO RECEIVE RESILIENT FLOORING AND CARPETING. PROVIDE STEEL TROWEL FINISH. PLACE SKIM COAT ONLY WHEN TEMPERATURE IS ABOVE +10 C AND WILL REMAIN SO UNTIL SKIM COAT IS CURED. PROVIDE HEAT IF NECESSARY.
     - .4.7 DRY PACKED GROUT: 1:3 CEMENT:SAND AND MINIMUM WATER. MINIMUM STRENGTH 30 MPA AT 28 DAYS.
     - .4.8 PREMIXED GROUT: NONFERROUS. MINIMUM STRENGTH 40 MPA AT 28 DAYS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
       MASTERFLOW 713 BY CHEMREX (M.B.T.), M–BED STANDARD

7. STRUCTURAL MASONRY
   - .1 CONFORM TO CSA–A371–94 "MASONRY CONSTRUCTION FOR BUILDINGS".
   - .2 CONFORM TO THE MATERIAL REQUIREMENTS NOTED ON THE STRUCTURAL DRAWING FOR MASONRY UNITS, MORTAR, AND GROUT.
   - .3 LAY UNITS IN RUNNING BOND. ALL FACE SHELLS SHALL BE FULLY BEDDED. GROUT USING LOW LIFT GROUTING METHODS AND MAXIMUM 1.5m (5FT) LIFTS. DO NOT USE MORTAR INSTEAD OF GROUT.
   - .4 REINFORCED MASONRY: NO OVER–HANGING MORTAR OR DEBRIS SHALL BE ALLOWED INSIDE THE REINFORCED CELLS. PROVIDE REINFORCING STEEL SPLICES IN ACCORDANCE WITH CSA S304.1 (300mm LAP FOR 15M BARS). LOCATE RODS ACCURATELY IN THE CELLS AS SHOWN ON THE DRAWINGS. HOLD IN POSITION TOP AND BOTTOM. FILL CELLS CONTAINING REINFORCEMENT SOLIDLY WITH COARSE GROUT (DO NOT USE MORTAR). CONSOLIDATE BY PUDDLING WHEN PLACING AND AGAIN RECONSOLIDATE BEFORE PLASTICITY IS LOST. PLACE GROUT IN LIFTS NOT EXCEEDING 1500 mm (5FT). STOP EACH LIFT 40 mm (1½") BELOW THE TOP OF A MASONRY UNIT.
   - .5 PROVIDE CONTROL JOINTS AT 6 m (20 FT) CENTRES MAXIMUM.
   - .6 UNLESS OTHERWISE NOTED ON THE DRAWINGS, PROVIDE 3.66 mm (9 GAUGE) GALVANIZED STEEL LADDER–TYPE JOINT REINFORCING EVERY SECOND BLOCK COURSE. PROVIDE JOINT REINFORCING IN THE FIRST TWO COURSES ABOVE AND BELOW WALL OPENINGS, AND EXTEND 600 mm (2 FT) BEYOND EACH SIDE OF OPENING. USE HOT–DIPPED GALVANIZED MATERIAL FOR METAL TIES, GALVANIZED AFTER FABRICATION.
8. STRUCTURAL STEEL
   - .1 CONFORM TO CAN/CSA S16.1–94 "LIMIT STATES DESIGN OF STEEL STRUCTURES".
   - .2 FABRICATOR SHALL BE CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF CSA W47.1–92, DIVISION 1 OR 2.1.
   - .3 MATERIALS:
     - –WIDE FLANGE SECTIONS: CAN/CSA G40.21–M92, GRADE 350W
     - –CHANNEL, ANGLES AND PLATES: CAN/CSA G40.21–M92, GRADE 300W
     - –HOLLOW STRUCTURAL SECTIONS: CAN/CSA G40.21–M92, GR. 350W
       - – CLASS H FOR 102 mm (4") OR LARGER SECTIONS
       - – CLASS C FOR SMALLER SECTIONS
     - –MACHINE BOLTS: ASTM A307–94
     - –HIGH–STRENGTH BOLTS: ASTM A325M–96
     - –ANCHOR BOLTS: CAN/CSA G40.21–M92, GRADE 300W
     - –FABRICATION: CAN/CSA S16.1–94
     - –WELDING: CSA W59–M1989
     - –PRIMER PAINT: CISC/CPMA 2–75–1975
     - –ZINC–RICH PRIMER: CGSB 1–GP–171M
     - –GALVANIZING: CAN/CSA G164–M92
     - –DRILLED ANCHORS: SEE DRAWINGS
   - .4 SUBMIT SHOP DRAWINGS INCLUDING ERECTION DRAWINGS AND SHOP DETAIL DRAWINGS. ALL SHOP DRAWINGS TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN ONTARIO. SHOW ON STEEL SHOP DRAWINGS: MATERIAL SPECIFICATIONS, SPLICES, AND SHOP AND FIELD CONNECTIONS.
   - .5 DESIGN CONNECTIONS TO CONFORM TO CAN/CSA S16.1–94 USE HEADER ANGLES AND HIGH–STRENGTH BOLTS.
   - .6 APPLY PRIMER PAINT TO ALL STEELWORK, EXCEPT WHERE ZINC–RICH PAINT IS CALLED FOR ON THE DRAWINGS. TOUCH–UP PAINT AFTER ERECTION. SURFACES RECEIVING ZINC–RICH PAINT SHALL FIRST RECEIVE COMMERCIAL BLAST CLEANING.
   - .7 WELD OR BOLT TOGETHER MULTIPLE ANGLE LINTELS. PROVIDE A MINIMUM OF 150 (6") BEARING.
   - .8 PROVIDE ALL ERECTION BRACING REQUIRED TO KEEP THE STRUCTURE STABLE AND IN ALIGNMENT DURING CONSTRUCTION.
   - .9 PROVIDE SECONDARY STEEL FRAMING TO SUPPORT 50 KN STATIONARY HOIST LOAD LOCATED 3.23m EAST OF LINE 3 AND 3.75m NORTH OF LINE C. PROVIDE ALL FRAMING, ATTACHMENTS, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. COORDINATE INSTALLATION OF EXISTING HOIST WITH OWNER. (SERVICE LOAD INDICATED DOES NOT INCLUDE IMPACT.)
9. INSPECTION AND TESTING
   - .1 AN INDEPENDENT INSPECTION AND TESTING COMPANY WILL BE APPOINTED TO UNDERTAKE CONCRETE STRENGTH TESTS, MASONRY STRENGTH TESTS AND TO INSPECT STRUCTURAL STEEL IN THE PLANT AND ON SITE.
   - .2 MAKE ONE STANDARD TEST FOR EACH 50 CUBIC METRES OF CONCRETE. PROVIDE A GROUP OF THREE CONCRETE CYLINDERS FOR EACH STANDARD CONCRETE TEST. BREAK ONE CYLINDER AT 7 DAYS.
   - .3 AT LEAST 6 MORTAR CUBES ARE TO BE TESTED FOR EACH 500 SQUARE METRES OF WALL, OR PORTION THEREOF. AT LEAST 2 CYLINDER TESTS SHALL BE MADE FOR EACH 20 CUBIC METRES OF GROUT OR LESS. TEST METHODS AND RESULTS SHALL CONFORM TO CSA A179–94.
10. CONSTRUCTION REVIEW
    - .1 PERIODIC REVIEW OF REPRESENTATIVE SAMPLES OF THE WORK WILL BE CARRIED OUT BY THE CONSULTANT.
    - .2 NOTIFY THE CONSULTANT 24 HOURS BEFORE EACH CONCRETE POUR.
    - .3 NOTIFY THE CONSULTANT 24 HOURS BEFORE COVERING UP STRUCTURE WITH FINISHES.
11. TEMPORARY BRACING AND SHORING
    - .1 MAKE ADEQUATE PROVISIONS FOR ALL LOADS ACTING ON THE STRUCTURE DURING ERECTION. PROVIDE TEMPORARY SHORING AND BRACING TO KEEP THE STRUCTURE PLUMB AND IN TRUE ALIGNMENT DURING CONSTRUCTION. MEMBERS SHOWN ON THE PLANS ARE THOSE REQUIRED FOR THE COMPLETED STRUCTURE AND MAY NOT BE SUFFICIENT DURING CONSTRUCTION. TEMPORARY BRACING AND SHORING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
12. REJECTED WORK
    - .1 DO NOT DELIVER TO THE SITE MATERIALS WHICH ARE KNOWN NOT TO MEET THE REQUIREMENTS OF THE SPECIFICATIONS. IF REJECTED AFTER DELIVERY, REMOVE IMMEDIATELY FROM SITE.

north

204sS027A
S.P.L.HOLMES

no.	revisions	date
4	AS BUILTS	OCT. 5, 2006
3	ISSUED FOR TENDER	MAY 6, 2005
2	FINAL COORDINATION	APR. 15, 2004
1	PRELIMINARY WORKING DRAWINGS	MAR. 19, 2004

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ONTC
Coach Maintainance
Facility

North Bay, Ontario

TYPICAL
DETAILS

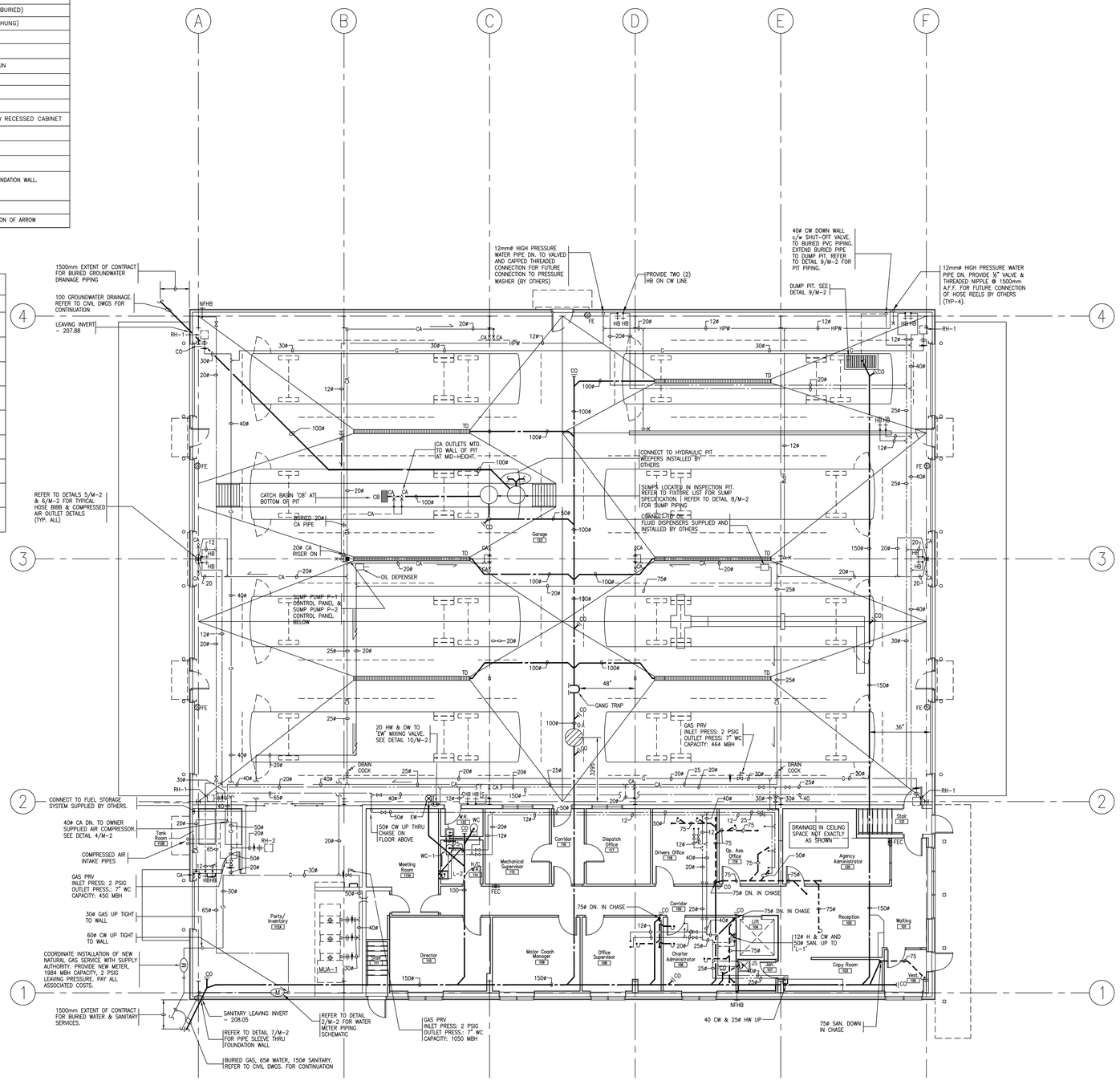
Date: October 2006 Drawn By: MWH
Scale: AS SHOWN Library No.:
Project No.: 204sS027 Drawing No.: S3

PLUMBING LEGEND

SYMBOL	DESCRIPTION
	NEW COLD WATER PIPING
	NEW HOT WATER PIPING
	NEW SANITARY DRAIN (BURIED)
	NEW SANITARY DRAIN (HUNG)
G	GAS LINE
	CLEANOUT
FD,HD	FLOOR DRAIN, HUB DRAIN
	ISOLATION VALVE
	GAS VALVE
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER C/W RECESSED CABINET
NFHB	NON-FREEZE HOSE BIB
HB	INTERIOR HOSE BIB
	UNION
	PIPE SLEEVE THROUGH FOUNDATION WALL. SEE DETAIL 7/M-2
CA	COMPRESSED AIR OUTLET
	SLOPE LINE DN. IN DIRECTION OF ARROW

FIXTURE CONNECTIONS

FIXTURE	CW	HW	DRAIN
LAVATORY (L, L-1, L-2)	12mmø	12mmø	50mmø
WATER CLOSET (WC, WC-1)	12mmø	–	75mmø
SINK (SS)	12mmø	12mmø	50mmø
URINAL (U)	12mmø	–	50mmø
SHOWER (SH-1)	12mmø	12mmø	75mmø
JANITOR SINK (JS)	12mmø	12mmø	75mmø
INTERIOR HOSE BIBB (HB)	12mmø	–	–
EXTERIOR HOSE BIBB (NFHB)	20mmø	–	–
FLOOR DRAINS (FD,FFD,FD-1)	–	–	75mmø



FIRST FLOOR PLAN
SCALE: 1:100

north

no.	revisions	date
1	AS-BUILT	OCT. 2006

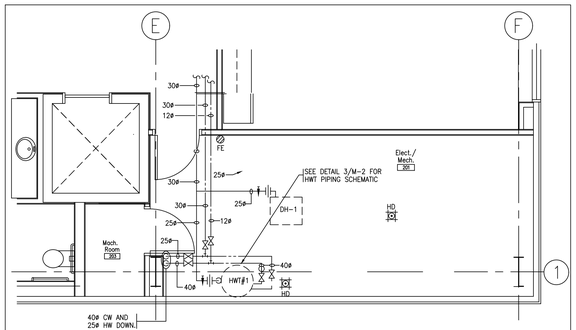
LKM CONSULTING ENGINEERS BCIN #27311
Leipciger Kaminker Mitelman and Partners Inc.
Toronto: (416) 445 8255 • Sudbury: (705) 675 6681

ONTC
Motor Coach Maintenance & Administration Facility

North Bay, Ontario

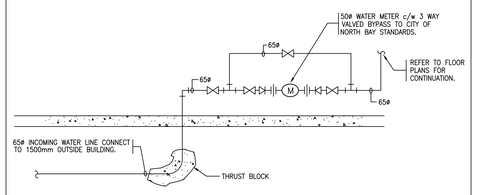
First Floor Plan - Plumbing

Date: OCT. 2006
Scale: AS NOTED
Project No.: 20381
Drawn By: B.M.
Library No.: 2004-0112
Drawing No.: M-1



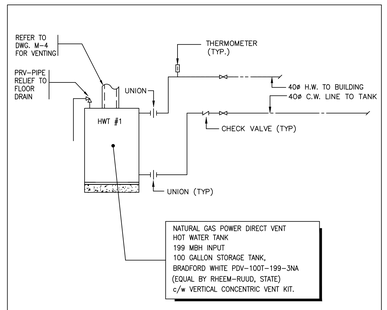
ELECT./MECH. ROOM 201
SCALE: 1:50

1 / M-2



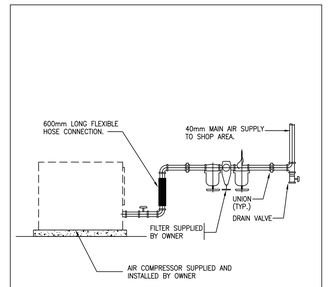
INCOMING WATER PIPING SCHEMATIC
N.T.S.

2 / M-2



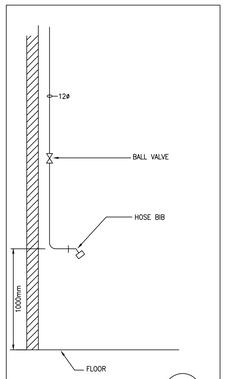
HOT WATER TANK PIPING SCHEMATIC
N.T.S.

3 / M-2



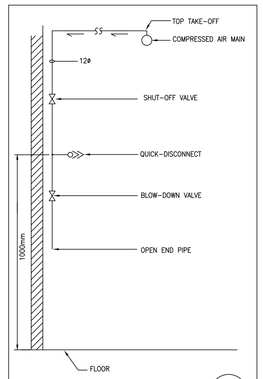
COMPRESSOR PIPING DETAIL
N.T.S

4 / M-2



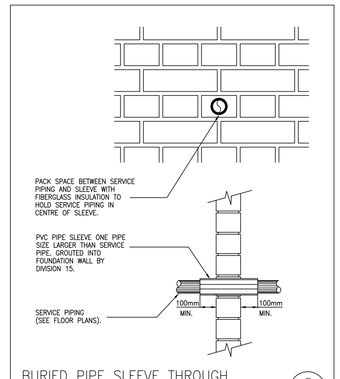
HOSE BIB DETAIL
N.T.S

5 / M-2



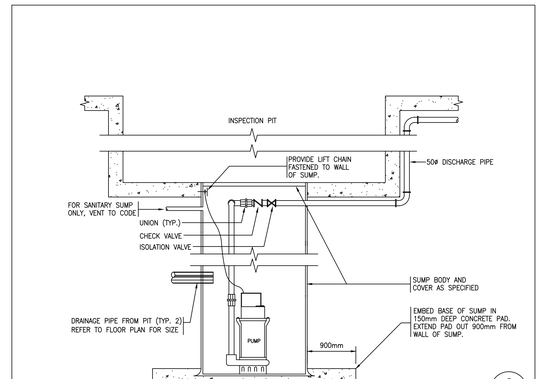
AIR OUTLET DETAIL
N.T.S

6 / M-2



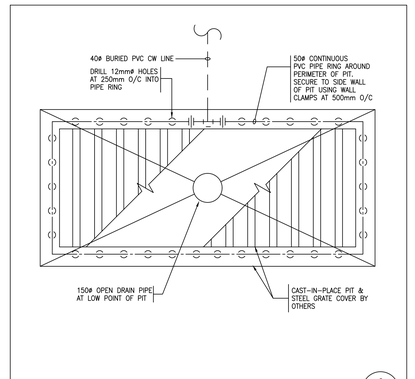
BURIED PIPE SLEEVE THROUGH FOUNDATION WALL (TYP.)
N.T.S.

7 / M-2



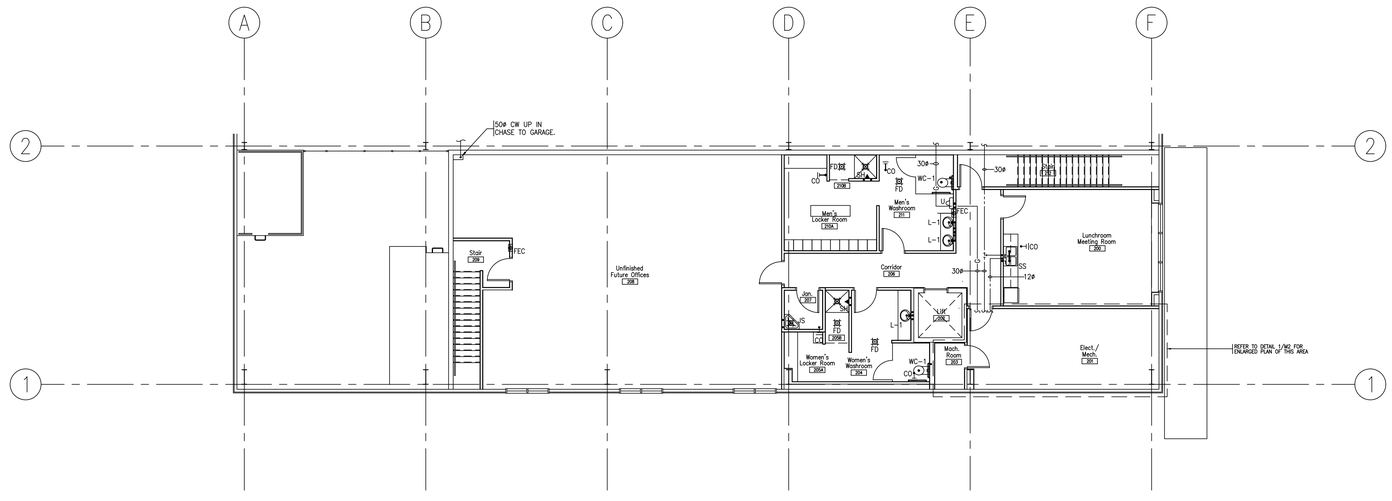
SUMP DETAIL
NOT TO SCALE

8 / M-2



DUMP PIT DETAIL
NOT TO SCALE

9 / M-2



PARTIAL PLAN @ SECOND FLOOR
SCALE: 1:100

north

no.	revisions	date
1	AS-BUILT	OCT. 2006

LKM CONSULTING ENGINEERS
EECINA# 27311
Leipciger Kaminker Mitelman and Partners Inc.
Toronto: (416) 445 8255 • Sudbury: (705) 675 6881

ONTC
Motor Coach Maintenance & Administration Facility

North Bay, Ontario

Second Floor Plan - Plumbing

Date: OCT. 2006
Scale: AS NOTED
Project No.: 20381
Drawn By: B.Y.
Library No.: 2004-0112
Drawing No.: M-2

H.V.A.C. LEGEND

SYMBOL	DESCRIPTION
100 / 8/6	SUPPLY GRILLE. AIRFLOW (l/s) AND SIZE (mm) PER DRAWING. TYPE PER SPEC.
200 / 6'ø	24"X24" DIFFUSER. AIRFLOW (l/s) AND NECK SIZE (mm) PER DRAWING.
200 / 8/8	RETURN/EXHAUST AIR GRILLE. AIRFLOW (CFM) AND SIZE (INCH) PER DRAWING
	RETURN AIR DUCT UP OR DOWN
	SUPPLY AIR DUCT UP OR DOWN
S	BRANCH TAKE-OFF C/W BALANCING DAMPER
EF	EXHAUST FAN
T	THERMOSTAT
	STARTER
EXH	EXHAUST DUCT
FD	FIRE DAMPER
	LOUVRES
M	MOTORIZED DAMPER

CO/NO2 MONITORING SYSTEM (G.E.L., VULCAIN)

CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) DETECTION SYSTEM C/W CONTROL PANEL, FIVE (5) CO SENSORS, FIVE (5) NO2 SENSORS, LOCATED AS INDICATED ON DRAWING M-3.

A. SEQUENCE OF OPERATIONS:

GENERAL EXHAUST FANS EF-1 & EF-2 AND MAKE-UP AIR UNIT MUA-1 SHALL BE CONTROLLED BY 3 POSITION STARTER WITH POSITIONS HAND/OFF/AUTO.

HAND MODE – EF-1, EF-2 AND MUA-1 ARE ON.

OFF MODE – EF-1, EF-2 AND MUA-1 ARE OFF

AUTO MODE – CO/NO2 MONITORING SYSTEM CONTROLS EF-1 EF-2, AND MUA-1, UNITS SHALL BE ACTIVATED BY THE MONITORING SYSTEM UPON DETECTION OF FACTORY SET LOW LEVEL CONCENTRATIONS OF CO OR NO2. AN AUDIBLE ALARM SHALL SOUND WHEN FACTORY SET HIGH LEVEL CONCENTRATIONS OF CO AND/OR NO2 ARE DETECTED.

B. MONITOR SHALL BE NEMA 4X WALL MOUNT TYPE, AND SHALL INCLUDE POWER ON/OFF SWITCH AND LED INDICATOR, TEST/RESET FUNCTION SWITCH, INDEPENDENTLY SETTABLE LOW AND HIGH ALARMS, ALARM RELAYS, AUDIBLE ALARM.

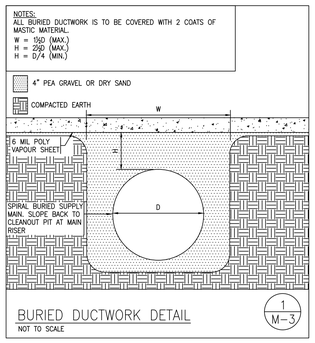
C. SENSOR/TRANSMITTERS SHALL BE ENCLOSED IN ABS PLASTIC FIRE RETARDANT ENCLOSURES.

D. CO SENSOR INTERCONNECT WIRING SHALL BE 3-WIRE SHIELDED CABLE. NO2 INTERCONNECT WIRING SHALL BE 2-WIRED SHIELDED.

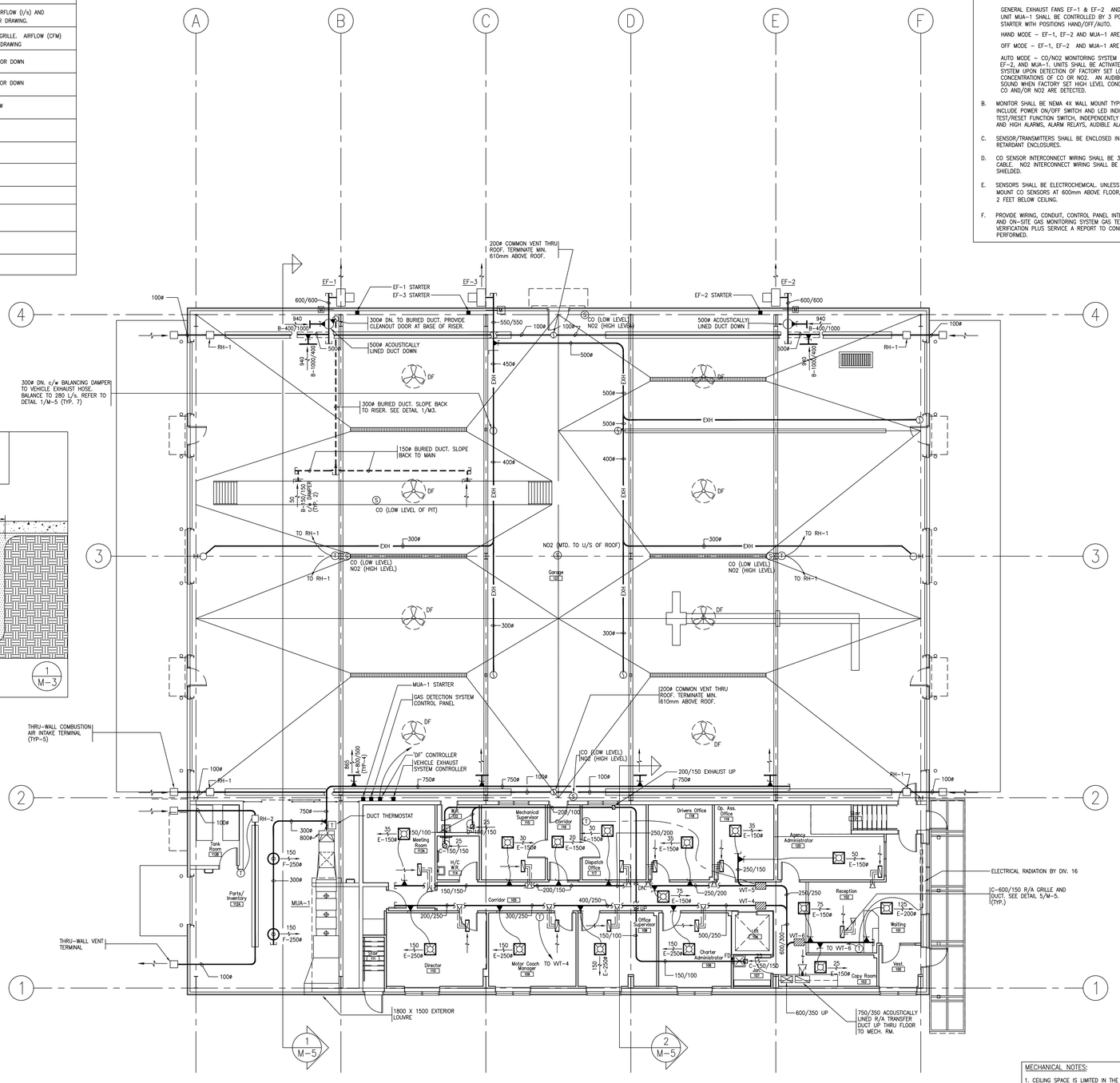
E. SENSORS SHALL BE ELECTROCHEMICAL. UNLESS OTHERWISE INDICATED MOUNT CO SENSORS AT 600mm ABOVE FLOOR, AND NO2 SENSORS 2 FEET BELOW CEILING.

F. PROVIDE WIRING, CONDUIT, CONTROL PANEL INTERCONNECTION, AND ON-SITE GAS MONITORING SYSTEM GAS TESTING AND VERIFICATION PLUS SERVICE A REPORT TO CONFIRM WORK PERFORMED.

NOTES:
ALL BURIED DUCTWORK IS TO BE COVERED WITH 2 COATS OF MASTIC MATERIAL.
W = 1ØD (MAX.)
H = 2ØD (MAX.)
H = D/4 (MIN.)



BURIED DUCTWORK DETAIL (1 / M-3)
NOT TO SCALE



FIRST FLOOR PLAN
SCALE: 1:100

MECHANICAL NOTES:

1. CEILING SPACE IS LIMITED IN THE OFFICE AREA. INSTALL ALL DUCT WORK AS TIGHT AS POSSIBLE TO U/S OF PRE-CAST DECK IN LOCATIONS INDICATED TO PERMIT LIGHTING INSTALLATION AND SPECIFIED CEILING HEIGHT.

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Verify dimensions and details and report all discrepancies to Architect. Do not scale drawings.

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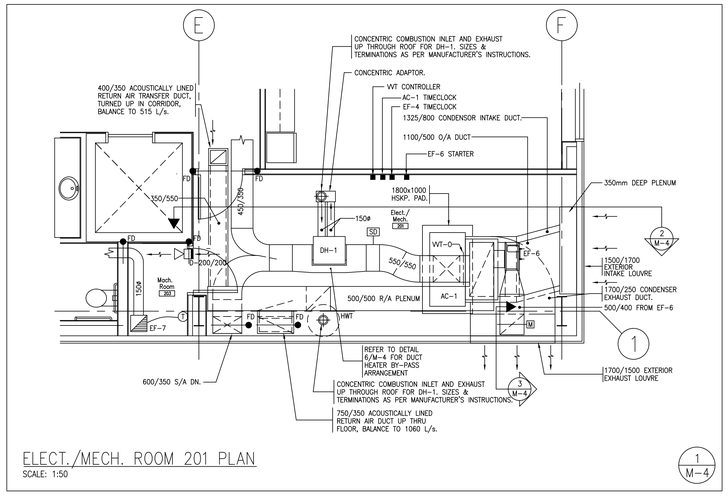
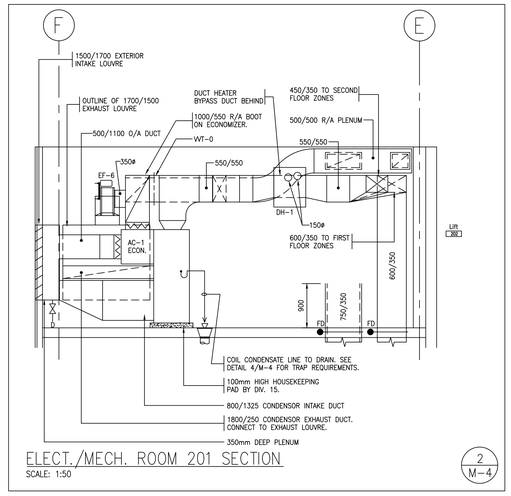


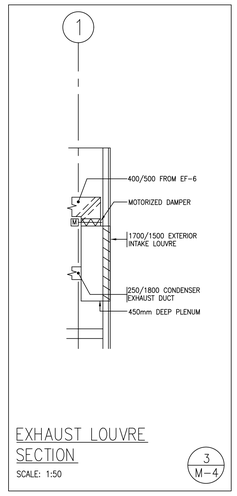
ELECT./MECH. ROOM 201 PLAN
SCALE: 1:50

1 M-4



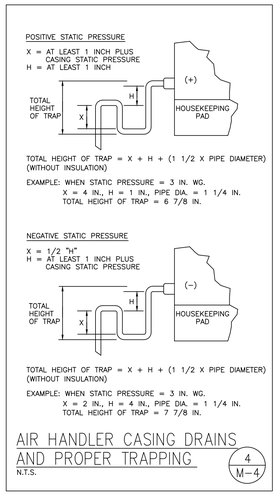
ELECT./MECH. ROOM 201 SECTION
SCALE: 1:50

2 M-4



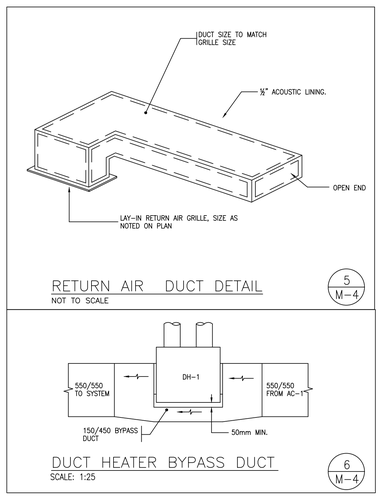
EXHAUST LOUVRE SECTION
SCALE: 1:50

3 M-4



AIR HANDLER CASING DRAINS AND PROPER TRAPPING
N.T.S.

4 M-4

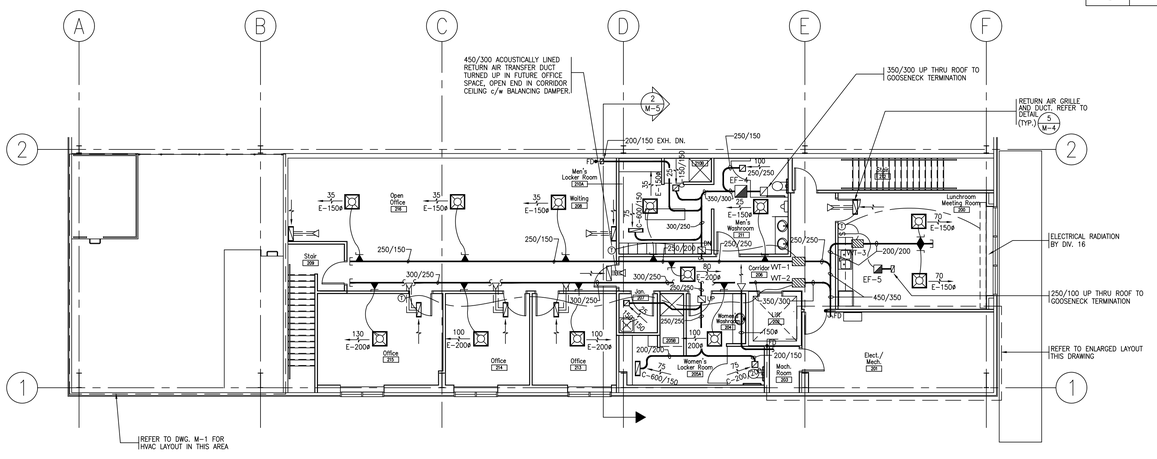


RETURN AIR DUCT DETAIL
NOT TO SCALE

5 M-4

DUCT HEATER BYPASS DUCT
SCALE: 1:25

6 M-4



PARTIAL PLAN @ SECOND FLOOR
SCALE: 1:100

GAS HEATING EQUIPMENT SCHEDULE

UNIT NO.	QUANTITY	UNIT NAME	LOCATION	MAKE/MODEL	CFM	ESP	UNIT VOLTAGE & PHASE	FAN HP	HEATING MBH		FRESH AIR (%)	REMARKS
									INPUT	OUTPUT		
MUA-1	1	GARAGE MAKE-UP AIR UNIT	PARTS/ INVENTORY 112A	ICE UPB-13-1050	8000	1.00"	600/3/60	7.5	1050.0	838.0	100	INDOOR INDIRECT-FIRED PACKAGED MAKE-UP AIR UNIT, NATURAL GAS, 6-STAGE FIRING, STAINLESS STEEL HEAT EXCHANGER, DISCHARGE TEMPERATURE SENSOR, INTAKE DAMPER, PLEATED MEDIA FILTERS, AND REMOTE PANEL w/ SYSTEM AND BURNER SWITCHES AND INDICATING LIGHTS, CONTROLLED VIA GAS DETECTION SYSTEM. INTERLOCK WITH EF-1 & EF-2 FOR SIMULTANEOUS OPERATION.
DH-1	1	AC-1 DUCT HEATER	MECH/ ELEC 201	REZNOR SC-150	N/A	N/A	120/1/60	N/A	140.0	112.0	N/A	INDOOR, SEPARATED COMBUSTION, GAS FIRED DUCT FURNACE c/w STAINLESS STEEL HEAT EXCHANGER AND BURNERS, MODULATING CONTROL, FACTORY SAFETIES. CONTROL VIA VVT SYSTEM. VERTICAL VENT TERMINAL/COMBUSTION AIR INLET ASSEMBLY.
RH-1	4	RADIANT TUBE HEATER #1	GARAGE 123	RE-VERBER-RAY HL-100-125N	N/A	N/A	120/1/60	N/A	125.0 HI 95.0 LO	N/A N/A	N/A	GAS-FIRED TWO-STAGE INFRA-RED RADIANT TUBE HEATER c/w INTAKE WALL TERMINATIONS AND VERTICAL VENT. CONTROL VIA SPARE THERMOSTAT.
RH-2	1	RADIANT TUBE HEATER #2	PARTS/ INVENTORY 112A	RE-VERBER-RAY HL-20-75N	N/A	N/A	120/1/60	N/A	75.0 HI 52.5 LO	N/A N/A	N/A	20" TWO-STAGE INFRA-RED RADIANT TUBE HEATER c/w INTAKE & VENT WALL TERMINATIONS. CONTROL VIA SPARE THERMOSTAT.

FAN SCHEDULE

NO.	NAME	LOCATION	CFM	MAKE/MODEL	SP	H.P.	VOLTAGE	RPM	REMARKS
EF-1	GENERAL GARAGE EXHAUST FAN #1	REAR OF BUILDING	4000	COOK 225 CPS	0.125"	¾	600/3/60	599	EXTERIOR MOUNTED FORWARD CURVED UTILITY SET c/w WEATHERPROOF MOTOR ENCLOSURE, OUTLET HOOD w/ SCREEN, DISCONNECT, VIBRATION ISOLATORS. INTERLOCK WITH MUA-1.
EF-2	GENERAL GARAGE EXHAUST FAN #2	REAR OF BUILDING	4000	COOK 225 CPS	0.125"	¾	600/3/60	599	EXTERIOR MOUNTED FORWARD CURVED UTILITY SET c/w WEATHERPROOF MOTOR ENCLOSURE, OUTLET HOOD w/ SCREEN, DISCONNECT, VIBRATION ISOLATORS. INTERLOCK WITH MUA-1.
EF-3	VEHICLE EXHAUST FAN	REAR OF BUILDING	4200	COOK 195 CPS	3.500"	5.0	600/3/60	1834	EXTERIOR MOUNTED FORWARD CURVED UTILITY SET c/w WEATHERPROOF MOTOR ENCLOSURE, OUTLET HOOD w/ SCREEN, B.D.D., DISCONNECT, VIBRATION ISOLATORS, HEAT SLINGERS. CONTROL VIA VEHICLE EXHAUST SYSTEM CONTROLLER.
EF-4	OFFICE WASHROOM EXHAUST FAN	CORRIDOR 206	960	PENN ZC10	0.375"	¼	120/1/60	643	BELT DRIVE IN-LINE CABINET FAN c/w VIBRATION ISOLATORS, ACOUSTICALLY LINED HOUSING, B.D.D. CONTROL VIA TIMECLOCK.
EF-5	LUNCHROOM EXHAUST FAN	LUNCHROOM MTG. ROOM 200	143	PENN ZSH(2A)	0.250"	79W	120/1/60	1550	CEILING EXHAUST FAN c/w GRILLE, B.D.D. CONTROL VIA WALL SWITCH.
EF-6	AC-1 POWER EXHAUST FAN	MECH / ELEC 201	2500	DELHI 412	0.250"	1.0	208/1/60	833	BELT DRIVE, FC UTILITY EXHAUSTER c/w MOTOR, MOTOR MOUNTING BRACKET, VIBRATION ISOLATION HANGERS. SUSPEND UNIT FROM ABOVE. CONTROL UNIT VIA INTERLOCK WITH AC-1 ECONOMIZER.
EF-7	ELEVATOR MACHINE ROOM EXHAUST FAN	MACHINE ROOM 203	157	PENN ZJ1	0.125"	125W	120/1/60	1200	LOW-PROFILE CEILING FAN c/w GRILLE, B.D.D. CONTROL VIA REVERSE ACTING THERMOSTAT..
DF	DESTRAT. FAN	GARAGE	20,500	PLEASANTAIRE CPS6	N/A	97W	120/1/60	310	56ø" DESTRATIFICATION FAN c/w WIRE MESH GUARD. CONTROL 4 FANS WITH ONE MC-10 VARIABLE SPEED CONTROLLER.

PUMP SCHEDULE

REF.	SERVICE	LOCATION	FLUID FLOW (GPM)	HEAD (FT.WC)	PUMP SPEED RPM	MOTOR SIZE HP	VOLTAGE	MAKE/MODEL	REMARKS
P-1 & P-2	DRAINAGE PIT & WEEPER SUMP PUMP	GARAGE 123 INSPECTION PIT	40.0	20.0	1750	½	208/1/60	MYERS SX50-21	EXPLOSION PROOF SUBMERSIBLE SUMP PUMP, 2" SOLIDS HANDLING c/w 3 MYERS S30E0 FLOATS w/ 60 FT. CORDS, AND MYERS CPSX5-21 CONTROL PANEL w/ HIGH LEVEL ALARM BUZZER w/ TEST SWITCH.

VVT SCHEDULE (BASED ON TRANE)

REF.#	SIZE	SIZE (L/S)
WT-0	BY VVT OWNER	BYPASS
WT-1	200ø	245
WT-2	300ø	430
WT-3	150ø	140
WT-4	350ø	600
WT-5	250ø	310
WT-6	200ø	225

AIR HANDLER SCHEDULE

TAG	AC-1
MAKE	YORK
MODEL	DSK120
V/PH/C	600/3/60
TYPE	PACKAGED INDOOR VERTICAL AIR COOLED AIR CONDITIONER c/w ECONOMIZER
MIN. O.A.	25%
COOLING PERFORMANCE	
TONS	10
NET COOLING CAPACITY (MBH)	117000
SEER	10.60
EVAPORATOR FAN	
VOLUME (CFM)	4150
ESP (IN. W.G.)	1.00
RPM	1130
BHP/HP	2.42/3.00
CONDENSER FAN	
VOLUME (CFM)	5500
ESP (IN. W.G.)	0.400
RPM	873
BHP/HP	1.94/3.00

NOTES:

1. AC-1 SHALL BE CONSTRUCTED OF 18 GUAGE GALVALUME CABINETS WITH VERTICAL DISCHARGE EVAPORATOR, OVERSIZED EVAPORATOR FAN MOTOR, STAINLESS STEEL DRAIN PAN, REUTRN AIR FILTERS, CONTACTS FOR CONTROL VIA VARIABLE VOLUME AND TEMPERATURE CONTROLLER.
2. ECONOMIZER SHALL BE YORK MODEL 2EE04704124, TWO-DAMPER UNIT CONSTRUCTED OF 18 GUAGE GALVALUME c/w FULLY MODULATING OPPOSED BLADE LOW LEAKAGE SPRING RETURN DAMPERS, ENTHALPY CONTROLLER, ENTHALPY SENSOR, AND DISCHARGE SENSOR. OA DAMPER ACTUATOR TO BE c/w AUXILLIARY CONTACT FOR EF-6 CONTROL INTERLOCK.

VEHICLE EXHAUST EXTRACTION SYSTEM (BASED ON PLYMOVENT)

HOSE & DROPPER SYSTEM (TYP-7):	MODEL FE-6-150-HT1500 150ø HIGH TEMP. (1500°F RATED). HOSE FOR THE FIRST 10 FT., MODEL FE-6-150HT600 (600°F RATED) HOSE FOR THE SECOND TEN FT., c/w MODEL PC500 PRESSURE SWITCH FOR AUTOMATIC FAN CONTROL, SUSEPNSION HALTER AND BALANCER WITH RATCHET.
NOZZLE ADAPTORS (TYP-7):	MODEL MEN-125-125 125ø EXHAUST NOZZLE WITH RUBBER AND CO OUTLET c/w TRANSITION FROM 150ø HOSE.
DAMPER KIT (TYP-1):	MODEL TEVAV-35 DAMPER KIT MOUNTED ON FAN INLET DUCT WITHIN BUILDING ENVELOPE.
CONTROLLER (TYP-1):	MODEL PCU-1000 CONTROL BOX.
EXHAUST FAN SEQUENCE:	REFER TO FAN SCHEDULE FOR 'EF-3' SPECIFICATION.

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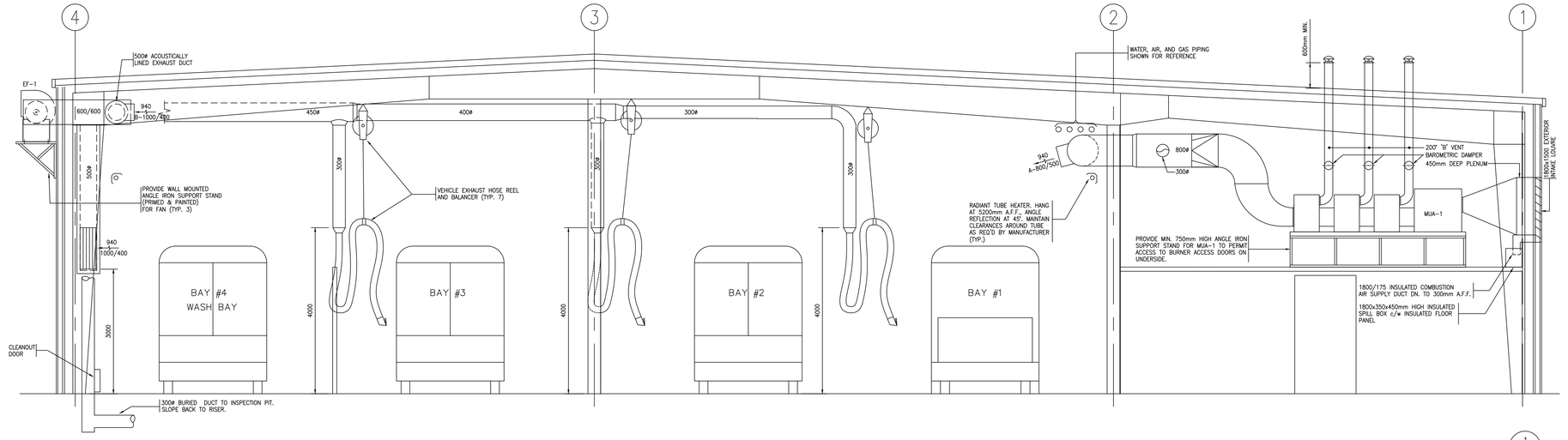


ELECT./MECH. ROOM 201
SCALE: 1:50

GENERAL MECHANICAL CONDITIONS – SECTION 15A

1. CONFORM TO INSTRUCTIONS TO BIDDERS, GENERAL CONDITIONS AND GENERAL REQUIREMENTS.
2. THIS SECTION 15A SHALL APPLY TO ALL DIVISION 15 SECTIONS.
3. BEFORE SUBMITTING TENDERS, EXAMINE SITE, EXISTING SERVICES AND ALL DRAWINGS. EXTRAS WILL NOT BE ALLOWED FOR FAILURE TO DO SO.
4. PROVIDE ALL LABOUR, MATERIALS AND EQUIPMENT NECESSARY TO EXECUTE THE WORK SHOWN AND DESCRIBED. INSTALLATION OF MATERIALS SHALL MEET ALL APPLICABLE PROVINCIAL, FEDERAL AND MUNICIPAL REQUIREMENTS.
5. OBTAIN PERMITS AND PAY ALL FEES FOR WORK AND REQUIRED INSPECTIONS.
6. MAINTAIN LIABILITY INSURANCE TO PROTECT OWNER AND THE CONTRACTOR FROM ANY AND ALL CLAIMS UNDER THE WORKER'S COMPENSATION ACT.
7. THE DRAWINGS SHALL BE CONSIDERED DIAGRAMMATIC ONLY. ALL MEASUREMENTS SHALL BE TAKEN FROM BUILDING SITE AND ARCHITECT'S DRAWINGS.
8. ALL MATERIALS SHALL CONFORM TO CSA, HEPC AND CEC REQUIREMENTS AND SHALL BEAR CSA LABEL. GAS FIRED EQUIPMENT SHALL BEAR CGA LABEL.
9. ALL EXISTING SERVICES MUST BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. THIS CONTRACTOR TO PROVIDE ALL NECESSARY TEMPORARY LINES, ETC. SO AS TO CARRY OUT THE ABOVE.
10. TEMPORARY LIGHT, POWER AND WATER BY GENERAL CONTRACTOR.
11. ALL CUTTING AND PATCHING FOR MECHANICAL WORK WILL BE THE RESPONSIBILITY OF THIS SUB-CONTRACTOR. FIRESTOPPING AROUND ALL PIPE AND DUCTWORK PENETRATIONS THROUGH RATED WALL OR FLOOR ASSEMBLIES (INCLUDING SEALING FOR THE PURPOSES OF MAINTAINING THE INTEGRITY OF A NON-RATED WALL TO PREVENT THE PROPAGATION OF SMOKE) SHALL ALSO BE THE RESPONSIBILITY OF THIS SUB-CONTRACTOR. HIRE SPECIALIZED TRADES TO DO THIS WORK. PROVIDE ULC LISTED INFORMATION ON ALL FIRESTOPPING METHODS BEING USED WHEN REQUESTED BY THE ENGINEER, OWNER OR BUILDING CONTROLS DEPARTMENT ON THE PROJECT AND MAINTAIN A SET OF LITERATURE ON EACH ULC ASSEMBLY ON SITE FOR REFERENCE BY TRADES.
12. PROVIDE TEMPORARY BUILDINGS AND MATERIAL STORAGE AS REQUIRED AND BE RESPONSIBLE FOR ANY LOSS OR DAMAGE THERETO.
13. SUBMIT SAMPLES OF MATERIALS WHEN REQUIRED.
14. SUBMIT 7 COPIES OF SHOP DRAWINGS FOR REVIEW COVERING MAJOR MANUFACTURED ITEMS, IE. FANS, PLUMBING FIXTURES, AC UNITS, STARTERS, OIL INTERCEPTOR, HOT WATER TANK, DAMPERS, ACTUATORS, VVT SYSTEM, ETC.
15. WHERE SUBSTITUTIONS ARE MADE FOR EQUIPMENT SPECIFIED BY NAME OR MODEL NUMBER, BE FULLY RESPONSIBLE FOR CAPACITIES AS WELL AS PHYSICAL FIT OF SUBSTITUTED MATERIALS.
16. SUPPLY AND LOCATE ALL BASES, SUPPORTS, SLEEVES, CURBS, ETC. REQUIRED FOR THIS WORK. FLASHING BY ROOF TRADES. COUNTERFLASHING BY THIS CONTRACTOR.
17. UNLESS OTHERWISE NOTED, ALL MOTORS 1/2 HP AND UNDER SHALL BE 115/1/60 MOTORS OVER 1/2 HP SHALL BE 600/3/60.
18. SUPPLY PROPER COMBINATION MOTOR STARTERS WITH OVERLOAD PROTECTION AND FUSED DISCONNECT SWITCHES FOR POWERED MECHANICAL EQUIPMENT AND HAND OVER TO ELECTRICAL CONTRACTOR FOR INSTALLATION. THREE PHASE STARTERS SHALL BE COMPLETE WITH SOLID STATE OVERLOAD RELAYS FOR OVERLOAD AND PHASE UNBALANCE/LOSS PROTECTION (SQUARE D "MOTOR LOGIC", CUTLER HAMMER "ADVANTAGE" OR APPROVED EQUAL). PROVIDE FULL VOLTAGE MANUAL MOTOR STARTERS FOR ALL 120 VOLT MOTORS (C/W PILOT LIGHT WHERE NOTED). FOR MECHANICAL EQUIPMENT CONTROLLED BY EQUIPMENT CONTROL PANELS, THE STARTERS SHALL BE HAND/OFF/AUTO TYPE WITH AUXILIARY CONTACTS COMPATIBLE WITH THE EQUPMENT MANUFACTURER'S REQUIREMENTS. THIS DOES NOT INCLUDE ISOLATION SWITCHES, UNLESS STATED SPECIFICALLY.
19. ALL POWER WIRING BY ELECTRICAL CONTRACTOR, CONTROL AND INTERLOCK WIRING BY MECHANICAL CONTRACTOR (REGARDLESS OF VOLTAGE). CONTROL WIRING IN RETURN AIR CEILING SPACES SHALL BE FT-6 OR INSTALLED IN CONDUIT. HIRE CERTIFIED ELECTRICAL TRADESMEN TO PERFORM LINE VOLTAGE WORK.
20. SUPPLY AND INSTALL ALL NECESSARY ACCESS DOORS FOR MECHANICAL SERVICES AND EQUIPMENT. WHERE NECESSARY, DOORS SHALL BE RATED TO SUIT FIRE ASSEMBLY RATING.
21. DO ALL EXCAVATING AND BACKFILLING FOR MECHANICAL WORK.
22. PIPE HANGERS SHALL BE CLEVIS SPLIT TYPE WITH MILD STEEL RODS. FOR COPPER PIPE USE PLASTIC INSERTS. USE OVERSIZED HANGERS AND SADDLES FOR C.W. PIPING OR USE PIPE SIZE HANGERS AND INSULATE 150mm UP HANGER ROD. DO NOT SUPPORT EQUIPMENT OR PIPING FROM ROOF DECK WITHOUT PERMISSION FROM ARCHITECTS. SUPPLY AND INSTALL NECESSARY STEEL TO TRANSFER LOAD TO STRUCTURAL MEMBERS.
23. ALL DISSIMILAR METAL (STEEL-COPPER, ETC.) SHALL BE SEPARATED USING GASKETS AND INSULATING WASHERS OR WATTS "DI-ELECTRIC" FITTINGS.
24. INSTALL CHROME-PLATED ESCUTCHEONS WHERE BRANCH PIPES PASS THROUGH FINISHED SURFACE, INCLUDING BUT NOT LIMITED TO HOT AND COLD WATER PIPING, SANITARY PIPING, GAS PIPING, ETC.
25. KEEP ACCURATE RECORD OF "AS-BUILT" DRAWINGS AND SUBMIT THESE BEFORE FINAL CERTIFICATE OF COMPLETION. BURIED SERVICES MUST BE DIMENSIONED.
26. ALL SURFACES MUST BE LEFT CLEAN AND SMOOTH, READY FOR PAINTING BY GENERAL TRADES.
27. IDENTIFY ALL PIPING. USE STENCILS OR COLOUR CODES AND DIRECTIONAL ARROWS.
28. IDENTIFY ALL FANS, STARTERS, REMOTE CONTROL AND ALL OTHER EQUIPMENT AS TO SERVICE BY A BLACK LAMACOID ENGRAVED NAMEPLATE WITH WHITE CORE, FIRMLY AFFIXED WITH SCREWS TO EACH UNIT.
29. ON COMPLETION OF THE WORK, REMOVE FROM THE PREMISES ALL TOOLS, DEBRIS, SURPLUS AND WASTE MATERIALS RESULTING FROM OPERATIONS UNDER THIS SECTION. CLEAN ALL EQUIPMENT AND LEAVE ALL ITEMS IN PERFECT ORDER READY FOR OPERATION.
30. AFTER ACCEPTANCE, INSTRUCT OWNER'S REPRESENTATIVE IN EQUIPMENT OPERATION AND PROVIDE THEM WITH OPERATING AND MAINTENANCE MANUALS STANDARDS AND EXTENDED WARRANTY DOCUMENTS, INSPECTION CERTIFICATES AND COPIES OF SHOP DRAWINGS OF INSTALLED EQUIPMENT.
31. THE CONTRACTOR SHALL, BEFORE FINAL PAYMENT IS MADE, GUARANTEE ALL MATERIALS AND WORKMANSHIP SUPPLIED BY HIM IN THE PERFORMANCE OF THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE AND SHALL, WHEN CALLED UPON, MAKE GOOD WITHOUT FURTHER COST TO THE OWNER SUCH DEFECTS AS MAY APPEAR WITHIN THIS PERIOD.

WARM AIR HEATING, VENTILATING & AIR CONDITIONING – SECTION 15B

1. SUPPLY AND INSTALL ALL HEATING, VENTILATION AND AIR HANDLING EQUIPMENT AS SHOWN ON DRAWINGS.
2. SUPPLY AND INSTALL DUCTWORK AS INDICATED ON DRAWING. DUCTWORK SHALL BE FABRICATED AND INSTALLED IN STRICT ACCORDANCE WITH LATEST SMACNA STANDARDS AND SHALL BE MANUFACTURED OF GALVANIZED STEEL UNLESS SPECIFICALLY NOTED OTHERWISE. ALL DUCTWORK SHALL BE SEALED IN ACCORDANCE WITH SMACNA CLASS "C" REQUIREMENTS.
3. ALL EXPOSED ROUND DUCTWORK SHALL BE SPIRAL WOUND SATIN FINISH. NEATLY SEAL ALL JOINTS WITH A BRUSH APPLIED SEALANT SUITABLE FOR PAINTING.
4. INSTALL MANUAL BALANCING DAMPERS AT ALL BRANCH TAKEOFFS AND IN OTHER LOCATIONS WHERE NECESSARY FOR SYSTEM BALANCING.
5. FLEXIBLE DUCTWORK SHALL BE ALUMINUM HELICALLY WOUND SPIRAL DUCT WITH TAPED AND SCREWED JOINTS.
6. INSTALL UL LABELLED FIRE DAMPERS AND FIRE STOP FLAPS WHERE SHOWN AND WHERE REQUIRED. THESE SHALL BE INSTALLED IN ACCORDANCE WITH ULC APPROVED METHODS. FOR DUCTS UNDER 300mm USE 100 PERCENT FREE AIR DAMPERS. ADVISE DRYWALL TRADES OF APPROVED INSTALLATION METHODS IN DRYWALL PARTITIONS.
7. INSTALL150mm APPROVED FLEXIBLE CONNECTOR ON DUCT CONNECTIONS TO RESILIENTLY MOUNTED FANS. FLEXIBLE CONNECTORS ON THE VEHICLE EXHAUST SYSTEM SHALL BE RATED TO WITHSTAND TEMPERATURES OF 1500 DEG. F.
8. WHERE SHOWN, DUCTWORK SHALL BE LINED INTERNALLY WITH 12mm FACED FLEXIBLE DUCT LINER. SHOWN SIZES ARE CLEAR INSIDE DIMENSIONS, INCREASE DUCT SIZE ACCORDINGLY.

   SIMILARLY LINE SUPPLY AND RETURN DUCTS 10 FT FROM ALL INDOOR AIR HANDLERS AND A/C UNITS.
9. SUPPLY ALL GRILLES AND DIFFUSERS WHERE SHOWN ON DRAWINGS. FINISH SHALL BE OFF-WHITE BAKED ENAMEL. GRILLES AND DIFFUSERS SHALL BE E.H. MODEL SPECIFIED OR EQUAL BY NAILOR, TITUS.

A	SUPPLY GRILLES –	STEEL, DOUBLE DEFLECTION VERTICAL FACE BARS, 19mm SPACING, OPPOSED BLADE DAMPER, 25mm NARROW BORDER, SCREW FASTENING. E.H. PRICE 520D/N/S/A/B13. PROVIDE VOLUME EXTRACTOR WITH MANUAL EXTERNALLY CONTROLLED ADJUSTING ROD WITH SET SCREW LOCK. E.H. PRICE AE 1 NO. 4
B	HEAVY DUTY EXHAUST GRILLES –	STEEL, FIXED 0ø BARS, LONG WAY, 19mm SPACING, 30mm BORDER, SCREW FASTENING E.H. PRICE 95/L/A/B13.
C	LAY-IN RETURN GRILLES –	12mm ALUMINUM EGG CRATE, NO FRAME, NO DAMPER, NO BORDER. E.H. PRICE 80/B13.
D	SURFACE MOUNT RETURN –	12mm ALUMINUM EGG CRATE, 30mm BORDER, SCREW FASTENING. E.H. PRICE 80/F/A/B13.
E	SQUARE DIFFUSERS –	SQUARE PLAQUE DIFFUSER OF NECK SIZE SHOWN ON DRAWING C/W GRID. SEE CEILING SCHEDULE AND DRAWING FOR MOUNTING TYPE AND MODULE SIZE. E.H. PRICE SPD/B13.
F	ROUND DIFFUSERS –	ROUND CONE DIFFUSER OF NECK SIZE SHOWN ON DRAWING. E.H. PRICE RCD/B13.

10. PROVIDE A COMPLETE VVT SYSTEM EQUAL TO TRANE, AS DESCRIBED BELOW:
    - A THE CHANGEOVER/BYPASS VAV SYSTEM SHALL CONTROL THE HEATING/COOLING AIR CONDITIONING UNIT TO PROVIDE INDIVIDUAL ZONE TEMPERATURE CONTROL IN A MULTIPLE ZONE BUILDING. THE SYSTEM SHALL MONITOR THE HEATING OR COOLING, OR VICE VERSA. THE SYSTEM SHALL PROVIDE VARIABLE AIR VOLUME CONTROL FOR EACH ZONE, AND CONTROL EACH ZONE'S TEMPERATURE TO ITS HEATING OR COOLING SETPOINT. ALSO, THE SUPPLY AIR FLOW RATE SHALL BE SENSED AND MAINTAINED TO A MINIMUM AIR FLOW ACROSS THE AIR CONDITIONING UNIT BY USE OF A MODULATING BYPASS DAMPER.
    - B. THE SYSTEM'S CONTROLS SHALL BE DEDICATED DIRECT DIGITAL MICROPROCESSOR BASED CONTROL SYSTEM WITH MULTI-LEVEL DISTRIBUTED MICROPROCESSING. INFORMATION EXCHANGED BETWEEN THE CENTRAL CONTROLLER AND EACH TERMINAL UNIT CONTROL MODULE SHALL BE SERIALLY TRANSMITTED ON A SINGLE TWISTED WIRE PAIR COMMUNICATION LINK. SYSTEM CONTROLS SHALL BE DESIGNED FOR USE EXCLUSIVE TO MULTIPLE ZONE TEMPERATURE AND CHANGEOVER/BYPASS CONTROL. GENERAL PURPOSE OR GENETIC CONTROLS ARE NOT ACCEPTABLE.
    - C. ZONE DAMPERS SHALL BE COMPLETELY FACTORY ASSEMBLED, MANUFACTURED OF ROLLED AND SEAM WELDED 16 GAUGE 66061-T6 ALUMINUM. DISCHARGE END SHALL BE CRIMPED TO FIT STANDARD ROUND DUCTWORK. CASING SHALL BE AVAILABLE IN THE FOLLOWING INLET AND OUTLET DIAMETER SIZES; 6", 8", 10", 12", 14" AND 16". THE DAMPER BLADE SHALL HAVE AERODYNAMICALLY DESIGNED EDGES SEALS TO PROVIDE SEAL TIGHT OPERATION AT FULL CLOSURE AND VIBRATION FREE OPERATION AT OPEN POSITIONS. DAMPER BLADE SHALL MODULATE A FULL 90 DEGREES AND BE CONSTRUCTED OF 22 GAUGE GALVANIZED STEEL. THE TERMINAL UNIT CONTROL MODULE SHALL CONTROL DAMPER POSITION, AND THEREFORE PRIMARY AIR FLOW, IN RESPONSE TO THE DIFFERENCE BETWEEN ZONE TEMPERATURE AND THE APPROPRIATE SETPOINT. THE UNIT CONTROL MODULE SHALL BE CAPABLE OF OPERATING AS A COOL SUPPLY AIR CONTROLLER OR TO "CHANGEOVER" AND OPERATE AS A WARM SUPPLY AIR CONTROLLER.
    - D. ZONE THERMOSTAT SHALL CONSIST OF SENSOR, TEMPERATURE SETPOINT THUMB WHEEL, NIGHT SETBACK OVERRIDE PUSH BUTTON, AND COMMUNICATION JACK.
    - E. SYSTEM SHALL BE TRANE VARITRAC CHANGEOVER/BYPASS SYSTEM COMPLETE WITH THE FOLLOWING: ONE (1) TRANE COMFORT MANAGER PER ROOFTOP COOLING UNIT; ONE (1) VARITRAC BYPASS DAMPER PER SYSTEM; ONE (1) VARITRAC ZONE DAMPER PER ZONE; AND ONE (1) THERMOSTAT PER ZONE.
    - F. SYSTEM SHALL CONTROL THE UNIT AS FOLLOWS:

OCCUPIED MODE –	OUTSIDE AIR DAMPERS ARE OPEN.
UNOCCUPIED MODE –	OUTSIDE AIR DAMPERS ARE CLOSED. COOLING IS OFF. UNIT CYCLES TO MAINTAIN NIGHT SETBACK REQUIREMENTS OF ZONES.

   THE UNIT SHALL BE SET INTO THE OCCUPIED MODE 2 HOURS BEFORE THE BUILDING IS OCCUPIED.

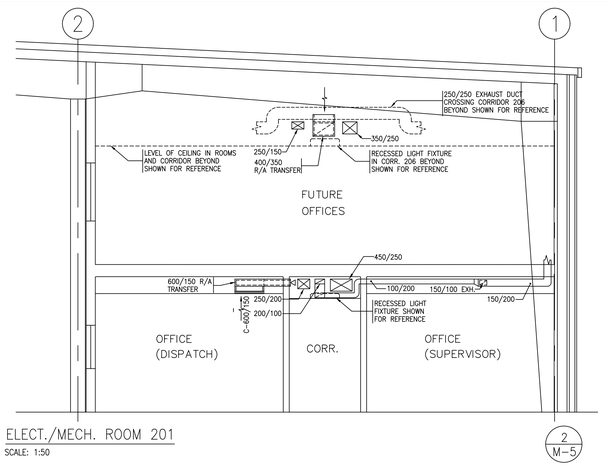
    - G. ZONE DAMPERS SHALL HAVE A MINIMUM SETTING OF 25% AIR FLOW. DAMPERS SHALL BE SET FOR 100 % AIRFLOW IN THE VENTILATION MODE.
    - H. SYSTEM SHALL BE COMPLETE WITH A CENTRAL CONTROL PANEL WITH LCD DISPLAY. INFORMATION ON THE MODE OF OPERATION OF THE ROOFTOP UNIT, ZONE TEMPERATURES, AND DAMPER POSITIONS MUST BE ACCESSIBLE AT THE LCD DISPLAY WITHOUT THE USE OF AN AUXILIARY DEVICE.
    - I. THE MANUFACTURER SHALL PROVIDE START-UP SERVICE FOR THE VVT SYSTEM. THE MANUFACTURER SHALL PROVIDE CUSTOMIZED WIRING DIAGRAMS FOR THIS APPLICATION AND ANY 115 TO 24 VOLT TRANSFORMERS REQUIRED FOR THE SYSTEM. ALL CONTROL RELAYS NECESSARY TO SYSTEM OPERATION SHALL BE PROVIDED BY THE MANUFACTURER.
    - J. THE CONTRACTOR SHALL INCLUDE IN THE CONTRACT PRICE, THE COST FOR THE MANUFACTURER TO COMMISSION AND CERTIFY THE SYSTEM, AS DESCRIBED BELOW.
    - K. AT COMPLETION OF CONSTRUCTION, THE MANUFACTURER MUST INSPECT THE SYSTEM AND PROVIDE WRITTEN CERTIFICATION THAT THE SYSTEM IS INSTALLED AND CALIBRATED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. IN PARTICULAR THE FOLLOWING SHALL BE CERTIFIED:
        - i) THE PRESSURE SENSOR IS MOUNTED IN THE PROPER LOCATION.
        - ii) THE ZONE DAMPERS ARE SET FOR 100% AIRFLOW IN THE VENTILATION MODE.
        - iii) THE ZONE DAMPERS IN ROOMS WITH ELECTRIC HEAT ARE INTERLOCKED WITH THE HEATERS TO PROVIDE ELECTRIC HEAT AS STAGE ONE HEAT.
        - iv) THE BYPASS DAMPER RESPONDS PROPERLY TO THE PRESSURE SENSOR.
        - v) THE SYSTEM IS WIRED CORRECTLY.
        - vi) THE ZONE DAMPERS RESPOND PROPERLY TO THEIR RESPECTIVE THERMOSTAT.
11. AC-1 SHALL BE COMPLETE WITH TRAPPED CONDENSATE DRAIN. EXTEND DRAIN SO THAT CONDENSATE SPILLS INTO FUNNEL FLOOR DRAIN PROVIDED.
12. INCLUDE FOR STARTUP OF ALL AIR HANDLING EQUIPMENT.
13. ALL MOTORIZED DAMPERS SHALL BE LOW LEAKAGE WITH THERMALLY LEAKAGE INSULATED BLADES. INTERLOCK MOTORIZED DAMPERS WITH THEIR RESPECTIVE FANS TO PREVENT FAN STARTUP UNTIL DAMPER IS AT LEAST 50% OPEN.
14. SUPPLY AND INSTALL GAS VENTS FOR ALL GAS FIRED EQUIPMENT.
15. EXHAUST DUCTWORK WITHIN 1500mm OF A WALL OR ROOF, ALL OUTSIDE AIR INTAKE DUCTWORK, AND ALL OTHER DUCTWORK AS NOTED ON THE DRAWING, SHALL BE EXTERNALLY INSULATED WITH 25mm THICK FOIL FACED FLEXIBLE FIBREGLAS DUCT INSULATION. APPLY USING RECOMMENDED ADHESIVE AND TAPE ALL JOINTS USING VAPOUR BARRIER TAPE. IN EQUIPMENT ROOMS AND OTHER EXPOSED AREAS, FINISH WITH CANVAS AND LAGGING CEMENT.
16. PROVIDE ALL MOTORIZED DAMPERS TO OPEN AND CLOSE AS RESPECTIVE FANS START AND STOP.
17. SUPPLY AND INSTALL ALUMINUM WEATHER LOUVRES WHERE SHOWN. 150MM STORMPROOF BLADE C/W 40MM FLANGE FRAME, BIRDSCREEN. COLOUR TO ARCHITECT'S APPROVAL. BLANK OFF ALL UNUSED SECTIONS WITH INSULATED SHEETMETAL.
18. ADJUST ALL FAN SPEEDS TO DELIVER SHOWN AIR QUANTITIES. BALANCE ALL AIR SYSTEMS AND SUPPLY WRITTEN AIR BALANCING REPORTS IN TRIPLICATE. INCLUDE NECESSARY SPARE BELTS AND PULLEYS FOR FIELD ADJUSTMENT. SET AIR SYSTEMS CONTROLS AND DEMONSTRATE OPERATION TO OWNER'S REPRESENTATIVE.

PLUMBING & DRAINAGE INSIDE THE BUILDING – SECTION 15C

1. ALL WORK SHALL BE EXECUTED BY LICENSED PLUMBERS.
2. ALL PLUMBING AND DRAINAGE WORK SHALL BE INSTALLED AS REQUIRED BY ONTARIO BUILDING CODE, REVISED TO DATE, AND SHALL MEET THE REQUIREMENTS OF ALL PROVINCIAL AND MUNICIPAL AUTHORITIES HAVING JURISDICTION.
3. INCLUDE ALL PIPING, FITTINGS AND EQUIPMENT SHOWN ON DRAWINGS OR DESCRIBED IN SPECIFICATIONS. ALL ITEMS NOT MENTIONED BUT UNDERSTOOD TO BE NECESSARY TO COMPLETE THE PLUMBING SYSTEM SHALL BE INCLUDED.
4. CONTRACT EXTENDS TO 1500MM OUTSIDE THE BUILDING.
5. ALL BURIED SANITARY DRAINAGE PIPING SHALL BE PVC SDR 35 WITH SOLVENT JOINTS. 200MM AND OVER USE GASKETTED JOINTS.D FO
6. ALL ABOVE GROUND SANITARY DRAINAGE AND VENT PIPING SHALL BE CAST IRON MECHANICAL JOINT OR DWV COPPER PIPING.
7. ABOVE GROUND WATER PIPING SHALL BE TYPE "L" COPPER C/W 95/5 SOLDER JOINTS. FOR 2" AND OVER, VICTAULIC ROLL-GROOVED JOINTING WILL BE ACCEPTED.
8. BURIED WATER PIPING SHALL BE COPPER TYPE "K" OR PVC APPROVED FOR MUNICIPAL POTABLE WATER.
9. BURIED VENT PIPING MAY BE ABS PLASTIC SOLVENT WELD.
10. OIL/TRANSMISSION FLUID PIPING SHALL BE STANDARD WEIGHT STEEL SCHEDULE 40 WITH SCREWED 125 LB. CLASS FITTINGS. USE ONLY ECCENTRIC REDUCERS ON HORIZONTAL PIPING.
11. COMPRESSED AIR PIPING SHALL BE STANDARD WEIGHT STEEL SCHEDULE 40 WITH SCREWED 125 LB. CLASS FITTINGS. USE ONLY ECCENTRIC REDUCERS ON HORIZONTAL PIPING.
12. SANITARY VENTING IS NOT INDICATED ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL FIXTURES, DRAINS, ETC. ARE VENTED IN ACCORDANCE WITH THE ONTARIO BUILDING CODE. PROVIDE VENTING SYSTEMS INCLUDING ROOF PENETRATIONS. LOCATE ALL AIR INTAKES AND ROOF MOUNTED EQUIPMENT WITH AIR INTAKES, AND INSTALL SANITARY VENTING NO CLOSER THAN 15 FEET TO THE INTAKE.
13. FLOOR DRAINS SHALL BE TRAPPED TO CODE USING AUTOMATIC METERED TRAP PRIMER UNITS ACTIVATED BY PRESSURE DROP. USE TRAP PRIMER DISTRIBUTION UNITS FOR TRAPPING MULTIPLE DRAINS OFF OF A SINGLE TRAP PRIMER UNIT. TRAP PRIMER UNITS SHALL BE PRECISION PLUMBING PRODUCTS INC. PR-500 OR EQUAL.
14. VALVES UP TO 50MM SHALL BE FULL THROAT BRONZE BALL VALVES. 65mm AND OVER SHALL BE BUTTERFLY VALVES.
15. SUPPLY AND INSTALL OIL INTERCEPTOR, PLUMBING FIXTURES, CLEANOUTS, HOSE BIBBS, FLOOR DRAINS, HOT WATER TANK, PUMP, ETC. AS SHOWN ON DRAWINGS AND LISTED IN SCHEDULES.
16. VISIBLE SINK DRAINAGE TRAPS AND VISIBLE SUPPLY PIPING TO ALL FIXTURES SHALL BE CHROME PLATED.
17. CLEANOUTS SHALL BE INSTALLED AS REQUIRED BY CODE AND WHERE SHOWN AND SHALL SUIT FLOORING MATERIAL.
18. MAKE ALL NECESSARY ARRANGEMENTS, PAY ALL CHARGES AND DO ALL NECESSARY WORK FOR THE INSTALLATION OF A NEW GAS SERVICE WHERE SHOWN ON THE DRAWINGS. ENTIRE INSTALLATION SHALL BE AS STATED IN THE NATURAL GAS AND PROPANE INSTALLATION CODE CSA B-149.1-00.
19. ALL GAS PIPING TO BE PAINTED YELLOW AND FURTHER IDENTIFIED AS REQUIRED BY GAS CODE.
20. SUPPLY AND INSTALL ALL NECESSARY GAS PRESSURE AND WATER PRESSURE REGULATORS WHERE REQUIRED BY INDIVIDUAL APPARATUS AND EQUIPMENT. RUN NECESSARY VENTS TO ATMOSPHERE.
21. PROVIDE APPROVED BACKFLOW PREVENTORS ON ALL INSIDE AND OUTSIDE HOSE BIBBS.
22. DOMESTIC COLD AND HOT WATER PIPING 30MM DIAMETER AND UNDER SHALL BE INSULATED WITH 12MM THICK FIBREGLAS PIPE INSULATION WITH ASJ. USE 25MM THICK FIBREGLAS PIPE INSULATION WITH ASJ FOR PIPING 40MM AND OVER. HORIZONTAL RUNS OF SANITARY AND STORM DRAINS SHALL BE INSULATED IN A SIMILAR MANNER. IN EXPOSED AREAS FINISH WITH CANVAS OR P.V.C. JACKETTING. INSULATE ALSO COLD WATER METERS.
23. SUPPLY ALL NECESSARY FRAMES AND GAS TIGHT COVERS FOR ALL SUMPS. VENT AS REQUIRED.
24. SUPPLY SUBMERSIBLE SUMPS, EACH PUMP C/W GATE AND CHECK VALVE ON DISCHARGE LINE. ALL CONNECTIONS TO BE BELOW FLOOR.
25. SUPPLY HOT WATER TANK AS SHOWN ON DRAWINGS.
26. SUPPLY AND INSTALL ALL FIRE EXTINGUISHERS AS SHOWN ON DRAWINGS.
27. SUPPLY AND INSTALL AND PAY ALL CHARGES FOR INSTALLATION OF WATER METER C/W 3 VALVE BYPASS. ENTIRE INSTALLATION TO LOCAL STANDARDS.
28. SEE FIXTURE SCHEDULE FOR PLUMBING FIXTURE TYPES.
29. SUPPLY AND INSTALL SCREW FIXTURE STOP VALVE ON THE HOT AND COLD WATER SUPPLY TO EVERY FIXTURE ON THE JOB, IN ADDITION TO THE VALVE OR FAUCET ON THE FIXTURE ITSELF.
30. PROTECT ALL FIXTURES UNTIL HANDED OVER TO THE OWNER. ALL FIXTURES SHALL BE C/W NECESSARY TRIM, TRAP SUPPLIES, STOPS, TAIL PIECES, TRAPS, GASKETS, ETC.

TEMPERATURE CONTROLS – SECTION 15D

NOTE: REFER TO SPECIFICATION SECTION ISSUED WITH LKM ADD M-01.



ELECT./MECH. ROOM 201
SCALE: 1:50

PLUMBING FIXTURE LIST

WC WATER CLOSET
FLOOR MOUNTED ELONGATED RIM BOWL, 6L LINED FLUSH TANK, BLACK OPEN FRONT SEAT LESS COVER AND SUPPLY WITH STOP.
FIXTURE: CRANE RADCLIFFE ULF 3-405
SEAT: CENTOCO 500CC

WC-1 WATER CLOSET – BARRIER FREE
FLOOR MOUNTED ELONGATED BOWL, 6L LINED FLUSH TANK, BLACK OPEN FRONT SEAT WITH COVER AND SUPPLY WITH STOP.
FIXTURE: CRANE HYMONT JR. ELITE 3493
SEAT: CENTOCO 820 ST

U URINAL
WALL HUNG FLUSH VALVE C/W WALL MOUNTING BRACKET AND WALL CLEANOUT.
FIXTURE: CRANE CROMWELL 7197
FLUSH VALVE: CAMBRIDGE BRASS 81T231

L LAVATORY
WALL HUNG CHINA LAVATORY WITH 150mm CENTRESET WITH WRIST BLADE LEVER HANDLES. PROVIDE CONCEALED FLOOR MTD. DRY WALL CARRIER, OPEN GRID STRAINER, WASTE ASSEMBLY, P-TRAP AND OFFSET SUPPLIES WITH STOPS.
FIXTURE: CRANE SERENA 129V
TRIM: SYMMONS S-240-FR-LWG
CARRIER: ANCON MC-41

L-1 LAVATORY – BARRIER FREE
COUNTERTOP OVAL CHINA LAVATORY WITH 150mm CENTRESET WITH BLADE LEVER HANDLES, OPEN GRID STRAINER, OFFSET WASTE ASSEMBLY, P-TRAP AND OFFSET SUPPLIES WITH STOPS. WRAP WITH PRE-MOULDED PVC SEAMLESS COVER.

FIXTURE: CRANE SONNET 1287V
BRASS: SYMMONS S-240-FR-LWG
DRAIN COVER: McGUIRE MANUF. PRO WRAP

L-2 LAVATORY – BARRIER FREE
WALL HUNG CHINA LAVATORY WITH 150mm CENTRESET WITH WRIST BLADE LEVER HANDLES. PROVIDE CONCEALED FLOOR MOUNTED DRY WALL CARRIER, OPEN GRID STRAINER, OFFSET WASTE ASSEMBLY, P-TRAP AND OFFSET SUPPLIES WITH STOPS. WRAP WITH PRE-MOULDED PVC SEAMLESS COVER.
FIXTURE: CRANE SERENA 129V
TRIM: SYMMONS S-240-FR-LWG
CARRIER: ANCON MC-42
DRAIN COVER: McGUIRE MANUF. PRO WRAP

SS STAINLESS STEEL SINK
DOUBLE 360mm X 410 mm X 180 mm DEEP COMPARTMENT LEDGEBACK SINK WITH CRUMB CUPS, WASTE, TRAP SUPPLIES WITH STOPS AND 200mm CENTRE SET.
FIXTURE: ARISTALINE #LBD6407
BRASS: CAMBRIDGE BRASS 26T2143

SH-1 SHOWER
ONE PIECE ACRYLIC SHOWER SUITE 965mm X 838mm X 2184mm HIGH c/w DRAIN , STRAINER PLATE, TEMPERED GLASS DOOR, PRESSURE BALANCING TEMPERATURE MIXING VALVE C/W TEMPERATURE LIMIT STOP, INTERNAL CHECK STOPS, 2 GPM SHOWER HEADWITH ARM FLANGE.
FIXTURE: FIAT #MS3600 C/W SD30 DOOR
TRIM: SYMMONS 56-1-X

JS JANITOR'S MOP SINK
FLOOR BASED MOP BASIN 610mm X 610mm X 254mm HIGH c/w RIM GUARDS AND DRAIN. TRIM TO BE WALL MOUNTED WITH SUPPORT BRACKET, PAIL HOOK, HOSE END ADAPTOR WITH VACUUM BREAKER, HOSE AND HOLDER.
FIXTURE: FIAT MSB2424
BRASS: FIAT #830-AA + #832-AA

NFHB NON-FREEZE HOSE BIBB
CHROME PLATED BRASS ANTI-SIPHON NON FREEZE WALL HYDRANT
ZURN ZN-1310

EW EMERGENCY EYE/FACE WASH STATION
WALL MOUNTED EYE/FACE WASH UNIT c/w WITH STAINLESS STEEL BOWL, HINGED DUST COVER, STAY OPEN PUSH PAD CONTROL VALVE, WALL BRACKET, AND THERMOSTATIC MIXING VALVE WITH COLD WATER BYPASS AND TEMPERATURE GUAGE LOCATED IN SURFACE MOUNTED ENAMEL CABINET. PROVIDE TRAP AND SUPPLIES WITH STOPS.
FIXTURE: BRADLEY MODEL S19-220DCFW
MIXING VALVE: BRADLEY S19-2000-SE

FE FIRE EXTINGUISHER
5LB MULTI PURPOSE TYPE FIRE EXTINGUISHER COMPLETE WITH WALL HANGER BRACKET
WILSON AND COUSINS – ABC-050E
PROVIDE RECESSED EXTINGUISHER CABINET WHERE INDICATED ON DRAWINGS – WILSON AND COUSINS IE-105R

DRAINAGE PRODUCTS

FD FLOOR DRAIN
CAST IRON EPOXY COATED BODY, 5" DIA., 1/4" THICK POLISHED NICKEL BRONZE FRAME AND STRAINER.
ZURN ZN-401-B
POLISHED NICKLE BRONZE FRAME AND STRAINER, 12mm PRIMER CONNECTION.

CO CLEANOUTS
PVC BODY CONSTRUCTION WITH POLISHED NICKEL BRONZE TOP.
ZURN CO-2480-PV

TD TRENCH DRAIN
150 mm WIDE, 5500mm LONG 0.75% PRE-SLOPED FIBREGLASS TRENCH DRAIN SYSTEM c/w DUCTILE IRON HEAVY DUTY LONGITUDINAL GRATING, HEAVY DUTY STEEL FRAME, AND 150mm X 500mm X 500mm DEEP CATCHBASIN LOCATED AT DISCHARGE END.
ZURN #Z-806 TRENCH AND CATCHBASIN, -LD COVER, -HD FRAME

CB CATCH BASIN
300mm X 600mm X 600mm DEEP FIBREGLASS CATCH BASIN c/w DUCTILE IRON HEAVY DUTY LONGITUDINAL GRATING, HEAVY DUTY STEEL FRAME.
ZURN #Z-806 CATCHBASIN, -LD COVER, -HD FRAME

SUMP HYDRAULIC PIT SUMP
600mm DIA. X 1500mm DEEP FIBREGLASS BASIN c/w SLEEVES FOR POWER AND FLOAT WIRING, AND SEALED AND GASKETTED TREAD-PLATE STEEL COVER.
MYERS MODEL FB36132 BASIN AND C SERIES BASIN COVER

OI OIL INTERCEPTOR
RECESSED OIL INTERCEPTOR, 0.94 l/s, 284 l CAPACITY, NON SLIP SCORIATED COVER, ACCESS WAY, CLEANOUT & SAMPLE PORTS. VENT TO CODE.
PROCEPTOR #OGC-75

HD HUB DRAIN
CAST IRON EPOXY COATED BODY, CLAMP COLLAR AND HUB FUNNEL.
ZURN Z-415-S

no.	revisions	date
1	AS-BUILT	OCT. 2006

Verify dimensions and details and report all discrepancies to Architect.
Do not scale drawings.

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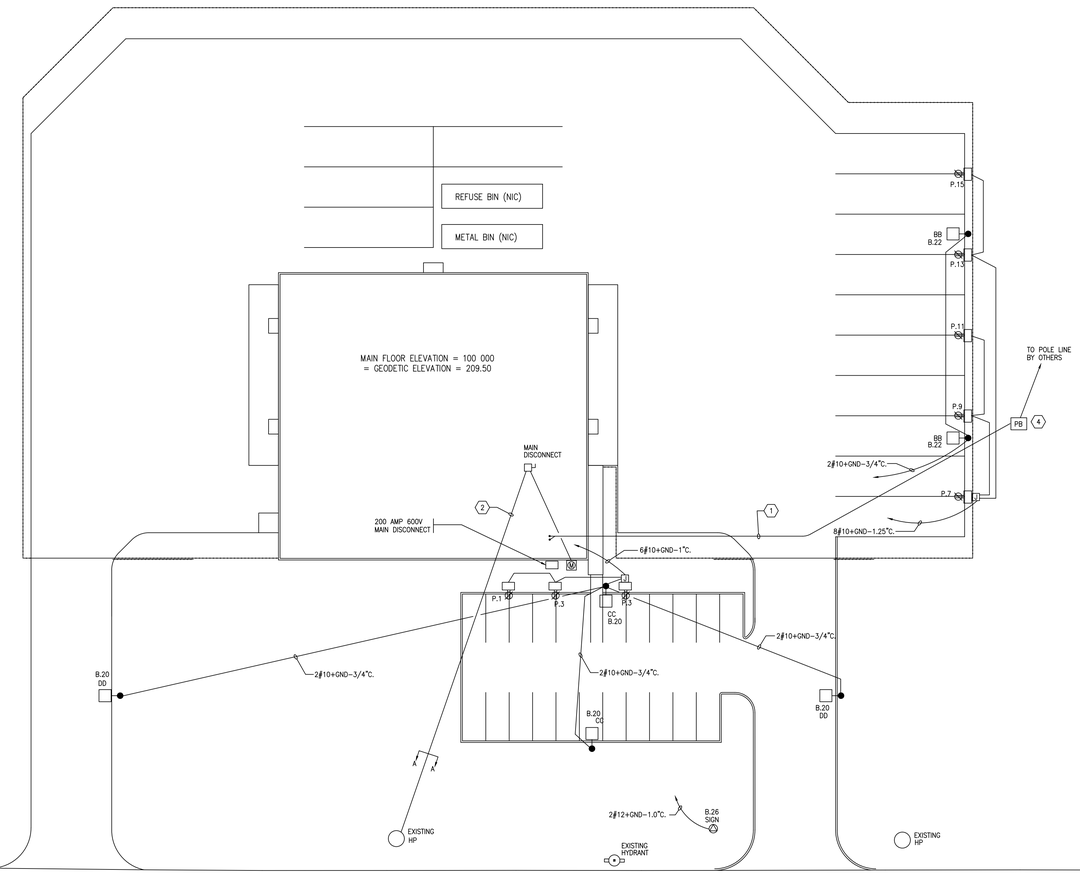
ONTC
Motor Coach Maintenance & Administration Facility
North Bay, Ontario

Mechanical Sections - HVAC

Date: OCT. 2006
Scale: AS NOTED
Project No.: 20381
Drawn By: B.Y.
Library No.: 2004-0112
Drawing No.: M-5

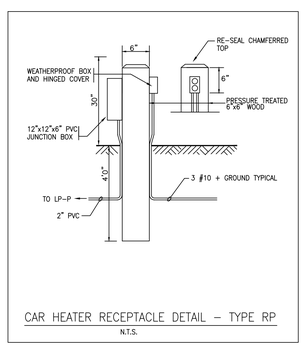
LEGEND

	ELECTRICAL PANEL SURFACE OR RECESSED MOUNTED RESPECTIVELY
	INCANDESCENT, HID OR COMPACT FLUORESCENT LUMINAIRE, CEILING OR WALL MOUNTED RESPECTIVELY LETTER DENOTES TYPE PER SCHEDULE
	FLUORESCENT LUMINAIRE CEILING MOUNTED LETTER DENOTES TYPE PER SCHEDULE
	SAME AS ABOVE BUT ON A NIGHTLIGHT CIRCUIT
	FLUORESCENT LUMINAIRE WALL MOUNTED LETTER DENOTES TYPE PER SCHEDULE
	FLUORESCENT STRIP LUMINAIRE LETTER DENOTES TYPE PER SCHEDULE
	EXTERIOR POLE MOUNTED LUMINAIRE LETTER DENOTES TYPE PER SCHEDULE
	CEILING MOUNT FIXTURE LETTER DENOTES TYPE PER SCHEDULE
PC	EXTERIOR PHOTOCELL
	EXIT LIGHT, CEILING OR WALL MOUNTED RESPECTIVELY C/W FACES AND ARROWS AS INDICATED
	EMERGENCY BATTERY UNIT C/W TWO INTEGRAL HEADS AND REMOTE DOUBLE HEADS RESPECTIVELY
$ $3 $4 $K $L	15A 120V SINGLE POLE TOGGLE SWITCH (3 = 3-WAY, 4 = 4-WAY, K = KEY OPERATED, L = ILLUMINATED)
J	JUNCTION BOX
	120V DIRECT CONNECTION TO EQUIPMENT AS NOTED
	OTHER DIRECT CONNECTION TO EQUIPMENT AS SPECIFIED
	15A 120V U-GROUND RECEPTACLE WALL MOUNTED SINGLE, DUPLEX, QUAD AND SPLIT RESPECTIVELY (GFI = GROUND FAULT, WP = WEATHER PROOF)
	SPECIAL RATED RECEPTACLE WALL MOUNTED AMPS AND VOLTAGE AS INDICATED
	RECEPTACLES AS ABOVE BUT MOUNTED AT 1070mm (42") AFF OR 155mm (6") ABOVE COUNTER SPLASHBACK
	CAR HEATER RECEPTACLE
	15A 120V U-GROUND RECEPTACLE CEILING MOUNTED SINGLE AND DUPLEX RESPECTIVELY (GFI = GROUND FAULT, WP = WEATHER PROOF)
	UNFUSED, FUSED AND TD FUSED DISCONNECT SWITCH RESPECTIVELY
	MANUAL STARTER AND MAGNETIC STARTER RESPECTIVELY
	COMBINATION MAGNETIC STARTER
M	HYDRO METER
PB	IN GROUND PULL BOX
A 1.0	ELECTRIC HEATERS DESIGNATION (A = TYPE A PER SCHEDULE, 1 = 1000W)
	ELECTRIC BASEBOARD HEATER
	ELECTRIC FORCED FLOW HEATER
T	REMOTE LINE VOLTAGE THERMOSTAT
	TELEPHONE OUTLET WALL MOUNTED C/W 3/4"C. TO ACCESSIBLE CEILING SPACE
	DATA OUTLET WALL MOUNTED C/W 3/4"C. TO ACCESSIBLE CEILING SPACE
	COMBINATION TEL/DATA OUTLET C/W 3/4"C. TO ACCESSIBLE CEILING SPACE
	AS ABOVE BUT MOUNTED AT 1524mm (60") AFF
D	DESTRAT FAN CONTROL
HP	HYDRO POLE
RP	PARKING RECEPTACLE
CV	CONTROL VALVE – LOW VOLTAGE TRANSFORMER
VVT	VARIABLE VOLUME BOX – LOW VOLTAGE TRANSFORMER
MD	MOTORIZED DAMPER
RT	EQUIPMENT LOCATED ON ROOFTOP
FF	FAN FORCED HEATER
UH	UNIT HEATER
EF	EXHAUST FAN
P	PUMP
B	BOILER

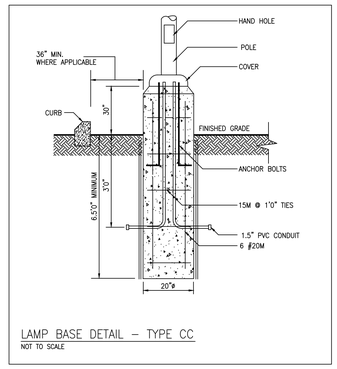


NOTES:

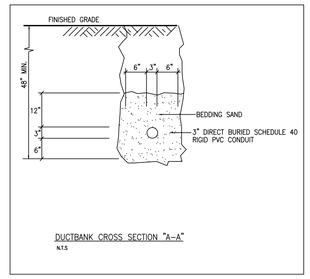
1. 2–3" COMMUNICATIONS DUCTS SHALL ENTER THE BUILDING AND EXTEND TO ELEC./MECH. 201 AND TRANSITION TO 3" EMT CONDUIT ABOVE FLOOR SLAB.
2. HYDRO DUCT SHALL EXTEND TO MAIN DISCONNECT SWITCH.
3. AT HYDRO POLE, HYDRO CONDUIT SHALL EXTEND 30FT. ABOVE FINISHED GRADE. PROVIDE 3" PVC WEATHERHEAD.
4. PULLBOX SHALL BE 17" x 30" PT STYLE ENCLOSURE WITH OPEN BOTTOM AND BOLT-ON COVER, CONSTRUCTED OF POLYMER CONCRETE WITH MOUSE HOLES AT BOTTOM OF BASE. STRONGWELL CAT# QUAZITE (COVER – PT1730CA00) (BASE – PT1730BB18)



CAR HEATER RECEPTACLE DETAIL – TYPE RP
N.T.S.



LAMP BASE DETAIL – TYPE CC
NOT TO SCALE



DUCTBANK CROSS SECTION "A–A"
N.T.S.

north

no.	revisions	date
1	AS-BUILT	OCT. 2006

LKM CONSULTING ENGINEERS BCIN # 27311
Leipciger Kaminker Mitelman and Partners Inc.
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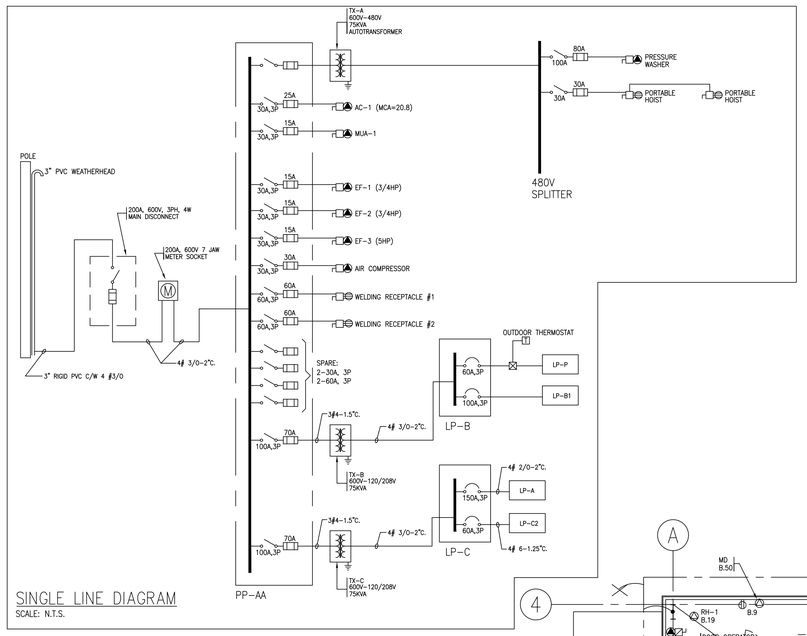
ONTC
Motor Coach Maintenance & Administration Facility

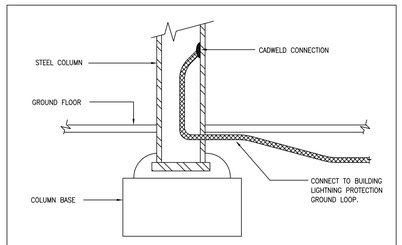
North Bay, Ontario

Electrical Site Plan

Date: OCT. 2006
Scale: 1:300
Project No.: 20381
Drawn By: A.C.
Library No.: 2004-0112
Drawing No.: E-1



SINGLE LINE DIAGRAM
SCALE: N.T.S.



1 / E-2 TYPICAL LIGHTNING DOWN LEAD INSTALLATION IN STEEL COLUMN

ELECTRIC HEATER SCHEDULE

TYPE	VOLTAGE	DESCRIPTION	MANUFACTURER
A	208V, 1ø	4.0KW ELECTRIC FORCED FLOW HEATER, SURFACE MOUNTED C/W BUILT-IN TAMPERPROOF THERMOSTAT, 18 GAUGE STEEL LOUVRES WITH ROUNDED CORNERS & WHITE POWDER COAT FINISH.	OUELLET CAT.# OAC4008 (HEATER) OAC-BS1 (SURFACE BOX)
B	208V, 1ø	3.0KW ELECTRIC FORCED FLOW HEATER, SURFACE MOUNTED C/W BUILT-IN TAMPERPROOF THERMOSTAT, 18 GAUGE STEEL LOUVRES WITH ROUNDED CORNERS & WHITE POWDER COAT FINISH.	OUELLET CAT.# OAC4000 (HEATER) OAC-BS1 (SURFACE BOX)
C	208V, 1ø	2.0KW HEAVY DUTY SLOPE TOP ELECTRIC BASEBOARD HEATER C/W 16 GAUGE STEEL FRONT COVER, 208/24V LOW VOLTAGE RELAY WITH TRANSFORMER & WHITE POWDER COAT FINISH.	OUELLET CAT.# ODIA2008 (HEATER) ODIA-RT-208 (RELAY-TX)
D	208V, 1ø	0.5KW HEAVY DUTY SLOPE TOP ELECTRIC BASEBOARD HEATER C/W 16 GAUGE STEEL FRONT COVER, REMOTE SINGLE POLE LINE VOLTAGE ADJUSTABLE THERMOSTAT & WHITE POWDER COAT FINISH.	OUELLET CAT.# ODIA0508 (HEATER) ODIA-T (T-STAT)
E	208V, 1ø	1.25KW HEAVY DUTY SLOPE TOP ELECTRIC BASEBOARD HEATER C/W 16 GAUGE STEEL FRONT COVER, REMOTE SINGLE POLE LINE VOLTAGE ADJUSTABLE THERMOSTAT & WHITE POWDER COAT FINISH.	OUELLET CAT.# ODIA1258 (HEATER) ODIA-T (T-STAT)
F	208V, 1ø	0.5KW HEAVY DUTY SLOPE TOP ELECTRIC BASEBOARD HEATER C/W 16 GAUGE STEEL FRONT COVER, BUILT-IN SINGLE POLE TAMPERPROOF THERMOSTAT & WHITE POWDER COAT FINISH.	OUELLET CAT.# ODIA0508 (HEATER) ODIA-T-AV (T-STAT)
G	208V, 1ø	1.5KW HEAVY DUTY SLOPE TOP ELECTRIC BASEBOARD HEATER C/W 16 GAUGE STEEL FRONT COVER, REMOTE SINGLE POLE LINE VOLTAGE ADJUSTABLE THERMOSTAT & WHITE POWDER COAT FINISH.	OUELLET CAT.# ODIA1508 (HEATER) ODIA-T (T-STAT)

ONTC LOAD CALCULATION

OCCUPANCY	AREA (m2)	BASE LOAD (W)	DEMAND LOAD (W)
REPAIR SHOP	900	22,500	22,500
PARTS WAREHOUSE	83	1,000	700
OFFICE	550	27,500	19,250
			45,450

BASE BUILDING DEMAND LOAD AS PER OESC RULE 8-210 AND TABLE 14 IS 42.45KW.

HEATING/COOLING LOAD
- ELECTRIC HEATING - 26,000W CONNECTED
  - FIRST 10KW @ 100% 10,000W
  - REMAINDER @ 75% 12,000W
  - 22,000W
- MECHANICAL EQUIPMENT - MUA UNIT (3HP) 3,000W
- COOLING LOAD - AC-1 16,240W
  (USE ELECTRIC HEATING LOAD AS IT IS LARGER)

SPECIAL EQUIPMENT
- PRESSURE WASHER (INTERMITTENT USE) 53,000W

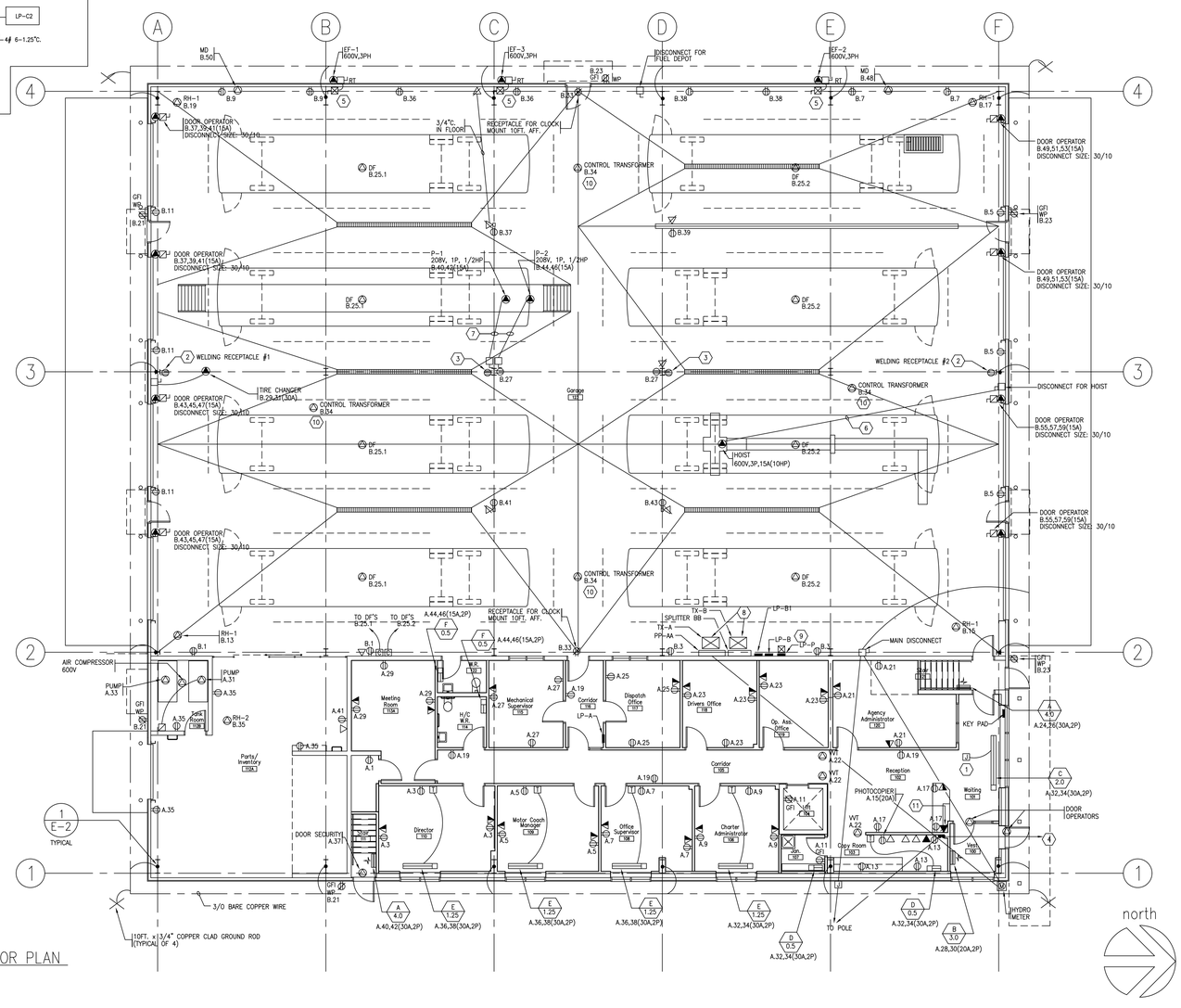
SUMMARY

BASE DEMAND LOAD	42.4 kW
ELECTRIC HEAT	22.0 kW
MECHANICAL EQUIPMENT	10.0 kW
SPECIAL EQUIPMENT	
PRESSURE WASHER	50.0 kW
WELDER	20.0 kW
TOTAL	144.4 kW

NOTES:
1. ALL CONDUITS SHALL BE T-90, COPPER UNLESS OTHERWISE NOTED.
2. FEEDER SIZES SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED.

15A, 3P	4 #12-3/4"C
30A, 3P	4 #10-3/4"C
60A, 3P	4 #6-1"C
100A, 3P	4 #3-1.25"C
125A, 3P	4 #1-1.5"C
150A, 3P	4 #1/0-2"C
200A, 3P	4 #3/0-2"C
250A, 3P	4 #250 MCM -2.5"C

NOTES:
1. RUN LOW VOLTAGE WIRING FROM RELAY IN HEATER TO JUNCTION BOX IN CEILING SPACE. CONNECTION FROM JUNCTION BOX TO WT SYSTEM BY DIV. 15.
2. WELDING REC. FED FROM 600V PP-AA RECEPTACLE TYPE 600V, 60A, 3PH, 4W W/ DISCONNECT SWITCH: CROUSE-HINDS MODEL# WSRD63542
3. PORTABLE HOIST REC. FED FROM 480V SPLITTER. SPRAY PAINT RECEPTACLE ORANGE AND PROVIDE A 6"x9" SIGN ABOVE THE RECEPTACLE W/ THE WORDING "CAUTION 480V". RECEPTACLE TYPE 600V, 60A, 3PH, 4W W/ DISCONNECT SWITCH: CROUSE-HINDS MODEL# WSRD63542
4. TWO 3" COMMUNICATIONS CONDUIT SHALL RISE TO ELECT/MECH 201 IN CORNER OF COPY ROOM 103. CHANGE FROM 3" DB-II DUCT TO 3" EMT AT FIRST FLOOR SLAB.
5. LOCATE MOTOR STARTER FOR EXHAUST FANS INSIDE BUILDING. MOTOR STARTER SUPPLIED BY DIV.15, INSTALLED BY DIV.16.
6. 2"C. FROM HOIST PIT TO WALL FOR CONTROL PANEL. SLOPE CONDUIT TO PIT. PROVIDE EYS SEAL AT FLOOR LEVEL. REFER TO OESC SEC.18.
7. PROVIDE 2-2"C. FROM EACH PIT SUMP TO RESPECTIVE SUMP PUMP CONTROLLER. PROVIDE EYS SEAL AT FLOOR LEVEL. REFER TO OESC SEC.18.
8. SUSPEND TX-A & TX-B FROM STRUCTURE ABOVE. BOTTOM OF TRANSFORMER SHALL BE A MINIMUM OF 9FT. AFF.
9. PROVIDE 60A, 3P CONTACTOR, LP-P AND OUTDOOR THERMOSTAT. THERMOSTAT SHALL BE COMPLETE WITH CAPILLARY TUBE, ADJUSTABLE FROM -18°C TO 20°C. LOCATE SENSOR BULB OUTSIDE ON WALL AT HIGH LEVEL C/W GUARD AND SEPARATED FROM OUTSIDE WALL.
10. CONNECTION POINTS FOR CONTROL TRANSFORMERS FOR DIV.15.
11. ELEVATOR EMERGENCY PHONE JACK CONNECTED TO JACK IN MACHINE ROOM 203.



FIRST FLOOR PLAN
SCALE: 1:100

no.	revisions	date
1	AS-BUILT	OCT. 2006

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Motor Coach Maintenance & Administration Facility
North Bay, Ontario

First Floor Plan - Power

Date:	OCT. 2006	Drawn By:	A.C.
Scale:	1:100	Library No.:	2004-0112
Project No.:	20381	Drawing No.:	E-2

PANEL 'LP-A'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 225 AMPS
MOUNTING: RECESSED
LOCATION: CORRIDOR 116

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
500	RECEPTACLE 112	15A	1	2	15A	EMERGENCY LIGHTING/EXIT SIGNS	100
500	RECEPTACLE 110	15A	3	4	15A	LIGHTING OFFICE AREA LEV. 1	1400
500	RECEPTACLE 109	15A	5	6	15A	LIGHTING OFFICE AREA LEV. 1	1330
500	RECEPTACLE 108	15A	7	8	15A	LIGHTING OFFICE AREA LEV. 1	490
500	RECEPTACLE 106	15A	9	10	15A	LIGHTING PARTS & TANK ROOM	1350
500	RECEPTACLE 104/07	15A	11	12	15A	–	–
600	RECEPTACLE 103	15A	13	14	15A	–	–
1500	PHOTOCOPIER 103	20A	15	16	15A	–	–
600	RECEPTACLE 102	15A	17	18	15A	–	–
500	RECEPTACLE 105/16	15A	19	20	15A	–	–
500	RECEPTACLE 120	15A	21	22	15A	WT	100
600	RECEPTACLE 119/18	15A	23	24	30A	HEATER STAIRWELL 121	4000
500	RECEPTACLE 117	15A	25	26			
500	RECEPTACLE 115	15A	27	28	20A	HEATER RM. 100	3000
500	RECEPTACLE 113	15A	29	30			
300	PUMP 112B	15A	31	32	30A	HEATER RM. 101/103/106/107	4250
300	PUMP 112B	15A	33	34			
500	RECEPTACLE 112A	15A	35	36	30A	HEATER RM.109/110	3750
100	DOOR KEYPAD	15A	37	38			
600	COMPRESSED AIR DRYER	15A	39	40	30A	HEATER STAIRWELL 111	4000
500	RECEPTACLE 112A	15A	41	42			
–	–	15A	43	44	15A	HEATER RM. 114/122	1000
–	–	15A	45	46			
–	–	15A	47	48	15A	–	–
–	–	15A	49	50	15A	–	–
–	–	15A	51	52	15A	–	–
–	–	15A	53	54	15A	–	–
–	–	15A	55	56	15A	–	–
–	–	15A	57	58	15A	–	–
–	–	15A	59	60	15A	–	–

TOTAL CONNECTED LOAD: 34.2 KVA

PANEL 'LP-B'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 225 AMPS
MOUNTING: RECESSED
LOCATION: GARAGE 123

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
600	GARAGE RECEPTACLE	15A	1	2	15A	EMERGENCY LIGHTING	100
600	GARAGE RECEPTACLE	15A	3	4	15A	GARAGE LIGHTING	1050
600	GARAGE RECEPTACLE	15A	5	6	15A	GARAGE LIGHTING	1400
600	GARAGE RECEPTACLE	15A	7	8	15A	GARAGE LIGHTING	1400
600	GARAGE RECEPTACLE	15A	9	10	15A	GARAGE LIGHTING	1050
600	GARAGE RECEPTACLE	15A	11	12	15A	GARAGE LIGHTING	1400
200	RH-1	15A	13	14	15A	GARAGE LIGHTING	1400
200	RH-1	15A	15	16	15A	GARAGE LIGHTING	1050
200	RH-1	15A	17	18	15A	GARAGE LIGHTING	1190
200	RH-1	15A	19	20	15A	OUTDOOR LIGHTING	800
600	OUTDOOR RECEPTACLE	15A	21	22	15A	OUTDOOR LIGHTING	500
600	OUTDOOR RECEPTACLE	15A	23	24	15A	OUTDOOR LIGHTING AND CONTACTOR	400
700	DESTRAT FANS	15A	25	26	15A	OUTDOOR SIGN	500
600	GARAGE RECEPTACLE	15A	27	28	15A	BUILDING LIGHTING	1350
4500	TIRE CHANGER	30A	29	30	15A	BUILDING SIGN	500
			31	32	15A	BUILDING LIGHTING	800
50	CLOCK RECEPTACLE	15A	33	34	15A	CONTROL TRANSFORMERS	500
200	RH-2	15A	35	36	15A	GARAGE RECEPTACLE	600
600	GARAGE RECEPTACLE	15A	37	38	15A	GARAGE RECEPTACLE	600
600	GARAGE RECEPTACLE	15A	39	40	15A	P-1	1020
600	GARAGE RECEPTACLE	15A	41	42			
600	GARAGE RECEPTACLE	15A	43	44	15A	P-2	1020
600	O/H DOOR WARNING LIGHTS	15A	45	46			
			47	48	15A	MD	100
			49	50	15A	MD	100
			51	52	15A	–	–
			53	54	15A	–	–
			55	56	15A	–	–
12000	LP-B1	100A	57	58	60A	LP-P	15600
			59	60			

TOTAL CONNECTED LOAD: 70.3 KVA

PANEL 'LP-C'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 225 AMPS
MOUNTING: RECESSED
LOCATION: MECH/ELEC 201

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
–	–	15A	1	2	15A	EMERGENCY LIGHTING/EXIT SIGNS	100
500	RECEPTACLE 212/13	15A	3	4	15A	LIGHTING LEVEL 2	1260
500	RECEPTACLE 213	15A	5	6	15A	LIGHTING LEVEL 2	490
500	RECEPTACLE 200	15A	7	8	15A	EF-5 200	700
800	FRIDGE 200	15A	9	10	15A	ELEVATOR CAB LIGHTS	200
800	MICROWAVE RECEPTACLE 200	15A	11	12	15A	HWT 201	100
500	RECEPTACLE 203	15A	13	14	15A	VVT CONTROL PANEL 201	50
600	RECEPTACLE 206/07	15A	15	16	15A	RECEPTACLE 201	500
700	EF-4 211	15A	17	18	15A	RECEPTACLE 201	300
100	WT	15A	19	20	15A	RECEPTACLE 203	500
–	–	15A	21	22			
500	RECEPTACLE 201	15A	23	24	30A	LIFT	8000
1500	RECEPTACLE 200	20A	25	26			
1500	RECEPTACLE 200	20A	27	28	15A	EF-4 TIMECLOCK 201	50
1500	RECEPTACLE 200	20A	29	30			
700	EF-7 203	15A	31	32	60A	LP-C2	9440
1200	EF-6 & MD 201	15A	33	34			
50	DUCT HEATER 201	15A	35	36	15A	–	–
33000	LP-A	150A	37	38	15A	–	–
			39	40	30A	HEATER RM. 200/203	3500
			41	42			

TOTAL CONNECTED LOAD: 70.1 KVA

PANEL 'LP-B1'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 125 AMPS
MOUNTING: RECESSED
LOCATION: GARAGE 123

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
			1	2			
3000	GARAGE DOOR OPENER	15A	3	4	15A	GARAGE DOOR OPENER	3000
			5	6			
			7	8			
3000	GARAGE DOOR OPENER	15A	9	10	15A	GARAGE DOOR OPENER	3000
			11	12			
–	–	15A	13	14	15A	–	–
–	–	15A	15	16	15A	–	–
–	–	15A	17	18	15A	–	–
–	–	15A	19	20	15A	–	–
–	–	15A	21	22	15A	–	–
–	–	15A	23	24	15A	–	–
–	–	15A	25	26	15A	–	–
–	–	15A	27	28	15A	–	–
–	–	15A	29	30	15A	–	–

TOTAL CONNECTED LOAD: 12.0 KVA

PANEL 'LP-P'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 125 AMPS
MOUNTING: RECESSED
LOCATION: GARAGE 123

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
1200	PARKING RECEPTACLE	15A	1	2	15A	–	–
1200	PARKING RECEPTACLE	15A	3	4	15A	–	–
1200	PARKING RECEPTACLE	15A	5	6	15A	–	–
1200	PARKING RECEPTACLE	15A	7	8	15A	–	–
1200	PARKING RECEPTACLE	15A	9	10	15A	–	–
1200	PARKING RECEPTACLE	15A	11	12	15A	–	–
1200	PARKING RECEPTACLE	15A	13	14	15A	–	–
1200	PARKING RECEPTACLE	15A	15	16	15A	–	–
–	–	15A	17	18	15A	–	–
–	–	15A	19	20	15A	–	–
–	–	15A	21	22	15A	–	–
–	–	15A	23	24	15A	–	–

TOTAL CONNECTED LOAD: 9.6 KVA

PANEL 'LP-C2'
120/208V, 3ϕ, 4W

TYPE: NLAB
MAINS: 125 AMPS
MOUNTING: RECESSED
LOCATION: OPEN OFFICE 216

LOAD	DESCRIPTION	BREAKER	CIRCUITS		BREAKER	DESCRIPTION	LOAD
400	RECEPTACLE 215	15A	1	2	15A	LIGHTING 208/16	700
600	RECEPTACLE 213/214	15A	3	4	15A	LIGHTING 209/13/14/15	840
600	RECEPTACLE 208/216	15A	5	6	15A	–	–
300	RECEPTACLE 208/216	15A	7	8	15A	–	–
500	CEILING JBOX 208	15A	9	10	15A	–	–
500	CEILING JBOX 208	15A	11	12	15A	–	–
500	CEILING JBOX 208	15A	13	14	15A	–	–
–	–	15A	15	16	15A	–	–
–	–	15A	17	18	15A	–	–
–	–	15A	19	20	15A	–	–
–	–	15A	21	22	30A	HEATER RM. 207/208/210	4500
–	–	15A	23	24			

TOTAL CONNECTED LOAD: 9.44 KVA

EMERGENCY AND EXIT LIGHT SCHEDULE

EXIT SIGN

L.E.D. TYPE SIGN, INDIRECT ILLUMINATION WITH RED LETTERS ("EXIT") ON WHITE BACKGROUND, ALUMINUM FRAME, ALUMINUM EXTRUSION CONSTRUCTION, SINGLE OR DOUBLE FACE AS SHOWN ON PLAN, UNIVERSAL MOUNTING, FOR CONNECTIONS TO 120 VOLT AC AND 12 VOLT DC. NRCAN C860 REGISTERED.
LUMACELL # LER400 SERIES OR EQUAL.

BATTERY EMERGENCY LIGHTING

BATTERY UNIT SHALL BE FOR 30 MINUTE OPERATION, 12 VOLT, AS NOTED ON SCHEDULE. THE UNIT SHALL BE FOR OPERATION ON 120 VOLT SINGLE PHASE WITH BUILT-IN LIGHTING HEADS AS INDICATED ON PLANS.
THE UNIT SHALL BE COMPLETE WITH SEALED PURE LEAD LONG LIFE (10 YEARS) BATTERIES. THE CHARGER SHALL BE COMPLETELY AUTOMATIC, SOLID STATE TYPE WITH BROWN OUT FEATURE, CAPABLE OF FULLY RECHARGING BATTERIES IN 24 HOURS. TRANSFER DEVICE SHALL AUTOMATICALLY SWITCH LOAD ON AT POWER FAILURE AND OFF UPON RETURN OF NORMAL POWER. UNIT SHALL HAVE LOW VOLTAGE DISCONNECT FEATURE.
LUMACELL "RG12S" SERIES OR EQUAL.

REMOTE HEADS SHALL BE 12VDC, 12W. MICRO QUARTZ LAMP, SURFACE MOUNTED.
LUMACELL "RSQB" FOR SINGLE HEAD
"RSQB-2" FOR DOUBLE HEADS

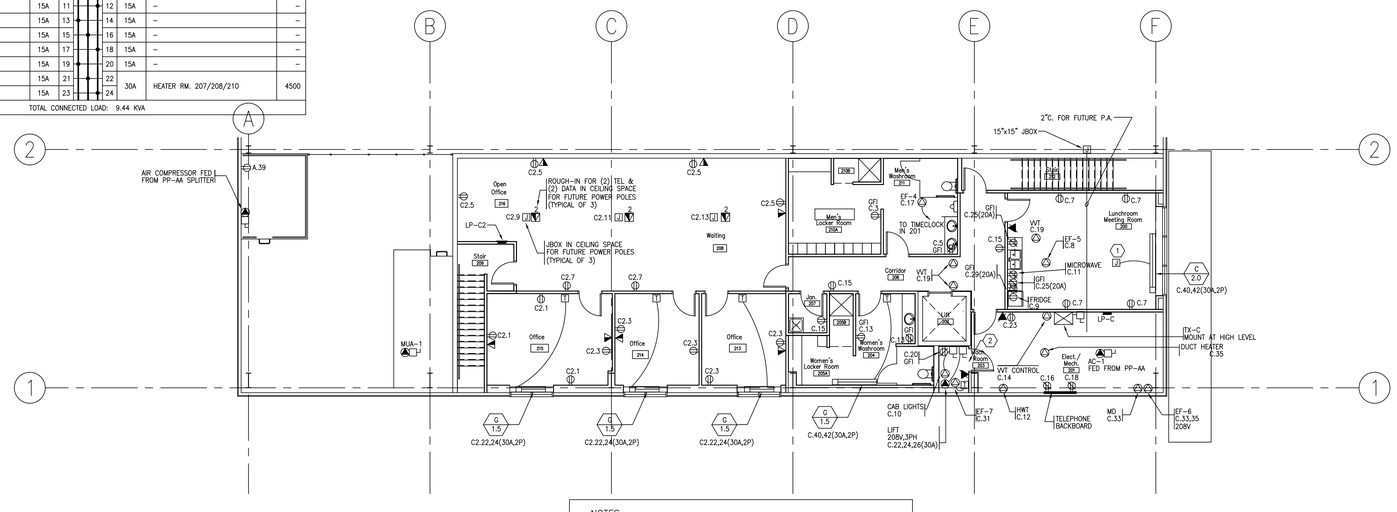
NOTE:
1. WIRING FOR EMERGENCY LIGHTING SHALL CONFORM TO SECTION 46 OF THE O.H.E.S. CODE.
2. WIRING SIZE SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS BUT IN ANY CASE SHALL NOT BE LESS THAN #10 AWG.

EMERGENCY BATTERY UNIT SCHEDULE

UNIT No.	MINIMUM CAPACITY	LOADING	LOCATION	CIRCUIT No.
EM-1	200 WATTS	98 WATTS	JAN. 107	A.2
EM-2A	200 WATTS	126 WATTS	GARAGE 123	B.2
EM-2B	250 WATTS	172 WATTS	GARAGE 123	B.2
EM-3	250 WATTS	186 WATTS	ELEC/MECH. 201	C.2

FIXTURE SCHEDULE

TYPE	LAMPS	DESCRIPTION	MANUFACTURER/CAT.#
AA	1–175 WATT METAL HALIDE	TRAPEZOIDAL WALL SCONCE C/W DIE CAST HOUSING, GASKETED AND LENSED, FORWARD THROW OPTICS, 120V HPF BALLAST, 1–175 WATT METAL HALIDE LAMP. DARK BRONZE FINISH.	LITHONIA CAT #WST–175M–FT–120–DDBT THOMAS (GARDCO) CAT #141–FT–175MH–120–BRP OR APPROVED EQUAL BY COOPER.
AA1	1–100 WATT METAL HALIDE	SAME AS TYPE 'AA' EXCEPT WITH 100 WATT MH LAMP.	LITHONIA CAT #WST–100M–FT–120–DDBT THOMAS (GARDCO) CAT #141–FT–100MH–120–BRP OR APPROVED EQUAL BY COOPER.
BB	1–250 WATT METAL HALIDE	ARM MOUNTED CUTOFF SHOEBOX STYLE LUMINAIRE ALUMINUM HOUSING AND DOOR FRAME, SEGMENTED REFLECTOR, FORWARD THROW OPTICS W/ SHARP CUTOFF, HOUSE SHIELD, 5" SQUARE BY 25 FT. LONG STEEL POLE. POLE SHALL BE COMPLETE WITH HANDHOLE AND BASE COVER. 120V HPF BALLAST, COLOUR: BRONZE ANODIZED	LITHONIA CAT. # KSF1–250M–R4SC–120 THOMAS CAT. # FORM 10 EH SERIES OR APPROVED EQUAL
CC	1–250 WATT METAL HALIDE	SAME AS TYPE 'BB' WITH 200 WATT MH LAMP AND TYPE R3 OPTICS	LITHONIA CAT. # KSF1–250M–R3–120 THOMAS CAT. # FORM 10 EH SERIES OR APPROVED EQUAL
DD	1–250 WATT METAL HALIDE	SAME AS TYPE 'BB' WITH 200 WATT MH LAMP AND TYPE R2 OPTICS	LITHONIA CAT. # KSF1–250M–R2–120 THOMAS CAT. # FORM 10 EH SERIES OR APPROVED EQUAL
EE	1–250 WATT METAL HALIDE	SAME AS TYPE 'BB' WITH TWO HEADS 180° APART, 200 WATT MH LAMP AND TYPE R3 OPTICS	LITHONIA CAT. # KSF1–250M–R3–120 THOMAS CAT. # FORM 10 EH SERIES OR APPROVED EQUAL
FF	1–70 WATT METAL HALIDE	14" ROUND SURFACE FIXTURE C/W CAST ALUMINUM HOUSING AND BEZEL, ROUNDED TRANSLUCENT DROP LENS, SEMI–SPECULAR ALUMINUM LENS, GASKETED, 120V HPF BALLAST, 1–70 WATT METAL HALIDE LAMP AND DARK BRONZE FINISH.	LITHONIA CAT. # VGR1C–70M–120–DDBT OR APPROVED EQUAL
A	2–32 WATT T8	RECESSED 2 FT. X 4 FT. FLUORESCENT FIXTURE SUITABLE FOR T–BAR CEILING C/W 0.125", K12 ACRYLIC LENS 120V ELECTRONIC BALLAST AND 2–32W T8 LAMPS.	LITHONIA CAT. # 2GT8–2–32–FW–A12125–120 THOMAS CAT. # 2GRS SERIES OR APPROVED EQUAL
B	2–32 WATT T8	4FT. INDUSTRIAL STRIP FIXTURE C/W RIBBED APERATURE REFLECTOR (10% UPLIGHT), 2–32W T8 LAMPS, 120V ELECTRONIC BALLAST AND WIREGUARDS. CHAIN HANG FIXTURES BELOW STRUCTURE AND MECHANICAL PIPING.	LITHONIA CAT. # LA–2–32–120–WGL THOMAS CAT. # 1FC232PR–120 OR APPROVED EQUAL
C	150 WATT METAL HALIDE	20" DIA. LOWBAY FIXTURE C/W CAST ALUMINUM HOUSING WITH POWDERCOAT FINISH, GASKETED ACRYLIC LENS, ANODIZED ALUMINUM REFLECTOR, TOOL–LESS LATCH ENTRY & 120V PULSE START CWA BALLAST.	LITHONIA CAT. # TXL–150M–A20–120–SCWA THOMAS CAT. # LBH–150M–MT–PSC–LR23 OR APPROVED EQUAL
D	350 WATT METAL HALIDE	17" DIA. HIGHBAY FIXTURE C/W CAST ALUMINUM HOUSING WITH POWDERCOAT FINISH, OPEN ANODIZED ALUMINUM REFLECTOR & 120V PULSE START CWA BALLAST.	LITHONIA CAT. # THP–350MP–A17–120–SCWA OR APPROVED EQUAL
D1	350 WATT METAL HALIDE	SAME AS TYPE 'D' C/W 150 WATT QUARTZ RESTRIKE SYSTEM	LITHONIA CAT. # THP–350MP–A22–120–SCWA–QRS OR APPROVED EQUAL
F	1–100 WATT A19	INCANDESCENT CAST FIXTURE C/W GLASS GLOBE AND CAST GUARD.	RAB CAT. # VBKS100CG
H	2–32 WATT T8	4FT. SURFACE MOUNT HAZARDOUS LOCATION FIXTURE SUITABLE FOR UL CLASS 1, DIV.2 C/W FIBREGLASS REINFORCED POLYESTER HOUSING, ACRYLIC LENS, WET LOCATION RATED & 120V ELECTRONIC BALLAST.	HUBBELL (COLUMBIA) CAT. # FNPH4–232–EB8Z–120 COOPER (CROUSE–HINDS) CAT. # NFL4232/120 OR APPROVED EQUAL
J	1–42 WATT COMPACT FLUORESCENT	6" DIA. RECESSED POTLIGHT C/W VERTICAL LAMP, STEEL FRAME, SELF FLANGED, CLEAR REFLECTOR, TEMPERED PRISMATIC LENS & 120V ELECTRONIC BALLAST.	LITHONIA CAT. # AFV–42TRT–6AR–T73–120 OR APPROVED EQUAL
K	1–40 WATT HALOGEN	120V BLUE STROBE LIGHT C/W SHATTER RESISTANT LENS, ANODIZED ALUMINUM BASE, DIRECT MOUNTING AND 40 WATT HALOGEN LAMP.	STAR WARNING SYSTEMS CAT. # 201B–120V–BLUE OR APPROVED EQUAL



PARTIAL PLAN @ SECOND FLOOR
SCALE: 1:100

NOTES:
1. RUN LOW VOLTAGE WIRING FROM RELAY IN HEATER TO JUNCTION BOX IN CEILING SPACE. CONNECTION FROM JUNCTION BOX TO VVT SYSTEM BY DIV. 15.
2. PROVIDE A SET OF AUXILIARY CONTACTS IN THE ELEVATOR CONTROLLER DISCONNECT SWITCH. EXTEND 2 #14 CONDUCTORS FROM THE CONTACTS TO THE ELEVATOR CONTROLLER.

north

no.	revisions	date
1	AS–BUILT	OCT. 2006

LKM CONSULTING ENGINEERS BCIN # 27311
Leipziger Kaminker Mitelman and Partners Inc.
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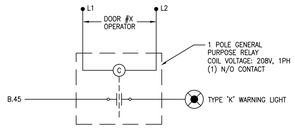
ONTC
Motor Coach Maintenance & Administration Facility
North Bay, Ontario

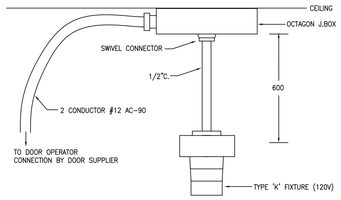
Second Floor Plan - Power

Date: OCT. 2006
Scale: 1:100
Project No.: 20381
Drawn By: A.C.
Library No.: 2004-0112
Drawing No.: E-3

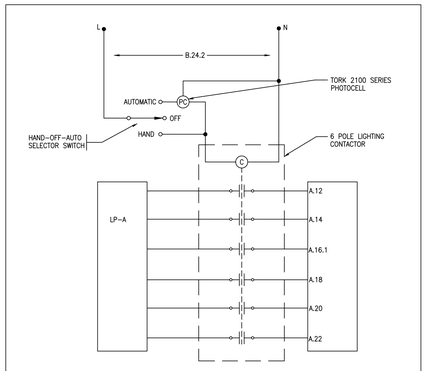


NOTE: EACH WARNING LIGHT SHALL TURN ON INDEPENDANTLY WHEN IT'S RESPECTIVE O/H DOOR IS RUNNING.

WIRING DIAGRAM FOR O/H DOOR WARNING LIGHT
TYPICAL FOR EACH OF (8) DOORS
N.T.S.



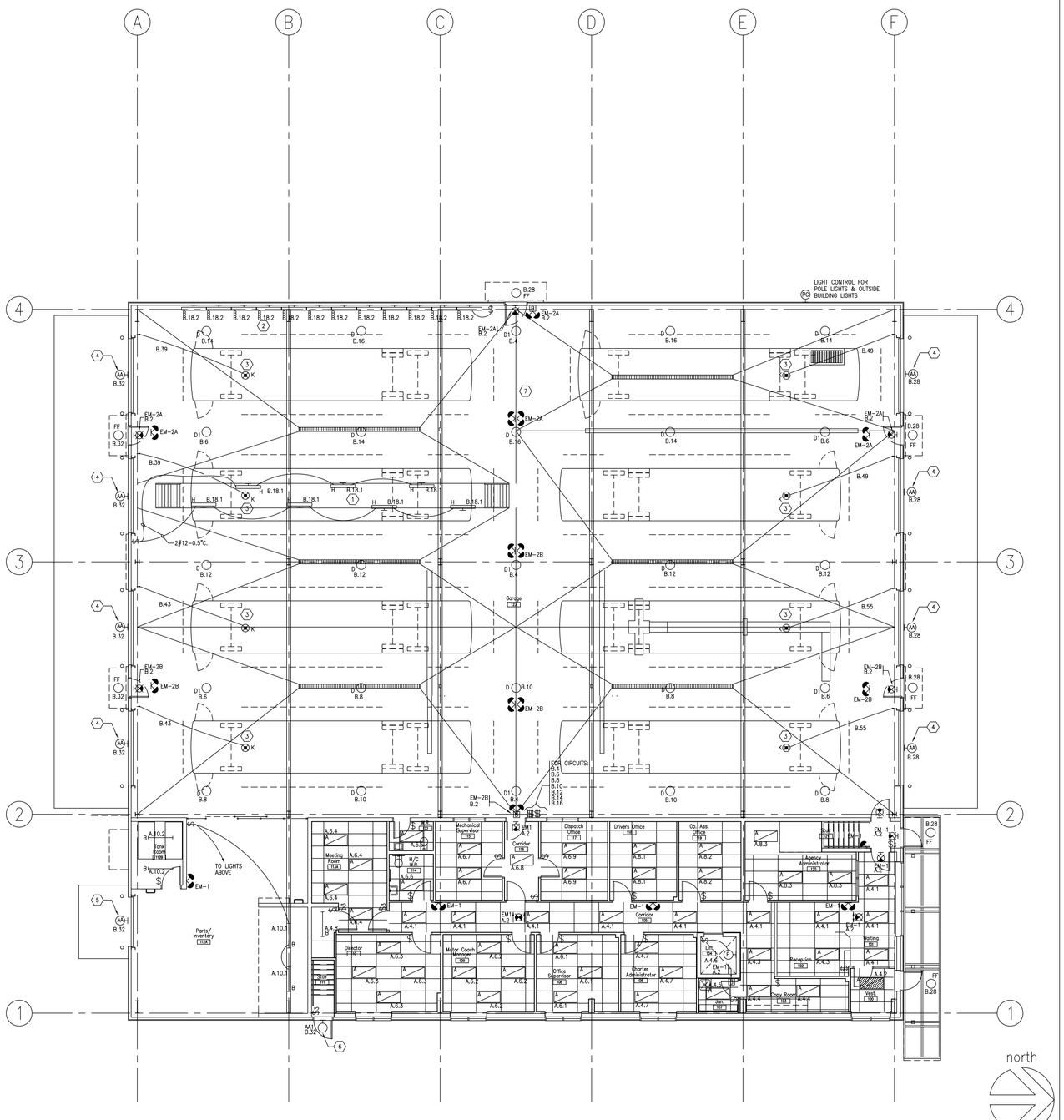
TYPE 'K' FIXTURE MOUNTING DETAIL N.T.S.



EXTERIOR LIGHTING CONTROL WIRING DIAGRAM N.T.S.

NOTES:

1. TYPE 'H' LIGHT FIXTURES TO BE MOUNTED 1.0m ABOVE FLOOR OF SERVICE PIT. PROVIDE EXPLOSION PROOF 'EYS' FITTINGS AT FLOOR LEVEL.
2. TYPE 'B1' LIGHT FIXTURES TO BE WALL MOUNTED 2.74m (9FT.) AFF.
3. SEE DETAIL THIS PAGE FOR TYPE 'K' FIXTURE MOUNTING AND WIRING. CONNECTION BY DOOR SUPPLIER.
4. FIXTURE MOUNTED ABOVE OVERHEAD DOOR AT 5000 AFF.
5. FIXTURE MOUNTED ABOVE OVERHEAD DOOR AT 3500 AFF.
6. FIXTURE MOUNTED ABOVE DOOR AT 3000 AFF.
7. STEM MOUNT EMERGENCY LIGHTING FIXTURES WITHIN GARAGE 123. FIXTURE SHALL BE LOCATED EVEN WITH BOTTOM OF MAIN STRUCTURAL BEAMS.



FIRST FLOOR PLAN
SCALE: 1:100

no.	revisions	date
1	AS-BUILT	OCT. 2006

LKM CONSULTING ENGINEERS BCIN# 27311
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ONTC
Motor Coach Maintenance & Administration Facility
North Bay, Ontario

First Floor Plan - Lighting

Date: OCT. 2006
Scale: 1:100
Project No.: 20381
Drawn By: A.C.
Library No.: 2004-0112
Drawing No.: E-4

GENERAL ELECTRICAL CONDITIONS – SECTION 16A

1 COMPLY WITH GENERAL CONDITIONS OF THE CONTRACT AND DIVISION 1.

2 THIS SECTION APPLIES TO ALL SECTIONS OF DIVISION 16.

3 PROVIDE EACH ITEM MENTIONED OR INDICATED OF QUALITY AND SUBJECT TO QUALIFICATIONS NOTED, PERFORM ACCORDING TO CONDITIONS STATED EACH OPERATION PRESCRIBED; AND PROVIDE THEREFORE ALL LABOUR, MATERIAL, EQUIPMENT, INCIDENTALS AND SERVICES REQUIRED TO COMPLETE THE INSTALLATION.

4 PAINTING OF EXPOSED CONDUITS, DUCTS AND UNFINISHED ELECTRICAL EQUIPMENT – UNDER DIVISION 9.
CONCRETE WORK – UNDER DIVISION 3.
CUTTING AND PATCHING WILL BE BY GENERAL TRADES.

5 MAKE A SET OF WHITE PRINTS AS THE JOB PROGRESSES, CHANGES MADE THROUGH ANY APPROVED CHANGE ORDER AS WELL AS THE LOCATION OF FEEDERS, CONDUIT RUNS, JUNCTION BOXES, AND ALL CHANGES IN CIRCUITING, LOCATION OF EQUIPMENT, RUNS OF CONDUITS, WIRING, ETC. FROM THAT ORIGINALLY SHOWN, SO THAT ON THE COMPLETION OF THE JOB THE RECORD DRAWINGS WILL SHOW THE EXACT LOCATION AS ACTUALLY INSTALLED. LOCATION OF CONCEALED AND BURIED DUCTS, CONDUITS AND CABLES SHALL BE DIMENSIONED FROM FIXED REFERENCE POINTS. RECORD DRAWINGS SHALL BE KEPT AT THE SITE AND SHALL BE BROUGHT UP TO DATE AS THE WORK PROGRESSES. SUBMIT COMPLETED RECORD DRAWINGS BEFORE FINAL CERTIFICATE OF JOB ACCEPTANCE IS ISSUED.

6 THE FOLLOWING DOCUMENTS SHALL BE SUBMITTED TO THE ARCHITECT ON THE COMPLETION OF THE PROJECT AS DESCRIBED ABOVE:
- ELECTRICAL INSPECTION CERTIFICATE.
- AS–BUILT DRAWINGS
- DATA BOOK.
- GUARANTEE

7 PROVIDE TEMPORARY BUILDING FOR FIELD OFFICE, WORKSHOP, TOOLS AND MATERIAL STORAGE AS MAY AS REQUIRED FOR OWN USE AND BE RESPONSIBLE FOR ANY LOSS OR DAMAGE THERETO.

8 ALL MATERIAL SHALL BE STORED NEATLY AND OUT OF THE WAY. CLEAN UP DAILY ALL REFUSE CAUSED BY WORK.

9 BIND WITHIN HARD–COVERED, LOOSE–LEAF BINDERS, TWO COMPLETE SET OF MANUFACTURER'S OPERATING AND MAINTENANCE INSTRUCTIONS SHOWING ALL MAJOR ELECTRICAL EQUIPMENT AND SYSTEMS. INCLUDE SHOP DRAWINGS AND DETAIL DRAWINGS. INSTRUCTIONS SHALL BE COMPLETE FOR INSTALLATION, OPERATION AND MAINTENANCE. SPARE PART SUPPLIERS, LISTS AND ADDRESSES SHALL BE INCLUDED. MAKE ANY ADDITIONS AND/OR CORRECTIONS REQUIRED BY THE ARCHITECT AND SUBMIT TWO CORRECT COPIES TO THE ARCHITECT. INSTRUCTIONS SHALL BE REVIEWED WITH THE OPERATING PERSONNEL TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.

10 EXAMINE THE SITE, AND THE LOCAL CONDITIONS AFFECTING THE WORK UNDER THIS CONTRACT. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY FOR ANY OBVIOUS CONSIDERATIONS OVERLOOKED.

11 AFTER THE WORK IS COMPLETE BUT BEFORE FINAL PAYMENT, GIVE THE OWNER A WRITTEN GUARANTEE THAT YOU WILL, AT NO CHARGE TO THE OWNER, REPLACE OR REPAIR ANY DEFECTS IN WORKMANSHIP AND MATERIALS NOT DUE, IN THE OPINION OF THE ARCHITECT TO MISUSE OR NEGLECT. GUARANTEE SHALL COVER A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE OF THE WORK BY THE ARCHITECT. THIS GUARANTEE SHALL IN NO WAY SUPPLIANT ANY OTHER GUARANTEE OR GUARANTEES OF LONGER PERIOD, BUT SHALL BE BINDING ON ALL OTHER WORK NOT OTHERWISE COVERED.

12 ALL WORK SHALL COMPLY STRICTLY TO THE REQUIREMENTS OF THE LATEST EDITIONS OF THE CANADIAN ELECTRICAL "CSA" CODE AS ADOPTED AND AMENDED BY PROVINCIAL REGULATIONS AND THE BUILDING CODE. THESE CODES AND ANY ADDITIONAL REQUIREMENTS OF THE POWER UTILITY SHALL FORM AN INTEGRAL PART OF THIS SPECIFICATION. ALL EQUIPMENT SHALL BE CSA APPROVED. WHERE DRAWING CALLS FOR EQUIPMENT, WIRING OR OTHER REQUIREMENTS EXCEEDING THE MINIMUM REQUIREMENTS OF THE CODE, THE DRAWING SHALL BE FOLLOWED.

13 OBTAIN ALL PERMITS REQUIRED AND PAY ALL PERMIT AND INSPECTION FEES.

14 ARRANGE FOR INSPECTION OF ALL WORK BY THE ELECTRICAL SAFETY AUTHORITY. ON COMPLETION OF THE WORK, PRESENT TO THE OWNER THE FINAL UNCONDITIONAL CERTIFICATE OF APPROVAL.

15 ON AWARD OF CONTRACT, SUBMIT FOR REVIEW A LIST OF DELIVERY DATES AND 8 COPIES OF SHOP DRAWINGS FOR ALL EQUIPMENT.

16 ALL MATERIALS SHALL BE NEW AND FREE FROM DEFECTS, NOISE AND VIBRATION. ALL EQUIPMENT SHALL BE CSA APPROVED.

17 SCHEDULE AND COORDINATE ALL WORK WITH OTHER TRADES. RELOCATE OR REPLACE CONDUIT OR EQUIPMENT WHICH INTERFERES WITH OTHER TRADES DUE TO LACK OF COORDINATION WITH OTHER TRADES.

18 THE OWNER SHALL HAVE TEMPORARY USE OF INSTALLATION PRIOR TO FINAL ACCEPTANCE.

19 ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED NOT ONLY REGARDING THE BEST ACCEPTED STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY, ETC., BUT ALSO REGARDING NEATNESS OF DETAIL. CONDUITS SHALL BE INSTALLED TRUE TO LINE AND GRADE. ALL CONDUITS, DUCTS AND CABLES SHALL BE ALIGNED PARALLEL AND AT RIGHT ANGLES TO THE BUILDING WALLS. EQUIPMENT SHALL BE ACCURATELY SET, PLUMBED AND LEVELLED AND HANGER RODS SHALL BE ALIGNED VERTICALLY. THE ENTIRE WORK SHALL PRESENT A NEAT AND CLEAN APPEARANCE ON COMPLETION.

20 ALL CLAIMS FOR EXTRAS SHALL BE SUPPORTED BY WRITTEN AUTHORIZATION AND ITEMIZED MATERIAL AND LABOUR COST BREAKDOWNS. THERE SHALL BE NO EXTRA CLAIM FOR RELOCATION OF ANY EQUIPMENT WITHIN 3 METRES FROM THE ORIGINAL LOCATION, PROVIDED SUCH RELOCATION IS MADE BEFORE INSTALLATION.

21 ALL ELECTRICAL EQUIPMENT MOUNTED AND CONNECTED BY THIS CONTRACTOR, WHETHER SUPPLIED BY HIM OR NOT, SHALL BE IDENTIFIED BY MEANS OF PLASTIC NAMEPLATES.

22 .1 ALL WIRING SHALL BE CONCEALED WHERE POSSIBLE EXCEPT THAT CONDUITS IN MECHANICAL ROOMS, STORE ROOM, SERVICE GARAGE, AND OTHER AREAS NOTED MAY BE INSTALLED ON SURFACE.

.1 RIGID PVC CONDUITS CAN BE USED BELOW GRADE AND BENEATH FLOOR SLABS. CONDUIT SHALL BE LOCATED A MINIMUM OF 6 INCHES BELOW THE BOTTOM OF CAST–IN PLACE CONCRETE FLOOR SLABS. CONDUIT SHALL NOT RUN HORIZONTALLY WITHIN FLOOR SLABS.

.2 EMT CONDUITS CAN BE USED WHERE PERMITTED BY CODE.
- EXPOSED WIRING.
- IN FURRED WALLS.

.3 ARMOURED FLEXIBLE CABLE (BX) MAY BE USED FOR FINAL CONNECTIONS TO LIGHTS, FOR RECEPTACLES AND MOTOR BRANCH CIRCUITS CONCEALED IN DRY ACCESSIBLE CEILING SPACES AND HOLLOW PARTITIONS.

.4 HOME RUNS TO PANELS SHALL BE IN CONDUIT.

.5 EMT CONNECTORS AND COUPLINGS SHALL BE STEEL SETSCREW TYPE, CONNECTORS SHALL HAVE NYLON INSULATED THROATS.

23 ALL LOW VOLTAGE AND MULTI CONDUCTOR CABLES SHALL BE INSTALLED IN CONDUIT.

24 ALL BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER 600V GRADE WITH INSULATION TYPE RW90. MINIMUM CONDUCTOR SIZE SHALL BE 12AWG AND COLOUR CODED. WIRE CONNECTIONS SHALL BE MADE WITH PRESSURE TYPE SOLDERLESS CONNECTORS WITH VINYL INSULATING CAPS AND LOCKING RINGS.

25 MECHANICAL TRADE WILL SUPPLY ALL STARTERS, CONTROL TRANSFORMERS AND CONTROLS FOR EQUIPMENT SUPPLIED BY THEM AND WILL MOUNT ALL THESE EXCEPT FOR WALL MOUNTED STARTERS AND WALL MOUNTED LINE VOLTAGE CONTROLS, WHICH SHALL BE MOUNTED BY ELECTRICAL TRADE. ELECTRICAL TRADE SHALL DO ALL POWER WIRING, WHICH IS WIRING WHICH CARRIES THE LOAD CURRENT OF THE MOTOR, HEATER, HOT WATER TANK OR OTHER EQUIPMENT SUPPLIED BY MECHANICAL TRADE. MECHANICAL TRADE WILL DO ALL OTHER RELATED WIRING.

26 PROVIDE 3/4" (19MM) EMPTY CONDUIT FROM EACH TELEPHONE AND DATA OUTLET TO THE NEAREST ACCESSIBLE CEILING SPACE UNLESS OTHERWISE NOTED. EMPTY CONDUITS PROVIDED BY DIVISION 16 FOR USE BY OTHERS SHALL BE COMPLETE WITH FISHWIRES.

27 PROVIDE 3/4" FIRE RATED PLYWOOD BACKING AS REQUIRED TO MOUNT ELECTRICAL DISTRIBUTION EQUIPMENT (PANELS, DISCONNECT SWITCHES, CONTACTORS, TIME SWITCHES, SPLITTERS, ETC.....).

RACEWAYS, ELECTRICAL DEVICES AND CONTROLS – SECTION 16B

1 PROVIDE ALL MATERIAL, EQUIPMENT AND LABOUR REQUIRED FOR A COMPLETE AND ADEQUATE INSTALLATION OF ELECTRICAL MATERIALS AS SHOWN ON THE DRAWINGS AND AS DESCRIBED HEREIN.

2 LIGHT SWITCHES SHALL BE AS FOLLOWS:
– SINGLE POLE, TOGGLE TYPE IVORY
– COOPER INDUSTRIAL SPECIFICATION GRADE, AC QUIET TYPE,
HEAVY DUTY GRADE, 120V:

	15A	20A
SINGLE POLE	1201V	2221V
DOUBLE POLE	1202V	2222V
3–WAY	1203V	2223V

– MOUNT SWITCHES AT 47" (1190MM).

3 DUPLEX RECEPTACLES SHALL BE IVORY – COOPER INDUSTRIAL SPECIFICATION GRADE, MOUNTED AT 18" AFF UNLESS OTHERWISE NOTED.

15A 125V DUPLEX	5262V
15A 125V DUPLEX (IG)	IG5262V
20A 125V DUPLEX	5362V
20A 250V DUPLEX	5462V
30A, 250V SINGLE	1234
15A 125V DUPLEX GROUND FAULT	GF15V
15/20A 125V DUPLEX GROUND FAULT	GF20V
15A CLOCK HANGER, 9/5 WALLPLATE	9363Z

4 COVER PLATES FOR DEVICES SHALL BE STAINLESS STEEL FOR FLUSH MOUNTED BOXES, FORMED GALVANIZED STEEL FOR SURFACE MOUNT BOXES. WEATHERPROOF COVER PLATES SHALL BE DIECAST CORROSION RESISTANT PVC TYPE SUITABLE FOR MOUNTING ON F.S. TYPE BOXES. ALL WEATHERPROOF COVER PLATES SHALL HAVE RUBBER OR NEOPRENE GASKETS BETWEEN COVER AND BOX.

5 RECESSED OUTLET BOXES SHALL BE ELECTRO GALVANIZED AND MADE OF CODE GAUGE STEEL, WHERE MORE THAN ONE DEVICE IS SHOWN ON PLAN, A MULTI–GANG BOX SHALL BE USED. OFFSET OUTLET BOXES, SHOWN BACK TO BACK IN PARTITIONS, HORIZONTALLY TO MINIMIZE NOISE TRANSMISSION BETWEEN ADJACENT AREAS. OUTLET BOX FOR DEVICES MOUNTED SIDE BY SIDE OR ONE ABOVE THE OTHER SHALL BE SEPARATED BY A MINIMUM OF 25mm.

SURFACE BOXES, MOUNTED AT LESS THAN 2700MM AFF, SHALL BE OF SOLID WELDED STEEL OR CAST CONSTRUCTION WITH NO REMOVABLE KNOCK–OUTS.

6 EYS SEALING CONDULETS SHALL BE CROUSE HINDS OR EQUAL COMPLETE WITH CHICO–A COMPOUND AND CHICO K FIBER. SEALING CONDULETS SHALL BE PROVIDED IN ALL LOCATIONS REQUIRED BY CODE. IN EXPLOSION PROOF AREAS SUITABLE EXPLOSION PROOF CONDULETS SHALL BE INSTALLED FOR SURFACE OR FLUSH MOUNTING DEVICES AS SPECIFIED.

7 PHOTOCELLS SHALL BE TORK 2001 SERIES OR EQUIVALENT BY PARAGON OR AREA RESEARCH.

8 CONTACTORS SHALL BE ELECTROMAGNETIC WITH 120V CONTROL COILS AND CONTROL CIRCUIT FUSE HOLDER AND FUSE. LIGHTING CONTACTORS SHALL BE SQUARE D CLASS 8903. OTHER CONTACTORS SHALL BE SQUARE D CLASS 8502. CONTACTORS BY CUTLER HAMMER SHALL BE CONSIDERED AS EQUAL.

9. PLASTIC FILM TO MARK BURIED SERVICES DUCTS, CABLES AND CONDUITS SHALL BE 6" (150MM) WIDE AS MANUFACTURED BY A.B. CHANCE CO., 3M, OR EQUAL. FILM SHALL CONTAIN CONTINUOUS PRINTED WARNING.

SERVICE AND DISTRIBUTION – SECTION 16C

1 PROVIDE ALL MATERIAL, EQUIPMENT AND LABOUR REQUIRED FOR A COMPLETE AND ADEQUATE DISTRIBUTION SYSTEM AS SHOWN ON THE DRAWINGS AND AS DESCRIBED HEREIN.

2 POWER PANELS

.1 POWER PANELS SHALL CONTAIN FUSIBLE UNITS AS SHOWN ON THE DRAWINGS.

.2 FUSIBLE UNITS SHALL HAVE QUICK–MAKE, QUICK–BREAK MECHANISM AND SHALL BE FRONT OPERATED. UNIT SHALL BE INDIVIDUALLY ENCLOSED WITH INSULATED END BARRIERS. FUSE CLIPS SHALL BE HIGH PRESSURE TYPE SUITABLE FOR AND COMPLETE WITH HRC FUSES.

.3 UNITS DESIGNATED AS "SPACE" SHALL HAVE ALL REQUIRED BUS WORK AND MOUNTING BRACKETS INSTALLED AT THIS TIME EXCEPT FOR HARDWARE AND BUS LINKS WHICH ARE NORMALLY SUPPLIED AS PART OF THE UNITS. UNITS DESIGNATED AS "SPARE" SHALL BE COMPLETE WITH FUSIBLE UNITS

3 LIGHTING PANELS SHALL BE OF THE TYPE AND SIZE INDICATED WITH THE NUMBER OF BRANCH CIRCUITS AS SHOWN ON THE DRAWINGS. PANELS SHALL BE PANELBOARD TYPE WITH TOGGLE TYPE, BOLT–IN BREAKERS, AS MANUFACTURED BY SQUARE D (NQOD), FEDERAL PIONEER (NBLP), SIEMENS (S1) OR CUTLER HAMMER (PL–1).

BREAKERS SHALL HAVE INTERRUPTING CAPACITY SUFFICIENT FOR SHORT CIRCUIT CURRENT AVAILABLE UNLESS OTHERWISE NOTED. TWO POLE AND THREE POLE BREAKERS SHALL HAVE COMMON TRIPS. EACH LIGHTING PANEL SHALL HAVE TYPEWRITTEN DIRECTORY WITH TRANSPARENT PLASTIC COVER. CIRCUIT LOADS SHALL BE BALANCED ACROSS PHASES AS CLOSELY AS POSSIBLE. PROVIDE LOCKING DEVICES TO BREAKERS CONTROLLING CIRCUITS FOR EMERGENCY LIGHTS AND EXIT LIGHTS, TIME SWITCHES, MECHANICAL CONTROLS, ETC.

4 DISCONNECT SWITCHES SHALL BE TYPE A, HORSEPOWER RATED. "SWITCHMATIC" BY FPL OR EQUAL BY CUTLER HAMMER (HD SERIES), SIEMENS (ID SERIES) OR SQUARE D (CH SERIES). FUSES SHALL BE HRC FORM 1. FUSES PROTECTING MOTORS OR TRANSFORMERS SHALL BE "FUSETRON" OR EQUAL.

5 DRY TYPE TRANSFORMERS SHALL BE INDOOR AIR COOLED TYPE, RATED THREE PHASE, 60 CYCLES, OF KVA RATING SHOWN ON THE PLANS, 600V – 208Y/120V, 1.2KV CLASS, AND CAPABLE OF WITHSTANDING A 10KV BIL. THE TRANSFORMER SHALL HAVE STANDARD PRIMARY TAPS, SHALL BE DESIGNED WITH A CLASS H INSULATION SYSTEM, AND SHALL BE CSA TYPE ANN AS MANUFACTURED BY POLYGON, MARCUS, CUTLER HAMMER, OR SQUARE D.

1. FLOOR MOUNTED TRANSFORMERS SHALL HAVE VIBRO–ACOUSTIC VIBRATION ISOLATORS INSTALLED BETWEEN THE CASE AND THE FLOOR.

2. TRANSFORMERS SHALL BE WIRED WITH 3FT. OF FLEXIBLE CABLE ON SECONDARY AND PRIMARY SIDES FOR SOUND ISOLATION.

7 DISTRIBUTION EQUIPMENT (PANELBOARDS,TRANSFORMERS, DISCONNECT SWITCHES ETC...) LOCATED IN SPRINKLERED AREAS SHALL BE PROTECTED WITH DRIP PANS, OVERHANGS ETC. AS REQUIRED TO PROTECT AGAINST FIRE PROTECTION SPRINKLER WATER FLOW.

8 ALL GROUNDING OF SERVICES, EQUIPMENT, LIGHT STANDARDS, FEEDERS, CONDUITS, ETC., SHALL BE DONE IN ACCORDANCE WITH THE ELECTRICAL CODE AND ANY REQUIREMENTS OF THE LOCAL SUPPLY AUTHORITIES. THE FOLLOWING REQUIREMENTS ARE SUPPLEMENTARY AND ADDITIONAL TO THE ABOVE REQUIREMENTS:

.1 GROUNDING CONDUCTORS RUN INSIDE BUILDINGS BEYOND THE ,MAIN SERVICE LOCATION AND TRANSFORMERS SHALL BE RUN IN EMT CONDUIT OF SUFFICIENT DIAMETER.

.2 PROVIDE A GREEN INSULATED GROUNDING CONDUCTOR IN ALL NON–METALLIC CONDUITS. SIZE OF GROUNDING CONDUCTOR SHALL BE AS SHOWN ON THE DRAWINGS. IF SIZE IS NOT SHOWN FOLLOW ELECTRICAL CODE. GROUND CONDUCTORS SHALL BE INSTALLED INSIDE CONDUIT OR TUBING CONTAINING THE PHASE CONDUCTORS.

.3 CONDUITS INSTALLED UNDER CONCRETE SLABS ON GRADE AND IN CONCRETE OR IN MASONRY EXTERIOR WALLS BELOW GRADE SHALL HAVE A GREEN GROUND CONDUCTOR. THE CONDUITS SHALL NOT BE RELIED UPON FOR GROUNDING CONTINUITY.

.4 ALL EMT CONDUITS 1–1/4" AND LARGER SHALL HAVE A GREEN INSULATED GROUND CONDUCTOR RUN PARALLEL TO THE LINE CONDUCTORS IN THE TUBING.

.5 ALL FEEDER AND SUBFEEDER CONDUITS SHALL HAVE A GREEN GROUND CONDUCTOR RUN PARALLEL TO THE LINE CONDUCTOR IN THE CONDUIT.

.6 GROUND CONNECTIONS SHALL BE MADE WITH APPROVED SOLDERLESS GROUND CONNECTORS, OR BY WELDING, USING THERMIT PROCESS.

.7 ALL GROUND CONNECTIONS UNDERGROUND AND IN PLACES WHICH WILL BECOME INACCESSIBLE AFTER INSTALLATION, SHALL BE MADE ONLY BY WELDING USING THE THERMIT PROCESS.

.8 WHERE ISOLATED GROUND RECEPTACLES ARE SPECIFIED PROVIDE A SEPARATE GROUND AND SEPARATE NEUTRAL CONDUCTOR FROM PANEL FOR EACH DUPLEX OR QUAD RECEPTACLE.

.9 WHERE CONDUIT DIAMETER IS NOT LARGE ENOUGH TO PROVIDE GROUNDING OF EQUIPMENT OR A SERVICE, AN INSULATED GROUNDING CONDUCTOR SHALL BE RUN WITHIN THE CONDUIT, TUBING AND FLEX.

.10 THE CONDUIT SYSTEM SHALL NOT BE USED FOR GROUNDING TRANSFORMER NEUTRALS. TRANSFORMER NEUTRALS SHALL BE CONNECTED DIRECTLY TO AN APPROVED GROUNDING ELECTRODE TO THE FULL SATISFACTION OF THE INSPECTION AUTHORITY.

.11 THE ELECTRICAL MAIN SYSTEM GROUND MAY BE CONNECTED TO THE METALLIC WATER MAIN IF AVAILABLE ON THE STREET SIDE OF THE WATER METER BY MEANS OF 3/0 CONDUCTOR RUN IN CONDUIT. CONNECTIONS TO THE WATER MAINS SHALL BE MADE IN AN APPROVED MANNER. PROVIDE GROUND WIRE SHUNTS AROUND WATER METERS.

9 SUBMIT SHOP DRAWINGS FOR POWER PANELS, PANELS, DISCONNECT SWITCHES, AND TRANSFORMERS.

LIGHTING – SECTION 16D

1 SUPPLY AND INSTALL ALL LIGHTING FIXTURES, LAMPS, AND ALL REQUIRED ACCESSORIES AS INDICATED ON THE DRAWINGS BY LETTER TYPE AND AS HEREINAFTER SPECIFIED.

2 SUBMIT SHOP DRAWINGS FOR EACH LIGHTING FIXTURE TYPE.

3 REPLACE AND INSTALL WITHOUT EXTRA COST TO THE OWNER, ALL DEFECTIVE OR NOISY BALLASTS FOR A PERIOD OF ONE YEAR AND ANY INCANDESCENT, LOW VOLTAGE LAMP WHICH FAILS WITHIN 30 DAYS OF TAKEOVER AND ANY FLUORESCENT AND HID LAMPS WHICH FAIL WITHIN 90 DAYS OF TAKEOVER.

4 INCANDESCENT LAMPS SHALL BE 130V STANDARD SERVICE TYPE UNLESS OTHERWISE NOTED.

5 FLUORESCENT LAMPS SHALL BE T8, 3500 DEG. K, 82 CRI UNLESS OTHERWISE NOTED. COMPACT FLUORESCENT LAMPS SHALL BE 3500 DEG. K 82 CRI OF TYPE INDICATED.

6 BALLASTS FOR FLUORESCENT LAMPS SHALL BE HIGH FREQUENCY ELECTRONIC TYPE, RAPID START, SOUND RATED "A" WITH LESS THAN 15% TOTAL HARMONIC DISTORTION, CREST FACTOR LESS THAN 1.4, POWER FACTOR GREATER THAN 95%, EFFICIENCY GREATER THAN 95%, MINIMUM 5 YEAR WARRANTY, SUITABLE FOR T8 LAMPS AS MANUFACTURED BY MAGNETEK, EBT OR PHILIPS. BALLASTS SHALL CONSUME A MAXIMUM OF 62 WATTS WHEN SERVING 2 32W T–8 LAMPS OR EQUIVALENT FOR 2 FO17 OR F025 LAMPS; 31 WATTS FOR 1 T–8 LAMP OR EQUIVALENT FOR 1 FO17 OR F025 LAMP.

7 COMPACT FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS.

8 ALL LIGHTING FIXTURES, INCLUDING THOSE MOUNTED IN SUSPENDED CEILINGS, SHALL BE SUPPORTED FROM BUILDING STRUCTURE. PROVIDE SAFETY CHAINS FOR ALL TYPE C, D, AND D1 BALLAST AND RELECTOR ASSEMBLIES.

9 COORDINATE THE INSTALLATION OF LIGHTING FIXTURE WITH ALL TRADES TO PROVIDE SPACING INTENDED.

10 FIXTURES SHALL BE PROPERLY CLEANED AND LEFT CLEAN AND DUST–FREE. ANY FIXTURE SHOWING MARKS OR SCRATCHES DUE TO HANDLING OR TOOL MARKS SHALL BE REPLACED.

INSTALLATION NOTES – SECTION 16F

1. THE DRAWINGS OF THIS DIVISION ARE PERFORMANCE DRAWINGS AND INDICATE THE GENERAL ARRANGEMENT OF WORK. THEY ARE DIAGRAMMATIC AND DO NOT SHOW ALL STRUCTURAL AND CONSTRUCTION DETAILS. ANY INFORMATION INVOLVING ACCURATE MEASUREMENTS SHALL BE VERIFIED ON SITE. ALL NECESSARY ADJUSTMENTS, CHANGES AND ADDITIONS TO CARRY OUT THE DESIGN INTENT SHALL BE MADE WITHOUT ADDITIONAL CHARGE.

2. PROVIDE FIRESTOP SYSTEMS THAT ARE PRODUCED AND INSTALLED TO RESIST THE SPREAD OF FIRE, RESIST PASSAGE OF SMOKE AND OTHER GASES, AND MAINTAIN THE ORIGINAL FIRE RESISTANCE RATING OF THE CONSTRUCTION ASSEMBLY.

.PROVIDE THE MANUFACTURERS PRODUCT LITERATURE FOR EACH TYPE OF FIRESTOP MATERIAL AS FOLLOWS:
.1 PRODUCT CHARACTERISTICS, TYPICAL USES, INSTALLATION PROCEDURES AND LIMITATION CRITERIA
.2 MATERIAL SAFETY DATA SHEETS (MSDS)

PROVIDE SHOP DRAWINGS FOR EACH FIRESTOP SYSTEM. SHOW CONSTRUCTION CONDITIONS, RELATIONSHIPS TO ADJOINING CONSTRUCTION, DIMENSIONS, DESCRIPTION OF MATERIALS AND FINISHES, COMPONENT CONNECTIONS, ANCHORAGE METHODS, HARDWARE AND INSTALLATION PROCEDURES. PROVIDE PRODUCT CERTIFICATES AND TEST REPORTS. MAINTAIN A SET OF LITERATURE ON EACH ULC ASSEMBLY ON SITE FOR REFERENCE BY TRADES.

3. PROVIDE FISH WIRES IN ALL EMPTY CONDUITS FOR WIRING BY OTHER TRADES.

4. ENSURE THAT ALL ELECTRICAL EQUIPMENT OPERATES WITHOUT OBJECTIONABLE NOISE OR VIBRATION.

5. MAKE CONNECTIONS TO ROTATING, VIBRATING, MAGNETIC OR OTHER NOISE PRODUCING EQUIPMENT SUCH AS MOTORS, TRANSFORMERS AND BETWEEN INDEPENDENT STRUCTURE BY MEANS OF LOOPED LIQUIDTIGHT FLEXIBLE CONDUITS.

6. MAKE NECESSARY CHANGES OR CORRECTIONS WITHOUT ADDITION TO THE CONTRACT PRICE, IF OBJECTIONABLE NOISE EXISTS WITHIN THE PREMISES.

7. LIGHTING FIXTURES SHALL BE SUPPORTED FROM STRUCTURAL MEMBERS. DO NOT RELY ON CEILING FOR SUPPORT.

8. PROVIDE ACCESS PANELS OR DOORS TO ALLOW READY ACCESS TO ALL ELECTRICAL PRODUCTS REQUIRING ADJUSTMENT OR MAINTENANCE AND WHERE REQUIRED BY CODE. ACCESS PANELS AND DOORS SHALL BE MAINTAIN FIRE RATING OF CEILING OR WALL WHERE INSTALLED.

9. ALL MATERIAL SHALL BE STORED NEATLY AND OUT OF THE WAY. CLEAN UP DAILY ALL REFUSE CAUSED BY WORK. AT COMPLETION OF PROJECT, CLEAN ALL FIXTURES AND EQUIPMENT.

10. EXCAVATE AND BACKFILL AS REQUIRED FOR THIS WORK BOTH INSIDE AND OUTSIDE THE BUILDING. ALL TRENCH EXCAVATION SHALL BE CARRIED OUT IN STRICT CONFORMITY WITH THE TRENCH EXCAVATOR PROTECTION ACT AND AMENDMENTS, STATUTES OF ONTARIO AND REGULATIONS, AS REVISED AND AMENDED TO DATE.

EXCAVATIONS FOR ALL UNDERGROUND SERVICES SHALL BE OF THE REQUIRED DEPTH AND DIMENSION AND SHALL BE:

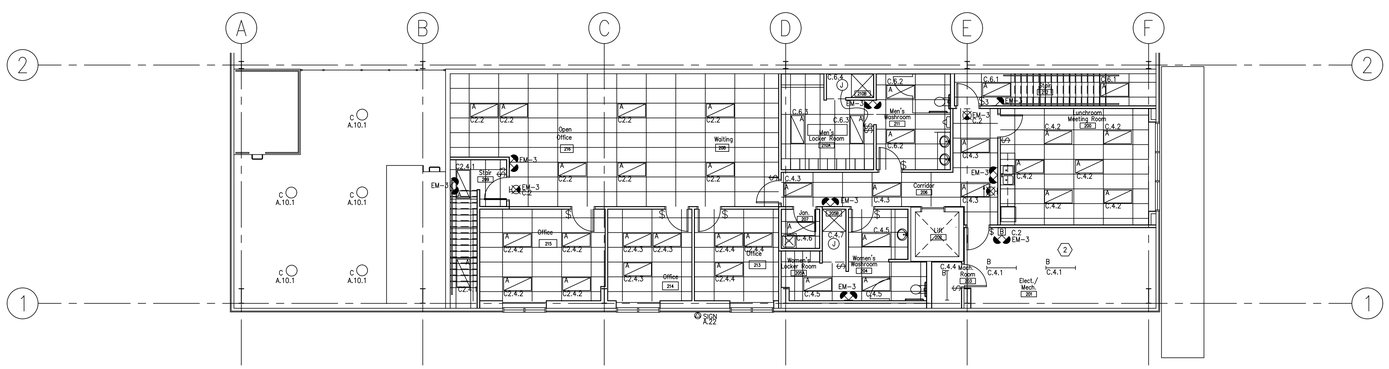
1. PREPARED AS REQUIRED, SO THAT NO PORTION OF ANY DUCT SHALL BEAR DIRECTLY AGAINST ANY ROCK OR OTHER HARD SURFACE.
2. KEPT DRY AT ALL TIMES BY BAILING, PUMPING OR OTHER MEANS. SIDES AND BOTTOMS SHALL BE KEPT FROM FREEZING.
3. BOTTOMS OF EXCAVATION SHALL BE GRADED AS REQUIRED.
4. BANKS OF EXCAVATIONS SHALL BE EVENLY CUT AND/OR TRIMMED AND THEY SHALL BE SHORED AS REQUIRED TO PREVENT CAVING IN, AND THE MATERIAL USED SHALL BE CAREFULLY WITHDRAWN DURING BACKFILLING.
5. WIDTH OF EXCAVATION SHALL BE CAREFULLY CONTROLLED AND SHALL BE LIMITED TO TWICE THE O.D. OF DUCTS, CONDUITS OR DUCT BANK, AND AS SHOWN ON THE DRAWINGS.
6. EXCAVATING, DUCT LAYING, AND BACKFILLING SHALL BE EXECUTED IN LIMITED LENGTH AS DETERMINED BY THE ARCHITECT CONSULTANT TO ENABLE ALL PROTECTIVE MEASURES TO FUNCTION EFFICIENTLY AT ALL TIMES.
7. ANY ROCKS AND BOULDERS ENCOUNTERED SHALL BE REMOVED. ROCKS AND BOULDERS REMOVED FROM THE EXCAVATION SHALL BE BROKEN UP AS REQUIRED, TO PERMIT HANDLING. ANY ROCK ENCOUNTERED SHALL BE REMOVED BY DRILLING AND WEDGING AS NO BLASTING WILL BE ALLOWED.

ALL BACKFILLING REQUIRED TO BRING LEVEL UP TO UNDERSIDE OF STONE FILL (UNDER PARKING AREAS, AND ROADS) AND TO UNDERSIDE OF SIDEWALK SHALL BE GRANULAR B MATERIAL, SUPPLIED AND PLACED UNDER THIS SECTION AND TAMPED EVERY 6" (150MM) IN DEPTH TO CONSOLIDATE SAID FILL. FILL SHALL BE CLEAN, SHALL NOT HAVE PARTICLES OVER 2–1/2" IN LARGEST DIMENSIONS, WITH NOT MORE THAN 8% PASSING A #200 SIEVE.

DUCTS INSTALLED FOR P.U.C. CABLES AND DUCTS LEFT AS SPARE SHALL HAVE ONE CONTINUOUS LENGTH OF 3/8" POLYETHYLENE ROPE INSTALLED IN EACH DUCT TO FACILITATE THE INSTALLATION OF THE CABLES IN THE DUCT. TERMINATION POINTS, GRADES AND ROUTE OF DUCT BANK SHALL BE CONFIRMED BY THE P.U.C. ON SITE.

11. EXTERIOR ILLUMINATED SIGNS WILL BE SUPPLIED AND INSTALLED BY SIGN INSTALLER. WIRE TO AND CONNECT EACH OF THE SIGNS, THE LOCATION OF OUTLETS SHALL BE VERIFIED WITH THE ARCHITECT BEFORE INSTALLATION. OBTAIN ROUGHING IN DRAWING FROM ARCHITECT .

12. UNLESS OTHERWISE SPECIFIED, ALL SURFACE MOUNTED EQUIPMENT SUCH AS PANELS, SWITCHBOARDS, TRANSFORMERS, ETC. SHALL HAVE FACTORY PREFINISHED EXTERIOR SURFACES. ALL PREFINISHED EQUIPMENT SURFACES SHALL BE CLEANED AND ANY SCRATCHES SHALL BE TOUCHED UP WITH ORIGINAL PAINT ON COMPLETION OF PROJECT.



NOTES:

1. CHAIN HANG FIXTURES TO 9FT. AFF. PROVIDE 4 SUPPORTS PER FIXTURE.
2. INSTALL FIXTURES AFTER INSTALLATION OF MECHANICAL EQUIPMENT, PIPING AND DUCTWORK. SITE LOCATE TO CLEAR OBSTRUCTIONS AND PROVIDE EVEN ILLUMINATION.

PARTIAL PLAN @ SECOND FLOOR
SCALE: 1:100

north

no.	revisions	date
1	AS–BUILT	OCT. 2006

LKM CONSULTING ENGINEERS BCIN#27311
Leipciger Kaminker Mitelman and Partners Inc.
Toronto: (416) 445 8255 • Sudbury: (705) 675 6681

ONTC
Motor Coach Maintenance & Administration Facility

North Bay, Ontario

Electrical Specification Second Fl - Lighting

Date: OCT. 2006
Scale: 1:100
Project No.: 20381
Drawn By: A.C.
Library No.: 2004-0112
Drawing No.: E-5

Ontario Northland

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 2024 008
Description: Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility

Submitted To: ONTARIO NORTHLAND TRANSPORTATION COMMISSION

We,_____
(*Name of Respondent)*

having carefully examined, understood, and completed the Request For Proposals Documents as described in Section 2 – The RFP Documents, and Addendum No. _____ to No. _____ inclusive, and having participated in the mandatory respondents' meeting and familiarized ourselves thoroughly with local conditions, hereby agree to supply the services associated with the Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility as outlined in our Proposal for a total price of:

$_____($_____) excluding HST

which price includes 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.

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 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.

Please provide the hourly rate of pay for the following (add an additional page for any Positions not listed below):

Position	Hourly Rate
Project Manager	
Estimator	
Scheduler	
Civil Engineering	
Site Super	
Carpenter	
Plumber	
Electrician	

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

Position	Hourly Rate
Mechanical Engineer	
Mechanical HVAC technician	
Masonry/Concrete Labour	
Roofer	
General labour	

SEPARATELY PRICED ITEMS:

Please provide separate cost for the following items:

Items	Cost, excluding HST
Roof Upgrade Cost	
Front exterior envelope/wall upgrade cost	
Cost for expansion of building	
Contractor to list all cash allowances	

Respondent to complete the below cost breakdown for the building expansion:

Items	Cost
A. EXTERIORS	
A.1 SUBSTRUCTURE	
A.1.1 Foundation	
A.1.2 Excavation	
A.2 STRUCTURE	
A.2.1 Lowest Floor Constr.	
A.2.2 Upper Floor Constr.	
A.2.3 Roof Construction	
A.3 EXTERIOR ENCLOSURE	
A.3.1 Walls Below Grade	
A.3.2 Walls Above Grade	
A.3.3 Windows & Entrance	
A.3.4 Roof Covering	
A.3.5 Projections	
B. INTERIORS	
B.1 PARTITIONS & DOORS	
B.1.1 Partitions	
B.1.2 Doors	
B.2 FINISHES	
B.2.1 Floor Finishes	
B.2.2 Ceiling Finishes	
B.2.3 Wall Finishes	

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

Items	Cost
B.3 FITTING & EQUIPMENT	
B.3.1 Fitting & Fixtures	
B.3.2 Equipment	
C. SERVICES	
C.1 MECHANICAL	
C.1.1 Plumbing & Drainage	
C.1.2 Fire Protection	
C.1.3 HVAC	
C.1.4 Controls	
C.2 ELECTRICAL	
C.2.1 Services & Distribution	
C.2.2 Lighting, Devices, Heating	
C.2.3 Systems & Ancillaries	
D. SITE & ANCILLARY WORK	
D.1 SITE WORK	
D.1.1 Site Development	
D.1.2 Mechanical Site Services	
D.1.3 Electrical Site Services	
D.2 ANCILLARY WORK	
D.2.1 Demolition	
D.2.2 Alterations	
Z. GENERAL REQUIREMENTS & ALLOWANCES	
Z.1 GENERAL REQUIREMENTS	
Z.1.1 General Requirements	
Z.1.2 Fee	
Z.1.3 Permits & Insurance	
Z.2 ALLOWANCES	
Z.2.1 Design Allowance	
Z.2.2 Testing and Inspection Allowances	
Z.2.2 Commissioning Allowance	
Total Construction Costs	
Site service relocates	
Infrastructure upgrades	
Add any other Costs	
Total Building Expansion Cost	

which prices 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.

Purchase is subject to budgetary approval of expenditures.

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:

(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 is substantially complete as defined in the Construction Act and the Contractor is demobilized from the site;

(e) The statutory holdback pursuant to the Construction Act will be 10%;

(f) We will provide the required evidence of insurance, as specified in the Ontario Northland draft Agreement, with our execution of the Final 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;

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 1 *cont'd*
PROPOSAL SUBMISSION FORM

(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.

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: _____

Date at _____ this _____ day of _____, 2024

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 2
RESPONDENT'S GENERAL INFORMATION

The Respondent must complete this document and submit it as part of his Proposal.

Name *Please indicate the complete legal name of the firm*	
Tax Registration # (HST)	
Tax Registration # (GST)	
Tax Registration # (QST)	
Address	
Telephone Number	
Fax 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 or manufacturer that has headquarters or a main office in Ontario, and that regularly conduct its activities (i.e., produces manufactured goods, intangible goods, or services) on a permanent basis in Ontario, is clearly identified by name and is accessible during normal business hours.

Canadian Business ☐ Yes ☐ No

"Canadian Business": A commercial enterprise that is incorporated pursuant to the laws of Canada and which has ongoing business activities in Canada.

Main Contact Person *(for the purposes of this Proposal)*

Name	
Title	
Telephone #	Fax #
E-mail address	

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 2 *cont'd*
RESPONDENT'S GENERAL INFORMATION

Indicate below your company/business' invoice terms:

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

Ontario Northland Transportation Commission (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 equals as a clarification item to be considered while the procurement remains open per 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) 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 Agreement included in Part 5 of this RFP using the table below. ONTC does not have any obligation to accept any proposed changes to the Agreement and will do so in its sole discretion. Significant material proposed changes to the Agreement may impact the evaluation of the Respondent's proposal. ONTC will not accept any material changes to the clauses in the Agreement 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	Contract, 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' MEETING REGISTRATION FORM

Reference Number: RFP 2024 008

Title: Design-Build Services for Two-Story Expansion to ONTC's Motor Coach Stores and Office Administration Facility

Submitted To: ONTARIO NORTHLAND TRANSPORTATION COMMISSION

Please confirm that you plan to attend the Respondents' Meeting by emailing a completed copy of this Registration Form, together with the Release of Liability to Brinda.ranpura@ontarionorthland.ca, prior to Monday, March 25, 2024 at 4:00 p.m.

Failure to submit all forms by the time required may result in ONTC not being able to accommodate your attendance at the site. PROPOSALS SUBMITTED BY RESPONDENTS THAT FAILED TO ATTEND THE RESPONDENTS' MEETING WILL BE DECLARED NON-COMPLIANT AND WILL BE REJECTED.

Date of Meeting: Tuesday, March 26, 2024
Time of Meeting: 10:30 a.m.

Location: 567 Wallace Road, North Bay, Ontario

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 brinda.ranpura@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 mandatory site meeting commencing at 10:30 a.m. on Tuesday, March 26, 2024, in North Bay, Ontario, associated with RFP 2024 008.

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 _____, 2024.

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. **Provide evidence of compliance to Ontario's Environmental Requirements (e.g., recycling, waste management).**
2. Submit the attached Contractor Health and Safety Responsibility Agreement.
3. Submit the attached Contractor Safety Pre-Qualification Form and associated supporting documents.

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 our proposed sub-contractor, 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. 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

_____

_____

11. 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? If yes, include a copy.	☐ 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

12. 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	☐ Yes	☐ No
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	

13. 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	
14. 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	
15. 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	
16. Do you have First Aid kits available to your staff?	☐ Yes	☐ No	
17. Does your company use a formalized Health and Safety Plan for conducting large projects?	☐ Yes	☐ No	
18. Does the company conduct pre-placement medical examinations?	☐ Yes	☐ No	
19. Is task-adequate PPE provided to workers?	☐ Yes	☐ No	
20. Are employees trained in PPE care, use and maintenance?	☐ Yes	☐ No	
21. Do you have a corrective actions process for addressing individual health and safety performance deficiencies	☐ Yes	☐ No	

22. 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	
23. 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:			
health and safety orientation	☐ Yes	☐ No	
health and safety meetings	☐ Yes	☐ No	
workplace inspections	☐ Yes	☐ No	
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	
24. 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	
25. 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	
26. 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?			

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 OF MATERIALS

SCHEDULE OF MATERIALS - VARIATIONS (AND SOURCES)

VARIATIONS:

MATERIALS SOURCES:
(ADD WHERE REQUIRED)

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.

QUANTITY	DESCRIPTION	CAPACITY	CONDITION	AGE	LOCATION	OWNER	HOURLY RENTAL RATE

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 10
SCHEDULE AND PROPOSED APPROACH

CONSTRUCTION SCHEDULE

Respondents shall include a construction schedule with their Proposal. The construction schedule shall be in Gantt chart format, showing all activities of the Work and the critical path. The construction schedule shall reflect the milestone dates listed below.

Mandatory Respondents' Meeting	March 26, 2024
Request for Proposal Close	April 12, 2024
Mobilization to site	May 2024
Completion of the Work	March 1, 2025

Do you agree to complete the Work by March 1, 2025?

Respondent confirms that they will complete the Work by March 1, 2025.

(Check one) YES_____; NO_____

(ONTC reserves the right, in its sole discretion, to disqualify a quotation that does not meet the specified requirements or cannot be completed prior to the end of the ONTC fiscal year (March 31, 2025).

PROPOSED APPROACH

The Respondent 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. Evidence of a thorough review of the RFP Documents and consideration for scheduling above grade work prior to the winter season should be apparent in the Respondent's Schedule and Proposed Approach.

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 11
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 12
LIST OF PERSONNEL

List the names of the Principal Personnel who will be assigned to the Work and **include their resumes.** This information shall be for the use of ONTC in assessing the Proposal. In the event of a Subcontractor(s) being listed as Principal Personnel, the Respondent shall also include their resume(s).

Name	Position	Experience

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 13
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 14
CONTRACTOR'S QUALIFICATION STATEMENT

1. The Respondent shall include a company profile.

2. The Respondent shall supply a minimum of three (3) project descriptions for projects of a similar nature and scope. 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.

In the event 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 14, a company profile for each subcontractor.

ONTC will consider all information submitted in the Respondent's Proposal when evaluating the Respondent's experience.

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 15
LOCAL KNOWLEDGE AND BENEFIT

1) Describe your experience with the climatic and environmental requirements in Northern Ontario

2) What is the value of the budget to be allocated to local subcontractors and how and when will the vendor use the local workforce, local vendors, local manufactures, etc.

PART 4 – FORM OF PROPOSAL
PROPOSAL FORM 16
CLAIMS

Submit an up to date list of outstanding, pending or anticipated claims, proceedings, liens or other legal claims, actions or proceedings.

Ontario Northland

PART 5

REQUEST FOR PROPOSALS

DRAFT AGREEMENT

Note: The draft agreement will be issued by way of Addendum in accordance with these RFP Documents.