

TENDER

HEARTZ HALL CONTRACT #1: RELOCATION OF HEARTZ HALL

CITY OF CHARLOTTETOWN SPECIFICATIONS



Consultant

Coles Associates Ltd. Charlottetown, PEI Project #231058-C#1

File #2024-026

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1 General

1.1 LIST OF DRAWINGS

- .1 <u>CIVIL DRAWINGS</u>
 - .1 C1-100 Demolition Plan
 - .2 C1-101 New Works Plan
 - .3 C1-102 Details & Notes

.2 STRUCTURAL DRAWINGS

- .1 S1-100 Existing / New Foundation & Main Level
- .2 S1-101 Sections and Details
- .3 S1-102 Notes and Specifications

.3 <u>ELECTRICAL DRAWINGS</u>

- .1 E1-100 Site Plan & Trench Details
- .2 E1-101 Riser Pole & Light Standard Details

END OF SECTION

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1 General

1.1 SUMMARY OF WORK

- .1 The work of this project is to complete the relocation of the Heartz Hall facility, inclusive of (but not limited to) the following items:
 - .1 Regrading of the site as described in the drawings herein.
 - .2 Provision of a new asphalt driveway and parking lot accessible to Robertson Road.
 - .3 Provision of a new full-depth concrete foundation at the new location of the facility.
 - .4 Routing of underground utilities (water, sanitary sewer, storm sewer, electrical, communications) from the originating point to the location of the new foundation, terminating the utilities where indicated.
 - .5 Selective demolition of the facility and disconnection from the utilities at the existing location.
 - .6 Relocation of the existing wood structure in its entirety from the existing location to the new foundation, on the same property.
 - .7 Demolition of the existing foundation, utility connections, slab aprons, and asphalt, restoring to suit the conditions of the new site plan.
- .2 All in accordance with the requirements of the Specifications; Drawings (listed on the Index of Specifications and Drawings);
- .3 The Contractor is to coordinate with the City for the turnover of the existing building, to occur prior to the new foundation being fully prepared.
- .4 Contractor to provide a safety plan.
- .5 The work included under this Project is subject to permitting and approval from Authorities Having Jurisdiction including City of Charlottetown Council Approval.

1.2 ENQUIRIES

- .1 Direct all enquiries during the tender period to:
 - .1 City of Charlottetown Attention: Finance Department
 - .2 E-mail: tenders@charlottetown.ca
- .2 All enquiries must be directed in writing via email no less than three (3) business days prior to tender close.

1.3 TENDERING PROCEDURE

- .1 General Contractors: Submit their tender for the entire work of this Contract, INCLUDING the work of all subcontractors, directly to the Owner in accordance with the requirements of the Invitation to Tender and this specification.
- .2 Tenders shall be submitted by completing the Bid Form and placing it in a sealed envelope, clearly marked on the outside, "Tender for Heartz Hall Contract #1 - Relocation of Heartz Hall; Attention Purchasing Officer; 3rd Floor City Hall", and must be delivered to the 3rd Floor of City Hall, 199 Queen Street, Charlottetown PE, C1A 4B7, and received by the Finance Department before 2:00:00 pm local time on April 12, 2024. The City of Charlottetown will not be obligated in any way by the Proponent's response to the Request for Tender. The Proponent's submission and all supporting documents will remain with the City and will not be returned. Proponent costs related to preparing and issuing the Tender response are entirely the responsibility of the Proponent. All such documentation may be reproduced by the City, provided that such reproduction is made solely for internal use or for any purpose required by law. This Tender creates no obligation on the part of the City of Charlottetown to award the contract or to reimburse proponents for tender preparation expenses. The City of Charlottetown reserves the right to accept or reject any and all submissions, in whole or in part, received as a result of this request, and to negotiate in any manner necessary to best serve the interest of the project.

- .3 Any addenda will be posted on the City of Charlottetown website: www.charlottetown.ca/tenders
 - .1 Bidders are responsible for checking the website for proposal/quote/tender notices, documents, and addenda. The City is not responsible for ensuring bidders have obtained addenda.
- .4 No fax, email or electronic documents will be accepted as the sole method of submission although an electronic copy (PDF or Microsoft WORD) of the proposal would be appreciated either included in the envelope noted above or e-mailed following the closing date and time.

1.4 SPECIFICATION EXPLANATION

- .1 Whenever the words "as shown," "as noted," "as called for," "indicated," or similar phrases are used, they shall be understood to refer to this specification and/or the accompanying drawings and addenda.
- .2 The words "provided", "install" or similar words shall mean the work described shall be completely supplied, and erected or installed by the Contractor, unless otherwise noted.
- .3 All materials are to be new unless noted otherwise.

1.5 EXAMINATION OF SITE

- .1 All bidders submitting tenders for this work shall first examine the site and all conditions thereon and/or therein, including:
 - A Pre-tender Site Meeting is scheduled for Thursday, April 4, 2024, at 1:30 PM, local time, at Heartz Hall, 400 St Peters Road, Charlottetown.
 - .2 Existing site conditions visually evident at the time of tender upon which the Work of this Contract will be installed.
 - .3 Conditions attached to, abutting against, or in any other way affected by existing conditions.
- .2 All tenders shall take into consideration all such conditions as may affect the work under this Contract.
- .3 No extra payment will be made to the Contractor, above the Contract Price, for costs resultant from failure to determine the conditions that affect the Work.

1.6 EXISTING CONDITIONS

.1 If in the performance of the contract, subsurface or latent conditions at the site are found to be materially different from those indicated by the drawings and specifications, or unknown conditions not usually inherent in work of the character shown and specified, the attention of the Owner shall be called immediately in writing to such conditions before they are disturbed. Upon such notice or resulting from his own observation of such conditions the Consultant shall promptly make such changes in the drawings and specifications as he finds necessary to conform to the different conditions. There shall be no changes in the tender price as a result of site conditions.

1.7 DOCUMENT INTERPRETATION

- .1 The Consultant's interpretation of Contract Documents shall be final.
- .2 Should the Bidder find discrepancies in, or omissions from the drawings, specifications or other tender documents, or be in doubt as to their meaning or interpretation, the Bidder should at once notify the Consultant in writing for clarification.
- .3 Any instructions or clarifications to Bidders issued during the period of bidding will be in the form of Addenda and are to be included in the tender. Addenda will form part of the Contract Documents.
- .4 The Owner or Consultant will not be responsible for verbal instructions.
- .5 Every effort will be made to issue addenda not less than THREE (3) business days prior to the time for the closing of tenders, at the Owner's discretion.

1.8 PREPARATION AND SUBMISSION OF BIDS

- .1 Contractors shall submit their bids on the Bid Form provided which will be received at the time and place indicated on the Invitation to Tender. Late tenders will not be accepted and will be returned unopened to the bidder.
- .2 Bidders shall fill in all information requested on the Bid Form.
 - .1 This form must be completely filled out in ink, or be typewritten with the signature in longhand. The completed forms shall be without interlineation, alteration or erasure.
 - .2 Failure to fill in the Bid Form, as provided, in its entirety may result in the rejection of the bid; however, bidders are not obligated to provide alternative prices to products listed on the Appendix provided for that specific purpose, as part of the Bid Form.
 - .3 Tender amount shall be stated both in writing and in figures.
 - .4 Signatures shall be without alteration or erasure.
 - .5 Additions, alterations, deletions or other irregularities in the bid form may, but will not necessarily, result in the Owner's rejection of the bid. The bidder acknowledges that it shall have no claim against, or entitlement to damages from, the Owner by reason of the Owner's rejection of its bid or of all bids.
 - .6 Tenders that contain prices which appear to be so unbalanced as likely to adversely affect the interests of the Owner may be rejected. Wherever in a tender, that an amount tendered for an item does not agree with the extension of the estimated quantity and the tendered unit price, the unit price shall govern and the amount shall be corrected accordingly. If a Bidder has not entered a price for an item or work set out in the Form of Tender, he shall, unless he has specifically stated otherwise in his tender, be deemed to have allowed elsewhere in the Form of Tender for the cost of carrying out the said item or work, unless agreed by the Owner no increase shall be made in the total tender price on account of such omission.
- .3 Each tender submitted will be accepted on the understanding that it covers all the Work called for in the specifications and on the drawings, regardless of any notations by Bidder that certain parts of the required Work are omitted from their proposal.
- .4 Each bid must:
 - .1 Give the full business address of the Bidder and must be signed by him with his usual signature.
 - .2 Bids by partnerships must furnish the full name of all partners and must be signed in the partnership name followed by the signature and designation of the person signing.
 - .3 Bids by corporations must be signed with the legal name of the corporation, followed by the name of the Province of incorporation, and by the signature designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person signed shall also be typed or printed below the signature.
 - .4 A bid by a person who affixes to his signature the word "president," "secretary," or "agent," or other designation, without disclosing his principal, may be held to be the bid of the individual signing on behalf of the corporation.
 - .5 A bid of any individual or any group of individuals operating as co-partners or the bid of any corporation which may be submitted shall be executed and authorized so that it shall be and it will constitute a legal binding act of the persons, co- partners, or corporate entity making the bid.
- .5 Bidders shall include with their tender, in the space designated in Section 00 41 13 Bid Form, Appendix A, the name of each Subcontractor and/or Supplier, as designated, whose price has been included in their tender and who will perform the trade work. Substitution for another Subcontractor in the event that the listed Subcontractor is unable to do the work shall be subject to the approval of the Owner and contingent on evidence satisfactory to the Owner that the original Subcontractor's price was legitimately carried in the Tender, and that the original Subcontractor is now incapable of carrying out the work required under the subcontract, or that he refuses to carry out the work and provides documented reasons for such incapacity or refusal.

- .6 The term "Own Forces," as a Subcontractor, may be used by a Bidder where the Bidder is equipped to and in fact normally carries out the trade work using employees in the direct employment of the Contractor or a wholly owned subsidiary company. Other designations such as "Own Estimate" are unacceptable and may be cause for rejection of the tender by the Owner.
- .7 When a Bidder indicates "Own Forces" as a Subcontractor, the Bidder may be required to demonstrate to the Owner that he has the resources, experience and employees necessary, available and qualified to perform the trade work in a manner and quality satisfactory to fulfill the obligations of the Contract Documents and that the trade work is a normal and continual part of his business operation.
- .8 A Bidder, whose tender is accepted, that included "Own Forces" for a subcontract will if requested, provide the Owner with payroll records verifying that the employees carrying out the "Own Forces" subcontract work are direct employees of the Contractor or of a wholly owned subsidiary company of the Contractor.
- .9 Each bidder shall be prepared, if so requested by the Owner, prior to the award of the Contract to present evidence of his experience, qualifications and financial ability to carry out the terms of the Contract.
- .10 Bidders may, at their own discretion, submit Alternatives to items identified as "Acceptable Material".
 - .1 All proposed Alternatives shall be listed in Appendix "B", ALTERNATIVE PRICES and be identified by name and model number where applicable and each Alternative shall have an associated tender price change "INCREASED BY" or "DECREASED BY" \$ or "N/A," as compared with the "Acceptable Material" item carried in the tender amount.
 - .2 Alternate prices will include ALL related costs associated with charges from Accepted Material. No additional costs will be accepted for failure of the Contractor to identify the full impact of using alternate systems.
 - .3 Alternate prices will NOT be used in determining the tender price or as the basis for awarding the tender.
- .11 Bidders are to complete any other Appendices forming part of the Bid Form as directed under Section 00 41 13 Bid Form, Par. 1.2 Form of Tender Appendices.
- .12 Tender Forms and accompanying documents shall be enclosed in a sealed envelope marked "TENDER" and bearing the following identification.
 - .1 Name of project.
 - .2 Name of Contractor submitting tender.
- .13 Envelope to be addressed to the recipient of tenders indicated in the Invitation to Tender and delivered by hand, registered mail or courier.
- .14 Two (2) copies of the submission document is required. It is the proponent's responsibility to ensure that the hard copies of their submission are received prior to the deadline noted above.
- .15 Any changes to a particular Tender, RFP or RFQ will continue to be dealt with using addendums. Any site visits will continue as planned while adhering to PEI Public Health recommendations. It is the Bidder's responsibility to ensure that the hard copies and/or electronic copies of their submission are received prior to the deadline noted above.
 - .1 There will be a public opening of submissions received immediately after closing. The selection of vendor resulting from this Tender shall be done, upon approval by City Council, as soon as bid evaluations have been completed. Results of this Tender will be posted on the City's awards webpage at the following address: www.charlottetown.ca/tenders
- .16 Accompanying the Bid Form shall be:
 - .1 One (1) copy of Bid Guarantee, together with Surety's Letter of Consent, as specified.
 - .2 One (1) copy of a preliminary schedule demonstrating the full scope of work to be completed within the identified time allowed for the completion of the contract work.
- .17 Tender forms and securities must bear original signatures.
- .18 Where the bid amount is shown in both written words and number and the two are in conflict, written words will take precedence.

1.9 BID GUARANTEES

- .1 Each tender submitted shall be accompanied by the following Security:
 - .1 For a General Contract Tender including all Subtrades:
 - .1 A Security Deposit in the form a Certified Cheque, in an amount not less than ten per cent (10%) of the Bid Amount including applicable taxes; OR
 - .2 A Bid Bond only issued by a recognized bonding company, in an amount not less than ten per cent (10%) of the Bid Amount including applicable taxes.
 - .3 An Irrevocable Letter of Credit in an amount of not less than ten percent (10%) of the Bid Amount including applicable taxes.
- .2 The Certified Cheque, Bid Bond, or Irrevocable Letter of Credit shall be made payable to the Owner, City of Charlottetown.
- .3 The Certified Cheque , Bid Bond, or Irrevocable Letter of Credit will guarantee that:
 - .1 The Bidder will not withdraw the bid for the period indicated on the Bid Form, following the schedule closing time of the receipt of bids, and
 - .2 The Bidder will enter into a formal agreement with the Owner in accordance with the agreement included as part of the Contract Documents, and
 - .3 The required Certified Cheque , Bid Bond, or Irrevocable Letter of Credit as Contract Security will be provided to the Owner, and
 - .4 In the event of withdrawal of said bid within said period, or the failure to enter into said Agreement and give said contract security within ten (10) days after notice of the acceptance of the bid, the Bidder shall be liable to the Owner for the full amount of the bid guarantee as representing the liquidating damages to the Owner on account of the default of the Bidder in any particular hereof and shall not be construed as a penalty.
- .4 Bid Bonds or Security Deposits will be returned to all except the three (3) lowest Bidders within three (3) days after the opening of tenders. The remaining non-successful Bid Bonds or Security Deposits will be mailed to Bidders the earlier of sixty (60) days of opening the tenders and two (2) days after Council has awarded the tender.
- .5 Bonds and Letters of Surety, provided by General Contractors to the Owner shall be from a recognized Surety Company.
- .6 Only Bid Bonds issued by insurers, licensed in Canada and authorized to do business in the Province of Prince Edward Island, will be accepted.
- .7 Security Deposits provided by General Contractors:
 - .1 Must be in the form of a Certified Cheque or Canadian Bank Draft drawn on a bank to which the Bank Act applies or a Credit Union, payable to the Owner, OR
 - .2 Security Deposits submitted by Subcontractors to General Contractors, shall be in a form satisfactory to the General Contractor.
 - .3 No interest will be paid to either the successful or unsuccessful bidders for any form of Bid Guarantee.

1.10 CONTRACT SECURITY

- .1 Upon award of a Contract, the Contractor shall provide the following Contract Security:
 - .1 A Performance Bond and a Labour and Materials Bond, each in the amount of fifty per cent (50%) of the total Bid Amount, including applicable taxes, or
 - .2 A Security Deposit in the form of a Certified Cheque, in an amount not less than ten per cent (10%) of the total Bid Amount, including applicable taxes.
 - .3 An Irrevocable Letter of Credit in an amount not less then ten percent (10%) of the bid amount including applicable taxes.
- .2 All Bonds provided by General Contractors, are to be made payable to the Owner.
- .3 Bonds shall be from a recognized Surety Company, licensed in Canada and authorized to do business in the Province of Prince Edward Island.
- .4 If a Performance Bond is utilized, it shall be maintained in force for a period of not less than twelve (12) months after the issuance of the Total Performance Certificate.
- .5 Security Deposits, provided by the General Contractor:

- .1 Must be in the form of a Certified Cheque or Irrevocable Letter of Credit drawn on a bank to which the Canadian Bank Act applies, or a Credit Union, payable to the Owner.
- .6 Contract Security shall be provided at the expense of the General Contractor. Cheques or Bank Drafts shall be drawn on an account with recognized Financial Institutions.
- .7 Contract Security submitted by Subcontractors to General Contractors, shall be in a form acceptable to the General Contractor.
- .8 No interest will be paid to the successful Contractor on any form of Contract Security.
- .9 If in accordance with the Contract Security requirements the successful Contractor has used a certified cheque as Contract Security, it will be held by the Owner until the date of Substantial Performance for the Contract as defined under Definitions and GC 5.4 of CCDC2-2020. Subject to the Work being acceptable to the Owner and Consultant it will be returned to the Trade Contractor.

1.11 RECEIPT AND OPENING OF BIDS

- .1 There will be a public opening of tenders received immediately after closing. The officer whose duty it is to open them will decide when the specified time has arrived. No responsibility will attach to any officer for the premature opening of a bid not properly addressed and identified.
- .2 Facsimile transmitted bids will not be considered.

1.12 ADJUSTMENT AND WITHDRAWAL OF BIDS

.1 A Bidder who has already submitted a bid may submit a further bid at any time up to the official closing time. The last submission received shall supersede and invalidate all submissions previously submitted by that bidder for this tender. Any bidder may withdraw or qualify his/her submission at any time up to the official closing time by re- submitting a new bid to the City. The time and date of receipt will be marked thereon and the new submission will be placed in the tender box. The new submission shall be marked on the sealed envelope by the Bidder as "Resubmission #" along with the name of the tender and to the attention of the Finance Department, as noted above in the tender. Bids may be withdrawn at any time prior to opening upon written request from the bidder. Negligence on the part of the bidder in preparing his/her bid shall not constitute a right to withdraw a bid subsequent to the bid opening.

1.13 AWARD OF CONTRACT

- .1 The Contract, if awarded, will be awarded by City Council as promptly after the opening of bids as is possible, and at the discretion of the Owner. The award date will not extend beyond the period indicated on the Bid Form following the scheduled time of tender closing, without first obtaining permission of the three (3) low bidders, or low bidder only, at the discretion of the Owner.
- .2 The Form of Agreement, (Contract) which the successful Bidder will be required to enter into with the Owner, may be seen on application to the Consultant. The drawings, specifications and any addenda issued during the tender period, will be suitably marked for identification at the time the Form of Agreement is signed by both parties, shall be considered as being included in the Contract, together with the completed Bid Form and are hereinafter referred to as the "Contract Documents." All of these documents shall be read together and construed as one document. Following execution of the Contract, the Contractor shall receive from the Owner one (1) complete signed set of Contract Documents.
- .3 Final award of Contract shall be subject to approval of all agencies having direct interest in the project.
- .4 The award will be posted on the City's tender site.

1.14 **REJECTION OF BIDS**

- .1 The Owner reserves the right to reject any and all bids.
- .2 The lowest of any bid will not necessarily be accepted.

- .3 Bids submitted which indicate "own forces" for subcontract work, that in the opinion of the Owner cannot be successfully completed by the Contractor's employees will not be accepted.
- .4 Bids not submitted on the required form will be rejected.
- .5 Bids which are incomplete or qualified will be rejected.
- .6 All Bidders acknowledge that they shall have no claim against, or entitlement to damages from the Owner or Consultant by reason of the Owner's rejection of their individual bids or all bids.
- .7 At the election of the Owner, whether or not a bid or bidder otherwise satisfies the requirements of a tender, the Owner may reject summarily any bid received from a corporation or other person which has been anywise involved in litigation, arbitration or alternative dispute resolution with the Owner within the five (5) year period immediately preceding the date on which the request for tender was published.
- .8 Submissions will not be evaluated if the Bidder's current or past corporate or other interests may, in the City's opinion, give rise to a conflict in connection with this project.
- .9 The Owner's evaluation may include information provided by the bidder's references and may also consider the proponent's past performance on previous contracts with the Owner or other institutions.
- .10 The Owner may prohibit a bidder from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, and such inappropriate conduct shall include but not be limited to the following: (a) the submission of bids containing misrepresentations or any other inaccurate, misleading or incomplete information; (b) the refusal of the bidder to honour its pricing or other commitments made in its bid; or (c) any other conduct, situation or circumstance, as solely determined by the Owner.
- .11 The Owner may, by written notice to a bidder, reject any submission if it is found by the Owner that gratuities, in the form of entertainment, gifts, or otherwise, were offered or given by the bidder, or the agent or representative of the bidder, to any employee or agent of the project that in the Owner's opinion have been offered or provided with a view toward securing favorable treatment with respect to the awarding or amending, or making any determinations with respect to being selected as the successful bidder. Bidders must declare to the Owner where there is a potential or real conflict of interest. The Owner will take whatever steps it deems necessary to manage the potential or real conflict or risk of conflict of interest arises, the Contractor will notify the City immediately in writing of that conflict or risk and take any steps that the City reasonably requires to resolve the conflict or deal with the risk.
- .12 The Owner specifically reserves the right to reject all tenders if none is considered to be satisfactory and, in that event, at its option, to call for additional tenders. No term or
 - .1 condition shall be implied, based upon any industry or trade practice or custom, any practice or policy of the Owner or otherwise, which is inconsistent or conflicts with the provisions contained in these conditions.

1.15 CANCELLATION OF TENDER

.1 The Owner reserves the right to cancel any request for tender at any time without recourse by the contractor. The Owner has the right to not award this work for any reason including choosing to complete the work with the Owners' [sic] own forces.

1.16 SUBCONTRACT WORK

- .1 Contractor is to ensure that all Subcontractors understand the full extent of their responsibilities in order to complete the entire work of the project. Subcontract work may appear in various Sections of Specifications and on various Drawings.
- .2 Contractors and their Subcontractors are advised to become familiar with all specifications and drawings.

.3 The Owner reserves the right to approve or reject any subcontracting agent or reject bids based on the use of subcontracted work if not in the best interest of the project. The bid should document the justification for using the services of professionals other than those of the lead contractor.

1.17 CONFIDENTIALITY

.1 The successful proponent agrees not to release or, in any way, cause to release any confidential information of the City of Charlottetown unless an appropriate official of the City has specifically approved them to do so in writing. The Bidders agree to treat all information contained in this Tender as confidential, to use such information only for purposes of responding to this Tender, and not to disclose any such information, in whole or in part, to any other party without the express prior written consent of either party or pursuant to legal power, other than: a) to an agent who in the City's reasonable opinion, is seeking information on behalf of the Bidder, b) to a party used by the City to evaluate the Bidder's creditworthiness. Each party agrees to allow the other party to store contact information, such as names, phone numbers, and email addresses for its business representatives, in any country where that party does business and to use such information internally and to communicate with the other party for the purposes of their business relationship. Bidders agree to handle any personal information that it may gain access to through this Tender in accordance with the requirements of privacy laws, and in a manner consistent with the City's published privacy policies, as amended from time to time.

1.18 ASSIGNMENT

.1 This tender and any resulting contract may not be assigned by either party without the prior written consent and approval of the other party, which consent may not be unreasonably withheld; provided however, either party, without such consent, may assign or sell the same in connection with the transfer or sale of substantially its entire business to which this contract pertains or in the event of its merger or consolidation with another company. Any permitted assignee shall assume all obligations of its assignor under this contract. No assignment shall relieve any party of responsibility for the performance of any accrued obligation that such party then has hereunder.

1.19 CONDITIONS OF WORK AND EMPLOYMENT IN PEI

.1 All Construction Companies and Contractors and subcontractors submitting tenders for this work, or a portion thereof, are advised, in their own interest, to contact the Construction Association of Prince Edward Island, the accredited association for commercial and industrial sectors of the construction industry, to inquire and determine the terms and conditions of work and employment in the Province of Prince Edward Island.

1.20 LAWS OF PRINCE EDWARD ISLAND

.1 This Tender will be governed by and will be construed and interpreted in accordance with the laws of the Province of Prince Edward Island.

1.21 LABOUR

- .1 No prospective employee in the Province of Prince Edward Island shall, with relation to his employment or eligibility for employment, be discriminated against or favored by reason of sex, racial origin, religious views, or political affiliations.
- .2 Contractors, to the extent possible, are encouraged to maximize the employment of the local labour force for the Work of this Contract.

1.22 HARMONIZED SALES TAX REQUIREMENTS

.1 The Owner for this project must account for the Harmonized Sales Tax (HST).

.2 All tenders submitted for the work of this Contract shall be calculated on the basis that the Owner is not exempt from HST. The bid will include HST but will show it as a separate line item.

1.23 ACCEPTABLE PRODUCTS

- .1 The Bidder shall carry in his tender the base bid product(s) identified in the specifications as "Acceptable Materials", or approved equals as they are identified throughout the tender period.
- .2 The Bidder is also encouraged to carry the products of other manufacturers, that are not considered equals, as "Alternatives Prices," listing them by name on the Appendix provided for that specific purpose, as part of the Bid Form, together with the price difference compared to the specified products, when such Appendix is identified under Section 00 41 13 Bid Form.

1.24 APPROVED EQUALS

- .1 Submission for an Approved Equal is to contain literature and descriptive information with full specification data. Where the requested item is contained on a printed document with other items, it is to be clearly identified.
- .2 The Consultant will not search catalogs, e-mails or websites or contact suppliers to obtain the necessary information for proper evaluation.
- .3 Submission by Bidders for evaluation of products requested to be considered as equal must be submitted to Owner no less than five (5) working days prior to closing of tenders. No consideration will be given to approving equals after the close of tenders, except when the specified product is found to have been discontinued by the manufacturer.
- .4 The consideration of a product(s) for Approved Equal status and the acceptance of individual products as approved equals is entirely at the discretion of the Consultant.
- .5 When products are given Approved Equal status these products may, at the discretion of bidders, be carried in their tender price, provided that ALL costs related to changes to the contract work required to incorporate the Approved Equal product are included in the tender price.
- .6 The acceptance of a product by the Consultant as an "Approved Equal," even where not specifically indicated on the Approved Equals listing in the Addendum, is to be understood as being contingent upon the provision of the particular series, model and/or type, complete with all options to meet the specified requirements of the Acceptable Material product.
- .7 Products given approved status that are found, during construction period, to not have all specified options available, or to have discontinued production of same, or to have made other design changes since the time of approval, will not be accepted for use on this project, except when financial compensation has been mutually agreed upon between the Contractor and the Owner and deemed acceptable by the Consultant. Compensation will not be paid to the Contractor for products acknowledged by the Consultant to be superior to the specified products.

1.25 ALTERNATIVES

- .1 Alternative products, when requested under Section 00 41 13 Bid Form, must be listed in Appendix "B" provided as part of the Bid Form , and are to be understood as being offered only for the Owner's consideration as substitutes for the specified Acceptable Material products, at the amount of increase or decrease in the tender amount indicated in the Appendix. These products and related prices are not to be included in the tender amount.
- .2 Alternative products and their related increase or decrease in the base bid amount are not used as the basis for awarding tenders.
- .3 When alternative products are listed in Appendix "B", ALL costs related to changes to the contract work required to incorporate the alternative product into the work are to be included in the amount stated in Appendix "B".

- .4 Alternative products may or may not be accepted at the discretion of the Owner at the price difference quoted, without any other monetary consideration. If requested, bidders shall promptly supply full details of any or all Alternatives listed. Specific written direction from the Consultant must be given to the Contractor to substitute an alternative product.
- .5 Alternative prices shall include all fees, taxes and markups.

1.26 UNIT PRICES

- .1 Unit Prices, when requested under Section 00 41 13 Bid Form, must be listed in Appendix "C", as part of the Bid Form and are to be understood as being offered only for the Owner's consideration; to be accepted or not accepted, at the Owner's discretion in a timely manner during the Work of the Contract, ONLY as a method of adjustment to the Contract Work for changes in the Work, should the Owner opt for the Unit Price Method.
- .2 Unit prices shall include all fees, taxes and markups.

1.27 SEPARATE PRICES

- .1 Separate Prices, when requested under Section 00 41 13 Bid Form, must be listed in Appendix "D", as part of the Bid Form and are to be understood as being offered only for the Owner's consideration; to be accepted or, not accepted, in whole or in part, at the Owner's discretion. If used the Separate Prices may be incorporated into the Contract Work either at the time of Award of Contract or in a timely manner during the Work of the Contract, at the Owner's discretion.
- .2 Separate Prices shall include all fees, taxes (HST) and markups.

1.28 CASH ALLOWANCES

.1 Cash Allowances as requested under Section 00 41 13 - Bid Form, are to be understood as being expended only on Consultant's / Owner's written instructions.

1.29 GUARANTEES

- .1 The Contractor will be required to guarantee the work of this Contract in accordance with the requirements of GC12.3 of the Agreement.
- .2 Not withstanding the above, the bidder's attention is directed to the fact that certain individual items on this project may be required to be guaranteed by the manufacturer for periods in excess of twelve months. These specific requirements are to be found in various sections of the specifications for this project.

1.30 PAYMENT OF WORKERS

- .1 The Contractor shall, in addition to any fringe benefits, pay the workers employed by the Contractor on the work at wage rates, not less than those established by the Minimum Wage Order, issued under authority of the Labour Act, which is in effect. The Contractor shall pay workers employed on the work at intervals of not less than twice per month.
- .2 The Contractor shall require each Subcontractor, or person doing any part of the work, to covenant with the Owner that workers are employed at the wage rates and in the manner required by this provision.
- .3 Where any person employed by the Contractor or any Subcontractor, or other person engaged on the Work of this Contract, is paid less than the amount required to be paid under the provisions of this Contract, the Owner may deduct from any monies payable to the Contractor, under this or any other Contract, and pay to such person, a sum sufficient to bring the person's wages up to the amount required to be paid under this Contract.
- .4 No claim for extra payment from the Contractor will be considered by the Owner concerning any change in the Minimum Wage Order which may occur during prosecution of the Contract.

1.31 TIMING REQUIRMENTS

.1 This project will require the achievement of the following project milestones:

.1	Tender Call	March 27, 2024
.2	Pre-tender Site Meeting	April 04, 2024 at 1:30 PM local time
.3	Tender Close	April 12, 2024 at 2:00 PM local time

Tender Award .4

.5 Ready for Takeover April 22, 2024 July 31, 2024

.2 The above are planned project milestones. While this is ideal, timing is subject to change.

END OF SECTION

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1 General

1.1 TENDER .1

SUBMITTE	ED BY:	
_		_(Name)
_		_(Address)
_		_(Contact)
DATE: _		_
FOR: TO:	HEARTZ HALL CONTRACT #1: RELOCATION OF HEART CITY OF CHARLOTTETOWN	Z HALL
Having exa issued, as to furnish a Contract w	amined ALL the drawings and specifications for this project, as we prepared by Coles Associates Ltd. and/or their consultants; WE I Ill materials, plant and labour necessary for the full and proper co ork for:	ell as any addenda HEREBY OFFER mpletion of the
	HEARTZ HALL CONTRACT #1: RELOCATION OF HEART	Z HALL
INCLUDIN date, EXCI allowances	G all prime cost allowances and Government sales or other taxes LUDING Harmonized Sales Tax (HST) but not any other addition or taxes which may be applicable subsequent to this date, and v	s in force at this al or deductible vhich shall be

payable by or to the Owner, in accordance with the above mentioned Documents, for the bid amount of:

	(Dollars)
(\$)

in lawful money of Canada.

The following is the total amount of money EXTRA to our bid amount for the Harmonized Sales Tax (HST):

	(Dollars)
(\$)

In submitting this Tender we recognize the necessity to complete the information requested by any appendices, as well as, the right of the Owner to reject all Tenders or to accept any Tender at the price submitted, on the condition that revised Tenders will not be called for if minor changes are made.

Bid Prices are valid for up to 60 days. In the event of this Tender being accepted within earlier of sixty (60) days of opening the tender and two days after Council has awarded the tender, and our failing or declining to enter into a Contract, then our Bid Guarantee, submitted with our Tender shall be forfeited to the Owner in lieu of any damages which the Owner may suffer by reason of our failure or refusal to enter into such Contract.

In the event of our Tender not being accepted within earlier of sixty (60) days of opening the tender and two days after Council has awarded the tender, our Bid Guarantee, submitted with our Tender will be returned to us forthwith, unless a satisfactory arrangement is made with us covering its retention for a further stated period.

If we are notified of the acceptance of this Tender within the above specified time, we will:

- .1 Enter into a formal Contract Agreement with, or accept a purchase order issued by the City.
- .2 Furnish the Performance Bond and Labour and Materials Payment Bonds, or other form of Contract Security, when specifically permitted, as Contract Security in accordance with the requirements of the specifications.
- .3 Furnish a cost breakdown of the Contract sum, the total aggregating the amount of our Tender, in accordance with the requirements of the specifications.
- .4 Furnish a certified copy of all insurance policies.
- .5 Furnish a certified copy of all insurance policies carried by the named subtrades.
- .6 Complete the entire work on or before the dates stated.
- .7 Provide and update as required a Construction Schedule which clearly shows the state of progress required to complete the work on the date specified.
- .8 Enter into subcontract agreements where applicable.

1.2 FORM OF TENDER APPENDICES

- .1 Appendix 'A' must be completed by bidders.
- .2 Appendix 'B' (only the items indicated) may be completed by bidders, any other items are at the bidder's discretion.
- .3 Appendix 'C' must be completed by bidders.
- .4 Appendix 'D' must be completed by bidders.
- .5 Appendix E' must be completed by bidders.
- .6 Appendix 'F' must be completed by bidders.

1.3 CONTRACTOR'S SIGNATURE

.1 Signed, sealed and submitted for and on behalf of:

(Company Name)

(Address)

(Authorized Signature)

(Witness)

(Name and Title)

(Name and Title)

(Date)

Affix Corporate Seal

1.4 APPENDIX 'A'

.1 ASSIGNMENT OF WORK

The Bidder's attention is drawn to the General Conditions of the Contract – Assignment and Sub-Contracting. The Bidders shall enter the name and address of each Sub-Contractor used in making up the tender. Only one Sub-Contractor shall be named for each part of the work to be sublet.

After the tender has been accepted by the Owner, the Contractor shall not be allowed to substitute other Sub-Contractors in place of those named in the tender without written approval from the Consultant.

Herewith are identified the Subcontractors we propose to use on this project:

Excavation Work:	
Concrete Work:	
Carpentry:	
Mechanical:	
Electrical:	
Asphalt Paving:	
Building Mover:	
Other:	
Other:	
COMPANY:	
AUTHORIZED SIGNATURE:	

.2 CONTRACTOR'S EXPERIENCE AND PROJECT PERSONNEL

The Bidders shall include below the names, qualifications and previous experience of those individuals who will be directly involved with the project, including but not limited to foreman, superintendent, project manager, project engineer, etc.

NAME	TITLE	RELATED EXPERIENCE
COMPANY:		
AUTHORIZED SIGNATURE:		

1.5 APPENDIX 'B'

.1 ALTERNATIVE PRICES

We herewith submit for consideration by the Owner the following systems or products as Alternatives to the Base Bid items indicated below and identify the increase or decrease, as applicable, in our tender price, for each item should it be selected by the Owner for installation in lieu of the Base Bid item. The change in tender price includes for all necessary modifications to the base bid systems.

Alternative prices shall include all fees, overhead, and markups, EXCLUDING HST.

SECTION ITEM BASE BID ALTERNATIVE:	TENDER PRICE INCREASED BY:	TENDER PRICE DECREASED BY:
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
	\$	\$
COMPANY:		
AUTHORIZED SIGNATURE:		

1.6 APPENDIX 'C'

.1 UNIT PRICE COMPONENT

We submit herewith our Unit Prices for the additions or deletions to the work listed below. The Unit Prices listed apply to performing the Units of Work, in accordance with the requirements of the appropriate specifications herein, only during the time scheduled for such work in the project work schedule.

Unit prices shall include all fees, overhead, and markups, EXCLUDING HST.

UNIT OF WORK	UNIT OF MEASURE	ONE (1) UNIT PRICE ONLY FOR EITHER ADDITION OR DELETION
.1		\$
.2		\$
.3		\$
.4		\$
COMPANY:		

ALITHORIZED SIGNATURE	
AUTHORIZED SIGNATORE.	

1.7 APPENDIX 'D'

.1 SEPARATE PRICES

We submit herewith our Separate Prices for adjustments to the work listed below and amounts are NOT included in our Stipulated Price. In accordance with the requirements of the appropriate specifications herein, only during the time scheduled for such work in the project work schedule.

Separate prices shall include all fees, overhead, and markups EXCLUDING HST.

UNIT OF WORK	UNIT OF MEASURE	ONE (1) UNIT PRICE ONLY FOR EITHER ADDITION OR DELETION
.1		\$
.2		\$
.3		\$
.4		\$
COMPANY:		

AUTHORIZED SIGNATURE: _____

1.8 APPENDIX 'E'

.1 CASH ALLOWANCES

The undersigned hereby acknowledges that the sum of:

SEVENTEEN THOUSAND DOLLARS, \$17,000.00 EXCLUDING Harmonized Sales Tax (HST)

is included in the total tender amount as Cash Allowances, to perform the following work; This money to be expended in accordance with the requirements of CCDC2 2020 General Condition GC 4.1 - Cash Allowances, only on consultant's written instructions.

WORK:

- .1 Contractors to include a \$10,000.00 cash allowance for unspecified additional construction elements relating to the work of this Contract. The nature and extent of this work to be determined by the Owner during the construction period for this contract.
- .2 Contractor to include for a \$4,500.00 cash allowance to cover utility costs including all labour, material, and plant associated with the new incoming electrical service at Heartz Hall. This allowance is to be adjusted to the actual utility service cost and be supported by invoices from the utility. No Contractor mark-ups will be accepted on this item.
- .3 Contractor to include for a \$2,500.00 cash allowance to cover communications server costs including all labour, material, and plant associated with the new incoming electrical service at Heartz Hall. This allowance is to be adjusted to the actual utility service cost and be supported by invoices from the utility. No Contractor mark-ups will be accepted on this item.

Contractors are advised to carry sufficient overhead and administration cost to administer and coordinate this work.

In the event that the Owner decides not to proceed with any or all of this work, we agree to credit the Contract with the unused portion of the full amount of these Cash Allowances, as applicable and the related HST.

COMPANY:

AUTHORIZED SIGNATURE: _____

1.9 APPENDIX 'F'

.1 COST BREAKDOWN

We submit herewith our cost breakdown for the work to be performed on this Project and in accordance with the requirements of the appropriate specifications herein.

(as applicable) and/or Equipment	Unit	Quantity	Unit Cost	Total Cost
General Requirements (insurance, permits, O/H, Profit, etc.)	LS	1	\$	_ \$
Mobilization & Demobilization	LS	1	\$	\$
Concrete Work	LS	1	\$	_ \$
Carpentry	LS	1	\$	\$
Mechanical	LS	1	\$	\$
Electrical	LS	1	\$	\$
Excavation/Backfilling	LS	1	\$	\$
Asphalt Paving	LS	1	\$	\$
Building Mover	LS	1	\$	\$
Other (Specify)			\$	\$
Cash Allowance	LS	1	\$17,000.00	\$17,000.00
As-Builts & Maintenance Manuals (will be released upon satisfactory submission of documents)	LS	1	\$2,000.00	\$2,000.00
		SUBTO	TAL \$	
		TAX	KES \$	
		TO	TAL \$	
COMPANY:				

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1 General

1.1 FORM OF AGREEMENT

- .1 The Form of Agreement between Contractor and Owner shall be Canadian Construction Documents Committee CCDC2-2020, "Stipulated Price Contract", including the Definitions and General Conditions therein, including items GC1.1 inclusive to GC13.2, and the modifications to items GC1.1 to GC13.2 incorporated into Section 00 73 00 - Supplementary Conditions of this Specification.
- .2 Document CCDC2-2020 may be examined at the Construction Association office in Charlottetown, PEI.

END OF SECTION

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1 General

1.1 GENERAL

- .1 These Supplementary Conditions modify, delete and/or add to the Agreement between Owner and Contractor, the Definitions, and the General Conditions of the Stipulated Price Contract, Standard Construction Document CCDC 2 - 2020.
- .2 Where any Article or portion of Article conflicts with the Laws of the Province concerned, such Article or portion of the Article is hereby stricken.

1.2 SUPPLEMENTARY CONDITION 1; AGREEMENT BETWEEN OWNER AND CONTRACTOR

- .1 SC1.1; Article A-5 Payment:
 - Delete paragraph 5.2 and replace it with the following:
 - "5.2 Should either party fail to make payments as they become due under this Contract or in an award by arbitration, adjudication or court, interest will begin to accrue on the amount that is not paid from the date when it is due until the date it is paid at the prejudgment interest rate prescribed by the Provincial Court of PEI."

1.3 SUPPLEMENTARY CONDITION 2; CCDC2 - 2020, DEFINITIONS

- .1 Amend the following Definitions:
 - .1 Amend the Definition of "Consultant" by adding the following to the end:
 - .1 "For purposes of this Contract, the terms "Consultant", "Architect" and "Engineer", wherever used in the Contract Documents, shall be considered synonymous. The term "Consultant" means the Consultant or Consultants authorized representative.

The Consultant shall be the Owner's Prime Consultant, Coles Associates Ltd., 85 Fitzroy Street, Charlottetown, PEI."

- .2 Amend the Definition of "Owner" by adding the following to the end:
 - .1 The Owner shall be the City of Charlottetown.
- .3 Amend the Definition of "Subcontractor" by adding the following to the end:
 - .1 All dealings with the Subcontractor shall be through the medium of the Contractor, who will be responsible for the proper coordination and execution of the Sub-contractor's work.
- .2 Add the following new Definitions:
 - .1 **Act**
 - "Act means the Construction Act (PEI), as amended.".

.2 As-Built Drawings

"*As-Built Drawings* are the drawings prepared by the *Contractor* by marking on a copy of the Drawings the changes from the Drawings which occur during the course of the Work including, but not limited to, the exact location of major building components and structures that were shown generally on the Drawings. For certainty, *As-Built Drawings* shall be in computer-aided design (CAD) format approved by the *Owner*, as well as in paper and PDF formats."

.3 Deficiency Rectification Security

"Deficiency Rectification Security means the amount and the form of security to be delivered by the *Contractor* pursuant to GC 5.4A – DEFICIENCY RECTIFICATION SECURITY."

.4 Engineer

"The *Engineer* shall mean the designated engineering representative(s) of the *Consultant.*"

.5 **OHSA**

"OHSA means the Occupational Health and Safety Act (PEI), as amended, and all rules and regulations passed under it."

.6 **Proper Invoice**

"Proper Invoice means an application for payment given by the *Contractor* to the *Owner* that fully complies with the requirements of GC 5.1A – PROPER INVOICE."

.7 Provide

.1

"Provide means supplied and installed."

.8 Submittals

"Submittals are documents or items required by the *Contract Documents* to be provided by the *Contractor*, such as:

- *Shop Drawing*s, samples, models, manuals, mock-ups to indicate details or characteristics before the portion of the *Work* that they represent can be incorporated into the *Work*; and
- .2 As-Built Drawings and manuals to provide instructions to the operation and maintenance of the Work."

.9 WCB

"WCB means the PEI Workers Compensation Board."

1.4 SUPPLEMENTARY CONDITION 3; GENERAL CONDITIONS

- .1 GC 1.1 CONTRACT DOCUMENTS
 - .1 Amend paragraph 1.1.2 by adding the following to the end:
 - "The intent of the Contract Documents is to include all labour, Products, materials, Construction Equipment and services necessary or normally considered necessary for the performance of the Work in accordance with the Contract Documents. Any item of Work mentioned in the Contract Documents or reasonably inferable from the Contract Documents but not otherwise shown or described shall be provided by the Contractor as if shown or otherwise described or inferable. Any items omitted from the Contract Documents which are reasonably necessary or inferable for the completion of the Work shall be considered a portion of the Work and included in the scope of Work to be performed under this Contract."
 - .2 Amend paragraph 1.1.5 as follows:
 - .1 Amend paragraph 1.1.5.1 by changing the order of the first four bullet points so that, as reordered, the bullet points read as follows:
 - ".1 the order of priority of documents, from highest to lowest, shall be
 - Supplementary Conditions,
 - the Agreement between Owner and the Contractor,
 - the Definitions,
 - the General Conditions"
 - .2 Amend paragraph 1.1.5 by adding the following new paragraph 1.1.5.6:
 - ".6 Notwithstanding the foregoing, if there a conflict or discrepancy between Drawings or between Drawings and Specifications or any other Contract Documents in relation to the Products to be supplied or the amount of labour or materials required to complete a particular item of Work, the Contractor shall supply and shall include in the Work the Products, labour and materials which would provide the greatest benefit to the Owner, as determined by the Owner."
 - .3 Amend paragraph 1.1.9 by adding new paragraphs 1.1.9.1 and 1.1.9.2 as follows:
 - ".1 The Specifications shall be read as a whole and are the minimum construction requirements. Neither the organization nor the division of the Specifications nor anything else contained in the Contract Documents will be construed to place responsibility on the Consultant to settle disputes among the Subcontractors and Suppliers in respect to such organization or division.
 - .2 The Drawings are intended to convey the scope of the Work and indicate elevations and general and approximate locations, arrangement and sizes of

fixtures, equipment, outlets, utilities and underground services. The Contractor shall obtain more accurate information and shall satisfy itself as to the conditions of the pre-grade elevations and the locations, arrangement and sizes of fixtures, equipment, outlets, utilities and underground services from study and coordination of the Drawings, including Shop Drawings, and shall satisfy itself and become familiar with conditions and spaces affecting these matters before proceeding with the Work. Where site conditions require reasonable minor changes to indicated locations and arrangements, the Contractor shall make such changes at no additional cost to the Owner. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the Contractor shall include such relocation in the Work at no additional cost to the Owner. The Contractor shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible."

- .4 Amend paragraph 1.1.11 as follows:
- .1 Delete the words "at the Owner's expense".
- .5 Add new paragraphs 1.1.12 to 1.1.16 as follows:
 - "1.1.12 The Contract Documents and are intended solely for use by the party with whom the Consultant has entered into a Contract, and there are no representations of any kind made by the Consultant to any party with whom the Consultant has not entered into a Contract.
 - 1.1.13 If the Contractor finds any error, inconsistency or omission in the Contract Documents or has any doubt as to the meaning or intent of any part thereof, the Contractor shall immediately notify the Consultant, who will provide written instructions or explanations. Neither the Owner nor the Consultant will be responsible for oral instructions.
 - 1.1.14 Electronic documents are and shall remain the Consultant's property. Copies of electronic documents may be made available for the preparation of Shop Drawings at the Consultant's sole discretion and for a fee.
 - 1.1.15 Drawings and specifications are posted on the City's website for use by the Bidders.
 - 1.1.16 The Contractor shall keep one copy of the current Contract Documents, Supplemental Instructions, proposed or Contemplated Change Notices, Change Orders, Change Directives, Record Drawings marked up with any changes to be included in As-Built Drawings, cash allowance disbursement authorizations, reports, records meetings, and reviewed Shop Drawings at the Place of the Work, in good order and available to the Owner and Consultant."

.2 GC 2.2 ROLE OF THE CONSULTANT

- .1 Add new paragraph 2.2.19 as follows:
 - "2.2.19 The Consultant will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the Work in accordance with the applicable construction safety legislation, other regulations or general construction practice. The Consultant will not be responsible for the Contractor's failure to carry

out the Work in accordance with the Contract Documents. The Consultant will not have control over, charge of or be responsible for the acts or omissions of the Contractor, Subcontractors, Suppliers, or their agents, employees, or any other persons performing portions of the Work."

.3 GC 2.4 DEFECTIVE WORK

- .1 Amend paragraph 2.4.1 by inserting the words ", at the Contractor's sole cost and expense," after the words "The Contractor shall" in the first line of the paragraph.
- .2 Add new paragraphs 2.4.4 and 2.4.5 as follows:
 - "2.4.4 The Contractor shall rectify, in a manner acceptable to the Owner and the Consultant and without cost or expense to the Owner, all defective Work and deficiencies throughout the Work, whether or not they are specifically identified by the Consultant.
 - 2.5.5 The Contractor shall give priority to the correction of any defective work or deficiencies identified as priorities by the Owner or the Consultant."
- .4 GC 3.1 CONTROL OF THE WORK
 - .1 Amend paragraph 3.1.1 by adding the following new paragraphs 3.1.1.1 and 3.1.1.2 as follows:
 - "1 The Contractor shall co-ordinate his own work and the work of all Subcontractors so as to facilitate and expedite the progress of the work.
 - 2 It is the responsibility of the Contractor to immediately notify the Consultant of any signs of distress or any other indications of actual or potential damage to the contract work, without regard to his awareness of any errors, inconsistencies or omissions in the Contract Documents."
 - .2 Add new paragraphs 3.1.3 through 3.1.7 as follows:
 - "3.1.3 The Contractor is solely responsible for the quality of the Work and shall undertake any quality control activities specified in the Contract Documents or, if none are specified, as may be reasonably required to ensure such quality. The Contractor shall perform the Work in accordance with modern practice and in accordance with applicable laws, ordinances, rules, regulations, or codes relating to the performance of the Work. Without limiting the generality of the foregoing, the Contractor is responsible for coordinating the Work so that no part shall be left in an unfinished or incomplete condition.
 - 3.1. 4 The Contractor shall abide by and shall enforce directives and policies regarding signs, advertisements, fires, smoking and vaping at the Place of the Work as directed by the Owner.
 - 3.1.5 The Contractor, without in any way limiting its responsibilities under this Contract, shall:
 - .1 perform the Work so as to avoid disturbing the occupants of any structures at the Place of the Work or any adjacent structures or the public in general,
 - .2 respect and comply with local regulations and all Owner's requirements regarding permitted work hours, noise levels and work conditions,
 - .3 take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise, to avoid conditions likely to propagate mould

or fungus of any kind, and shall take all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of any structures at the Place of the Work or any adjacent structures and the public in general, and/or to maintain access to and the operation of such structures,

- .4 take precautions not to allow any unauthorized visitors entry to the Place of the Work.
- 3.1.6 Prior to commencing the Work the Contractor shall verify, at the Place of the Work, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the Work and shall further carefully compare such field measurements and conditions with the requirements of the Contract Documents. Where dimensions are not included or exact locations are not apparent in the Contract Documents, the Contractor shall immediately notify the Consultant in writing and shall obtain written instructions before proceeding with any part of the affected Work. Failure to do so shall be at the sole risk and cost of the Contractor.
- 3.1.7 Before ordering any materials or doing any Work, Contractor shall verify all compensation has been allowed on account of differences between actual site dimensions and the measurements indicated on the drawings. Any difference, which may be found, shall be submitted to the Consultant for consideration before proceeding with the work.
- 3.1.8 The Contractor will be responsible for effecting the removal from the site of any trade, firm, group or person who is delaying the Work, or whose Work is unsatisfactory. The Contractor will arrange for other competent trades people to complete the Work at no expense to the Owner."

.5 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

- .1 Amend paragraph 3.2.2 by deleting the word "Owner" in the second line and replacing it with the word "Contractor".
- .2 Delete paragraphs 3.2.2.2 and 3.2.2.3 in their entirety.
- .3 Amend paragraph 3.2.3.4 by adding the following to the end:
 - .1 "Failure by the Contractor to so report shall invalidate any claims against the Owner by reason of the deficiencies in the work of Other Contractors or Owner's own forces except for those deficiencies not then reasonably discoverable; and".

.6 GC 3.4 CONSTRUCTION SCHEDULE

- .1 Delete paragraph 3.4.1 and replace it with the following:
 - "3.4.1The Contractor shall:
 - .1 within ten (10) Working Days of signing this Contract submit to the Owner and the Consultant, for the Owner's approval, a construction schedule that indicates the timing of major activities and critical milestone dates for the Work, demonstrating that the Work will be performed in conformity with the Contract Time. Such schedule:
 - .1 shall provide sufficient detail of the critical events and their interrelationship and shall include a baseline schedule indicating the critical path for the Project; and
 - .2 at each site meeting, provide to the Owner and the Consultant a lookahead schedule indicating the major activities to be undertaken in the next month."

Coles Associates Ltd.

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.2 Amend paragraph 3.4 by adding the following new paragraph 3.4.2 as follows: "3.4.2 The Contractor shall not change the scheduled Ready-for-Takeover date."

.7 GC 3.5 SUPERVISION

- Amend paragraph 3.5 by adding the following new paragraph 3.5.3 as follows:
 - "3.5.3 The Consultant may require the Contractor to inform him, in writing, of the name and experience of the supervisory personnel he intends to use on the project."
- .8 GC 3.7 LABOUR AND PRODUCTS
 - Amend paragraph 3.7 by adding the following new paragraph 3.7.4 as follows:
 - "3.7.4 All manufactured articles, materials and equipment shall be installed, applied, connected, erected, used, cleaned, conditioned and commissioned as directed by the manufacturer unless specified to the contrary."
- .9 GC 3.8 SHOP DRAWINGS AND OTHER SUBMITTALS
 - .1 Delete the title of GC 3.8 as written and replace with the following wording "SHOP DRAWINGS AND OTHER SUBMITTALS".
 - .2 Amend paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.5, 3.8.6 and 3.8.7 by adding the words "and Submittals" after the words "Shop Drawings" wherever they appear in those paragraphs; and amend paragraphs 3.8.3.2 and 3.8.5 by adding the words "and Submittal" after the words "Shop Drawing" wherever they appear in those paragraphs.
 - .3 Add new paragraph 3.8.8 as follows:
 - "3.8.8 The Consultant's review of Shop Drawings and Submittals will be for general detail and arrangement only. The Consultant's review shall not relieve the Contractor from its responsibility for deviations from the Contract Documents, unless the Contractor in writing has notified the Consultant of such deviations at the time of submission of the Shop Drawings and Submittals and the Consultant has given written approval to the specific deviations. The Consultant's review shall not relieve the Contractor from responsibility for defective Work resulting from errors or omissions of any kind on the reviewed Shop Drawings and Submittals and shall not constitute authorization to the Contractor to perform additional Work or changed Work. The Contractor s solely responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes, and for techniques of construction and installation."

.10 GC 3.9 DOCUMENTS AT THE SITE

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- Add new paragraph "3.9 DOCUMENTS AT THE SITE" as follows:
 - 3.9 DOCUMENTS AT THE SITE
 - 3.9.1 Contractor is to maintain at job site, one (1) copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Notice of Change.
 - .7 Change Orders.
- .8 Other Modifications to Contract.
- .9 Field Test Reports.
- .10 Approved Work Schedule.
- .11 Health and Safety Plan and Other Safety Related Documents.
- .12 CSA Z317.13-07 Infection Control Guidelines (if applicable).
- .13 Other documents as specified."
- .11 GC 4.1 CASH ALLOWANCES
 - .1 Delete paragraphs 4.1.4 and 4.1.5 and replace them with the following:
 - "4.1.4 Where the actual cost of the Work under any cash allowance exceeds or is expected to exceed the amount of the allowance, the Contractor shall notify the Owner and the Consultant in writing indicating the amount of additional funds required and, in such case, the Contractor shall not proceed with the cash allowance Work until the Contract or receives written instructions from the Consultant. Un-expended amounts from other cash allowances may be reallocated at the Owner's direction to cover the shortfall and, in that case, the Contractor is not entitled to any amount for overhead and profit. Where no such direction is given, or where the actual cost exceeds the allowance even after reallocation of un-expended amounts from other cash allowance and substantiated, plus an amount for overhead and profit as set out in paragraph 6.2.3.3 of GC 6.2 CHANGE ORDER, but on the excess only.
 - 4.1.5 The net amount of any un-expended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the Contract Price without any adjustment for the Contractor's overhead and profit on such amount."
 - .2 Add a new paragraph 4.1.8 as follows:
 - "4.1.8 The Owner reserves the right to call, or to have the Contractor call, for competitive bids for portions of the Work to be paid for from cash allowances."

.12 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

.1 Delete "GC 5.1. Financing Information Required of the Owner" in its entirety.

.13 GC 5.1A PROPER INVOICE

- .1 Add a new "GC 5.1A Proper Invoice" as follows:
 - "5.1A Proper Invoice
 - .1 In this Contract a Proper Invoice shall mean an application for payment made by the Contractor that:
 - .1 is given to the Owner monthly by e-mail sent to ".com" and is sent concurrently to the Consultant or as the Owner may otherwise direct; and includes all of the following:
 - .1 the *Contractor's* name and address and HST registration number;
 - .2 the date of the application for payment and the period during which the services or materials were supplied;
 - .3 information identifying the authority, whether in the *Contract* or otherwise, under which the services or materials were supplied,

including the applicable RFT or purchase order number;

- .4 a description, including quantities where appropriate, of the services and materials that were supplied;
- .5 the amount payable for the services or materials that were supplied, and the payment terms. Ensure the amounts align with the *Contractor's* pricing form;
- .6 the name, title, telephone number and mailing address of the person to whom payment is to be sent;
- .7 copies of all *Change Orders* and *Change Directives* for which the *Contractor* is claiming payment together with all backup documentation;
- .8 a statement based on the schedule of values for the *Work;*
- .9 for all applications for payment except the final payment, the monthly report required by GC 3.4A – CONTRACTOR'S MONTHLY REPORTS, including an updated construction schedule which complies with the requirements of paragraph 3.4.1.1 of GC 3.4 – CONSTRUCTION SCHEDULE;
- .10 a current valid clearance certificate issued by the WCB;
- .11 for the second and all subsequent applications for payment, a CCDC 9A Statutory Declaration stating that all accounts for services and materials and other indebtedness incurred by the Contractor for which the Owner may in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified matter in dispute."

.14 GC 5.2 APPLICATIONS FOR PAYMENT

- .1 Amend paragraph 5.2.2 by adding paragraphs 5.2.2.1 and 5.2.2.2 as follows:
 - "5.2.2.1 Payment shall be less any holdback release, which may have been made in accordance with the specific terms of this Agreement as dictated by GC 5.6. Any such holdback release by the Owner to the Contractor shall be a payment to the Contractor in trust for the specific Subcontractor in respect of whose work the release is made.
 - 5.2.2.2 Payments shall be less 15% Mechanics' Lien Holdback amount claimed against each progress claim."
- .2 Delete paragraph 5.2.7 in its entirety.
- .3 Amend paragraph 5.2.8 by adding the following wording to the end: "Payment for materials will be considered only if such materials are properly stored on site in a secure enclosure acceptable to the Consultant. Security of materials so stored is the responsibility of the Contractor."
- .4 Add new paragraphs 5.2.9 to 5.2.11 as follows:
 - "5.2.9 Authorized Change Orders shall be listed on the application for payment indicating the amount claimed against each to date of claim.
 - 5.2.10 For the second and all subsequent applications for payment, a CCDC 9A Statutory Declaration stating that all accounts for services and materials and other indebtedness incurred by the Contractor for which the Owner may in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified matter in dispute.
 - 5.2.11 A current valid clearance certificate issued by the WCB."

.15 GC 5.3 PAYMENT

- .1 Delete paragraph 5.3.1 and replace it with the following:
 - "5.3.1 The *Consultant* will issue to the *Owner* and copy to the *Contractor* a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due.
- .2 Add new paragraphs 5.3.1.3 and 5.3.1.4 as follows:
 - ".3 When any claim for payment during the course of construction includes for completed or partially completed Work, which in the opinion of the Consultant is defective or otherwise unacceptable, a sum of monies determined by the Consultant to be ten (10) times the value of the defective or unacceptable Work, or ten (10) times the value of the Work required to correct the defect or an amount solely at the Consultants discretion, will be withheld from the claim.
 - .4 Deficiency monies may be held back at any time during the course of the project for Work deemed incomplete or unacceptable.
 - .5 It remains the Contractor's responsibility to undertake his own deficiency reviews and ensure the entire Work conforms to the Contract including quality, completeness and commissioning.
 - .6 Two final deficiency reviews will be conducted by the Consultant. The first review with the Owner and Contractor will identify any minor items which may remain outstanding, and the second review will confirm that these items have been completed. All other deficiency reviews where deficiencies are incomplete or not ready for requested inspections, will be charged at cost to the Contractor. The invoice for the additional reviews will be submitted to the Owner with a corresponding amount deducted from the Contractor's progress payment."
- .16 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK .1 Add new paragraphs 5.4.1.3 as follows:
 - ".3 Submit with application for payment letter of clearance from The Workers Compensation Board to the Owner stating that the Contractor is in good standing with the Board."
- .17 SC 3.26 GC 5.5 FINAL PAYMENT

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- Amend paragraph 5.5.2 by adding the following to the end:
 - .1 "Any delay in delivering the required Project Record Drawings (As-Builts) as described in Section 01 78 00 Closeout Submittals will have the effect of delaying the final payment to the Contractor until the Consultant has received them complete and in good condition."
- .18 GC 5.8 WITHHOLDING OF PAYMENT
 - .1 Add a new "GC 5.8 Withholding of Payment: as follows: "GC 5.8 WITHHOLDING OF PAYMENT
 - 5.8.1 Notwithstanding any provision in the *Contract Documents* to the contrary, the *Owner* may withhold payment of any amount claimed in an application for payment, in a *Proper Invoice*, or in any certificate for payment to the extent required to offset any claims the *Owner* may have against the *Contractor*, or to offset previous overpayment made to the *Contractor*, or for damages or costs incurred by the *Owner*, or to the extent as may be necessary to protect

and/or indemnify the *Owner* from loss, claims or damage, including as a result of:

- .1 the *Contractor's* failure to perform any of its material obligations or where the *Contractor* is otherwise in default under the *Contract Documents*;
- .2 defective portions of the *Work* not remedied;
- .3 damage done by the Contractor to work performed by Other Contractors or by the Owner's own forces;
- .4 the Contractor's failure to make prompt payments to its Subcontractors and Suppliers respecting Work for which the Owner has made payment to the Contractor;
- .5 claims or reasonable evidence indicating possible commencement of claims for which the Contractor may be responsible to indemnify the Owner;
- .6 the Contractor's failure to remove any liens arising from the Work or otherwise to satisfy its obligations under GC 14.2 LIENS AND ACTIONS;
- .7 reasonable evidence the Work will not achieve Ready-for-Takeover in accordance with the construction schedule or within the Contract Time;
- .8 any claim for which the *Owner* is entitled to indemnification from the *Contractor* pursuant to the *Contract Documents*.
- 5.8.2 Where the *Owner* has withheld payment to the *Contractor* pursuant to the provisions of this *Contract*, the *Owner* shall be entitled to apply the amount toward the costs of any required remedial work, completion costs or toward damages or losses suffered and for which the *Owner* is entitled to compensation under this *Contract*, including legal costs and expenses."
- .19 GC 6.2 CHANGE ORDER
 - .1 Delete paragraph 6.2.1 and replace it with the following:
 - "6.2.1 When a change in Work is proposed or required:
 - .1 The Consultant will provide the Contractor with a written description of the proposed change in the Work. The Contractor shall promptly present, in forms acceptable to the Consultant, a detailed breakdown of the costs associated with the change, if any; and the adjustment in the Contract Time, if any. The breakdown shall include:
 - .1 Actual (not list) costs of material, as well as Subtrade and Supplier costs.
 - .2 Labour costs, including fringe benefits and wage levies.
 - .3 Equipment rental (excluding hand and small power tool).
 - .2 Change Orders calling for normal changes or additions to the Work will be priced in detail giving actual material trade prices (not list prices) and actual labour costs and wage levies (including Employment Insurance, Worker's Compensation, Holiday Pay) and actual equipment rental.
 - .3 Each Change Order will be considered as a whole to complete the work, inclusive of all Sub- Contract and/or General Contract work.
 - .4 To these prices, the Contractor will add:
 - .1 For Work less than \$2,500, involving the General Contractor

only, the General Contractor adds 20% to his costs

- .2 For Work over \$2,500, involving the General Contractor only, the General Contractor adds 15% to his costs.
- .3 For Work less than \$2,500, involving a Subcontractor only, the Subcontractor adds 20% to his costs, submits this price to the General Contractor who adds 10%.
- .4 For Work over \$2,500, involving a Subcontractor only, the Subcontractor adds 15% to his costs, submits this price to the General Contractor who adds 5%.
- .5 For Work less than \$2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 20% to his costs, submits his price to the General Contractor who adds 10%; to this amount the General Contractor adds the cost of his own Work plus 20% of the cost of his own Work only. The General Contractor does NOT add a further 10% to the cost of his own Work.
- .6 For Work over \$2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 15% to his cost, submits this price to the General Contractor who adds 5%; to this amount the General Contractor adds the cost of his own Work plus 15% of the cost of his own Work only. The General Contractor does NOT add a further 5% to the cost of his own Work.
- .7 Deletions to Contract: A mark-up by either Sub-Contractor or General Contractor shall not be charged or credited on credit Change Orders.
- .8 Supervision related to Change Orders shall be considered as included in the allowable mark-up, and shall not be added as additional charges for a Change order.
- .5 Note: Costs related to management, supervision, estimating, scheduling, bonding, insurance, as built drawings, copying, courier, safety, cleaning, site overhead, site vehicle, hand and small power tools etc. are covered by the mark up indicated and shall not be included on Change Orders.
- .2 Add new paragraphs 6.2.3 to 6.2.5 as follows:
 - 6.2.3 The mark-ups referred to in paragraph 6.2.1.4 shall constitute the only compensation the *Contractor* shall be entitled to for any and all overhead, profit, general expenses, incidental and administrative costs whatsoever related to a change including, but not limited to, costs relating to superintendence and supervision, general cleanup, *Shop Drawing* production, estimating, site office and head office expenses and personnel, administration costs, workers' tools, temporary facilities and controls, record drawings, *As-Built Drawings*, warranty, insurance, bonding, job safety costs, and coordination of any and all *Work*-related activities.
 - 6.2.4 An adjustment to the *Contract Time* will be considered only when the *Contractor* demonstrates to the *Owner* that a change in the *Work* affects the critical path of the *Work*. Any costs associated with an adjustment to the *Contract Time* shall be identified by the *Contractor* and shall be limited to the reasonable direct costs directly attributable to the adjustment to the *Contract*.

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Time.

- 6.2.5 The *Contractor* shall not be entitled to any additional compensation or an adjustment to the *Contract Time* arising out of changes to the *Work* aside from the amounts stated in a *Change Order*. In no event shall the *Owner* be liable to the *Contract* for any costs, including indirect, impact or consequential costs, arising out of changes to the *Work* beyond the agreed upon amount of the *Change Order*."
- .20 GC 6.3 CHANGE DIRECTIVE
 - Delete paragraph 6.3.6 and replace it with the following:
 - "6.3.6 The adjustment in the Contract Price for a change carried out by way of a Change Directive shall be determined on the basis of cost of the Contractor's actual expenditures and savings attributable to the Change Directive, valued in accordance with paragraph 6.3.7 and as follows:
 - .1 The Owner or the Consultant, without invalidating the contract, may make changes by altering, adding to, or deducting from the work, the contract sum being adjusted accordingly. All such work shall be executed under the conditions of the Contract.
 - .2 Where work is required to proceed immediately, work may proceed under a Change Directive. The Contractor will be instructed to proceed on a time and materials basis and maintain accurate accounting records for the cost of the change.
 - .3 Change Directives calling for changes to the Work will be priced in detail giving actual material trade prices (not list prices) and actual labour costs and wage levies (including Employment Insurance, Worker's Compensation, Holiday Pay) and actual equipment rental.
 - .4 Each Change Directive will be considered as a whole to complete the work, inclusive of all Sub-Contract and/or General Contract work.
 - .6 To these prices, the Contractor will add:
 - .1 For Work less than \$2,500, involving the General Contractor only, the General Contractor adds 20% to his costs.
 - .2 For Work over \$2,500, involving the General Contractor only, the General Contractor adds 15% to his costs.
 - .3 For Work less than \$2,500, involving a Subcontractor only, the Subcontractor adds 20% to his costs, submits this price to the General Contractor who adds 10%.
 - .4 For Work over \$2,500, involving a Subcontractor only, the Subcontractor adds 15% to his costs, submits this price to the General Contractor who adds 5%.
 - .5 For Work less than \$2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 20% to his costs, submits his price to the General Contractor who adds 10%; to this amount the General Contractor adds the cost of his own Work plus 20% of the cost of his own Work only. The General Contractor does NOT add a further 10% to the cost of his own Work.
 - .6 For Work over \$2,500, involving the General Contractor and a Subcontractor, the Subcontractor adds 15% to his cost, submits

this price to the General Contractor who adds 5%; to this amount the General Contractor adds the cost of his own Work plus 15% of the cost of his own Work only. The General Contractor does NOT add a further 5% to the cost of his own Work.

- .7 Deletions to Contract: A mark-up by either Sub-Contractor or General Contractor shall not be charged or credited on credit Change Orders
- .8 Supervision related to Change Orders shall be considered as included in the allowable mark-up, and shall not be included in the labour changes for a Change order."

.21 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- Add a new paragraph 6.4.0 as follows: .1
 - ".0 The Contractor confirms that, before signing this Contract, it carefully investigated and examined the Place of the Work, the Contract Documents and any other documents made available by the Owner, and has satisfied itself as to the conditions, circumstances, limitations and requirements necessary for the Contractor to perform the Work in accordance with the Contract Documents. No allowances will be made for additional costs and no claims by the Contractor will be considered for an adjustment in the Contract Price or Contract Time in connection with conditions which were reasonably apparent or which could reasonably have been discovered before the signing of this Contract."

.22 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT .1

- Add a new paragraph 7.1.7 as follows:
 - ".7 The Owner may terminate this Contract for convenience at any time for any or no reason. In such event, the Owner shall pay for the Work performed up to the effective date of termination, including demobilization costs, and for such additional reasonable direct costs directly flowing from and which are a reasonable consequence of the termination, but excluding the costs of the Contractor's head office personnel and overhead costs, any consequential, indirect or special damages, and any loss of profit or loss of opportunity costs and damages arising from or caused by such termination, regardless of whether any such excluded costs, damages or claims are made or incurred by the Contractor or any Subcontractor or Supplier. The Owner shall not be liable for any other claims, costs or damages whatsoever arising from such termination of this Contract."
- GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE .23 CONTRACT
 - Amend paragraph 7.2.3 as follows: .1
 - Delete paragraphs 7.2.3.1 and 7.2.3.2; .1
 - Amend paragraph 7.2.4 as follows: .2
 - Delete "5" in the second line and replace with "10". .1
 - Delete paragraph 7.2.5 and replace it with the following: .3
 - "7.2.5 If the default cannot be corrected within the 10 Working Days specified in paragraph 7.2.4, the Owner shall be deemed to have cured the default if it:
 - commences the correction of the default within the specified time; and .1

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- .2 provides the Contractor with an acceptable schedule for such correction; and
- .3 completes the correction in accordance with such schedule.

.24 GC 9.1 PROTECTION OF WORK AND PROPERTY

- Add a new paragraphs 9.1.5 and 9.1.6 as follows:
 - "9.1.5 Without in any way limiting the Contractor's obligations under this GC 9.1, should the Contractor or any Subcontractor or Supplier cause loss or damage to property, including roads, buildings, structures, paving, grass, sod, trees or other plantings, whether owned by the Owner or others, and whether at the Place of the Work or adjoining it, the Contractor shall be liable for the cost of making good such damage and for the repair and any replacement cost of the grass, sod, trees or other plantings damaged, including the cost of any arborist or other consultant, and such costs may be deducted by the Owner from amounts otherwise owing to the Contractor. If there is no amount owing by the Owner for all of the said costs.
 - 9.1.6 The Contractor shall be responsible for implementing all necessary security measures required to protect the areas of Work under his control and shall be responsible for damage which may arise from the failure of, or the failure to implement such security measures."

.25 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

- .1 Amend paragraph 9.2.3 as follows:
 - .1 Delete the words "The Owner" in the first line and replace them with "The Contractor".
- .2 Add new paragraphs 9.2.5.5 and 9.2.5.6 as follows:
 - ".5 take all reasonable steps necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances, and
 - .6 take all necessary steps to mitigate the impact on Contract Time and Contract Price."
- .3 Amend paragraph 9.2.7.3 by adding the following after the words "as a result of the delay" at the end:
 - ", but excluding the costs of the Contractor's head office personnel and overhead costs, any consequential, indirect or special damages, and any loss of profit or loss of opportunity costs and damages arising from or caused by such delay, regardless of whether any such excluded costs, damages or claims are made or incurred by the Contractor or any Subcontractor or Supplier"
- .4 Delete paragraph 9.2.7.4.
- .5 Add new paragraphs 9.2.10 and 9.2.11 as follows:
 - "9.1.10 The Contractor shall, immediately upon becoming aware of any environmentally toxic and hazardous substance or materials (within the meaning of applicable environmental legislation), notify the Owner in writing setting out particulars concerning the type of the environmentally toxic and hazardous substance or materials, where it was discovered, and all other information that the Contractor has at the time of the notice.
 - 9.1.11 The Contractor shall indemnify the Owner and its manager, officers, directors, employees, agents and elected officials in respect of any loss, costs, expense or fine which might be imposed in respect of any failure by

the Contractor to satisfy its obligations under this GC 9.2 and, without limiting the general nature of this indemnity, the Contractor shall indemnify the Owner and its manager, officers, directors, employees, agents and elected officials in respect of any loss, costs, expense or fine if the Project is made subject to an order from a court or government agency requiring remediation of any contamination caused as a result of the Work performed by the Contractor or its Subcontractors or Suppliers."

.26 GC 9.5 MOULD

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- .1 Amend paragraph 9.5.2.3:
 - .1 Add the words "and for any delay" immediately before the comma near the end.
- .2 Amend paragraph 9.5.3.3 by adding the following after the words "as a result of the delay" at the end:

", but excluding the costs of the Contractor's head office personnel and overhead costs, any consequential, indirect or special damages, and any loss of profit or loss of opportunity costs and damages arising from or caused by such delay, regardless of whether any such excluded costs, damages or claims are made or incurred by the Contractor or any Subcontractor or Supplier, and"

.27 GC 10.1 TAXES AND DUTIES

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- Amend paragraph 10.1.1 as follows:
 - Delete the words ..."at the time of closing except for Value Added Taxes"...and replace with the words ..."at the time of closing including Value Added Taxes"...
 - Amend paragraph 10.1.2 by adding the following to the end: "For greater certainty, the Contractor shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties."
- .28 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES
 - Delete paragraph 10.2.2 and replace with the following:
 - "10.2.2 The Owner shall obtain and pay for development approvals, permanent easements, rights of servitude, and all necessary approval and permits, except for the permits and fees referred to in paragraph 10.2.3 or for wich the Contract Documents specify as the responsibility of the Contractor.
 - .1 The Contractor shall apply for, obtain and pay for the building permit.".
 - .2 Amend paragraph 10.2.4 by adding the following to the end:
 - "The Contractor shall notify the Consultant and the chief building official or the registered code agency where applicable, of the readiness, substantial completion, and completion of the stages of construction set out in the applicable Building Code. The Contractor shall be present at each site inspection by an inspector or registered code agency. If any laws, ordinances, rules, regulations, or codes conflict, the more stringent shall govern."
- .29 GC 11.1 INSURANCE
 - .1 Delete GC 11.1.1 in its entirety and replace it with the following:
 - "11.1.1 The Contractor shall obtain, maintain, pay for and provide to the Owner evidence of the insurance coverage required under this Contract. Any deductible and/ or self-insured retention are the responsibility of the Contractor and shall not constitute a Project expense chargeable back to the

Owner in any way.

.1 Commercial General Liability Insurance

General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Ready-for-Takeover*. Liability coverage shall be provided for completed operations hazards from the date of *Ready-for-Takeover*, as set out in the certificate of *Ready-for-Takeover*, on an ongoing basis for a period of 6 years following *Ready-for-Takeover*

Commercial General Liability, underwritten by an insurer licensed to conduct business in the Province of PEI, for a limit of not less than \$5,000,000 per occurrence, an aggregate limit of not less than \$10,000,000, within any policy year with respect to completed operations and a deductible of not more than \$50,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 and IBC Form 2320. The policy shall include an extension for a standard provincial and territorial form of non-owned automobile liability policy. This policy shall include but not be limited to:

- .1 Name the Owner as an additional insured;
- .2 Cross-liability and severability of interest;
- .3 Blanket Contractual;
- .4 Products and Completed Operations;
- .5 Premises and Operations Liability;
- .6 Personal Injury Liability;
- .7 Contingent Employers Liability;
- .8 Owners and Contractors Protective;
- .9 Broad Form Property Damage;
- .10 Firefighting Expenses;
- .11 Elevator and Hoist Liability;
- .12 Attached Machinery while loading and unloading

The following also applies:

- .13 If applicable to the *Project*, coverage shall include shoring, blasting, excavation, underpinning, demolition, pile driving, caisson work and work below ground surface including tunneling and grading.
- .14 If the Work involves asbestos removal, the policy shall provide coverage for this exposure.
- .15 If the Work involves the use or operation of an owned or nonowned manned aircraft or watercraft, the policy shall provide coverage for this exposure.
- .16 To achieve the desired limits, umbrella or excess liability insurance may be used.
- .17 The Owner reserves the right to request in addition to Commercial General Liability Insurance coverage Wrap-up Liability. The Wrapup shall be in the names of the Owner, Contractor, all Subcontractors, the Consultant and all other architects, engineers, consultants, planners and project managers. Limits and coverages shall comply with the requirements outlined above.
- .2 <u>Automobile Insurance</u>

Standard Form Automobile Liability Insurance that complies with all requirements of the current legislation of the Province of PEI, having an inclusive limit of not less than \$5,000,000 per occurrence for third party liability, in respect of the use or operation of vehicles owned operated or leased by the Contractor.

.3 Builders Risk Insurance

Broad Form Builders' Risk Insurance written in the joint names of the *Contractor, Owner, Subcontractors, Consultants,* and underwritten by an insurer licensed to conduct business in the Province of PEI. The policy shall have limits of not less than 1.1 times the *Contract Price.* Should the *Owner* provide any property to be incorporated into the *Project,* the policy must be endorsed to include the *Owner's* property. Coverage shall be maintained during the term of the *Contract* and until 10 calendar days after the date of *Ready-for- Takeover.* The Builders' Risk shall:

- .1 Be endorsed to grant permission to occupy prior to the completion or acceptance of the entire *Work*.
- .2 Not be less that the insurance coverage provided by IBC Forms 4042 and 4047 or their equivalent replacement.
- .3 Include the installation, testing, commissioning and subsequent use of any machinery and equipment including boilers, pressure vessels or vessels under vacuum.
- .4 Apply to all *Products*, labour, equipment and supplies of every nature, the property of the *Owner* or *Contractor* or for which the *Owner* or *Contractor* may have assumed responsibility (whether on site or in transit), that is to be used in or pertaining to site preparation, erection, fabrication, construction or reconstruction of the structure.
- .5 Be subject to a waiver of coinsurance.
- .6 Include coverage for materials while in transit, awaiting installation or stored at off-site locations. Coverage shall be in an amount equal to the value of the material.
- 7 Provide that in the case of a loss or damage payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurer. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to a reasonable extension of *Contract Time*.
- .4 Boiler and Machinery Insurance

The Boiler and Machinery Policy shall be written in the joint names of the *Contractor*, *Owner*, *Consultants* and *Subcontractors* and underwritten by an insurer licensed to conduct business in the Province of PEI. The policy limit shall equal the replacement value of all permanent or temporary boilers and pressure vessels and other insurable objects forming part of the *Work*. The *Contractor* may elect to carry the testing, commissioning and subsequent use of these objects under the Boiler and Machinery Policy.

.5 Contractor's Equipment Floater

The *Contractor* shall provide and maintain coverage all equipment used on the *Project* during the term of this *Contract*. Coverage will be provided, on a broad form basis, for construction machinery, equipment, tools and stock that will be used by the *Contractor* in the performance of the *Work*. The coverage will also include rental expense. Coverage is to be carried from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.

.6 <u>Contractor's Pollution Liability</u>

The Contractor shall carry a Contractor's Pollution Liability Policy, underwritten by an insurer licensed to conduct business in the Province of PEI for a limit of not less than \$2,000,000. Coverage shall include bodily injury, property damage, clean-up and remediation costs

- .7 Proof of Insurance
 - .1 The *Contractor* shall provide the *Owner* with an executed certificate of insurance and a renewal replacement as may be necessary, stating any pertinent exclusions as applicable contained in the policies which may affect coverage as outlined in this *Contract*. The certificate will be delivered prior to the commencement by the *Contractor* of the *Work* or upon renewal of the policy. The *Contractor's* insurance carriers and the insurance policy provisions must be acceptable to the *Owner*. All lines of coverage required by this *Contractor* will make available complete certified copies of all applicable insurance policies for examination if required by the *Owner*.
 - .2 The *Contractor* shall ensure that each *Subcontractor* requires adequate insurance in accordance with the work being performed under the terms of their engagement. It is the *Contractor's* responsibility to ensure this exposure is insured adequately and at no time will costs associated with this exposure be transferred to the *Owner*.
 - .3 Delivery to and examination or approval by the *Owner* of any certificates of insurance or policies of insurance or other evidence of insurance shall not relieve the *Contractor* of any of its indemnification or insurance obligations under this *Contract*. The *Owner* shall be under no duty to either ascertain the existence of or to examine such certificate of insurance or policies of insurance or to advise the *Contractor* in the event that such insurance coverage is not in compliance with the requirements set out in this *Contract*. The *Contractor* is responsible for ensuring such compliance.
 - .4 All policies of insurance shall:
 - .1 Be recorded as being a primary policy and shall be in a form and issued by an insurance company satisfactory to the *Owner* and that is licensed to carry on business in PEI;

- .2 Be maintained continuously during the course of the *Work* or for such period of time as may be required after completion of the *Work* as may be deemed necessary by the *Owner*;
- .3 The *Contractor* shall ensure that any self-insured and deductible limits are prudent and responsible for the type of work being undertaken under the *Contract*. Any and all claim costs are borne by the *Contractor* including, but not limited to, deductibles, adjusting fees, legal costs, disbursements, and settlements;
- .4 Ensure that, except in the case of automobile liability insurance, non-owned automobile liability insurance, the *Owner* and the *Consulta*nt is to be added to the policy as an additional insured and/or loss payee;
- .5 Contain a cross-liability and severability of interest provisions, as may be applicable;
- .6 Provide that at least thirty (30) days prior written notice, fifteen (15) days in the case of automobile liability insurance, and ten (10) days in the event of non- payment of premiums, shall be given to the *Owner* by the insurer before the insurer or the *Contractor* takes any steps to cancel, terminate, fail to renew, amend or otherwise change or modify the insurance or any part thereof.
- .7 Necessary notification to insurers is required to ensure continuous coverage is in place at all times. This will include, but is not limited to, transfer of coverage from one policy to another (i.e. completion of a building constructed under a Builder's Risk Policy being transferred to a Property policy once *Ready-for-Takeover* has been achieved)."
- .2 Delete paragraph 11.1.2 in its entirety and replace it with the following:
 - "11.1.2 The Contractor shall not commence work under this contract until he has obtained all of the liability insurance specified and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his sub-contract until all similar insurance required of the sub-contractors has been obtained. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder nor shall such approval imply the contractor has fulfilled all the terms and conditions of this Contract. Upon expiration of any policies during the period of this Contract, new Certificates of Insurance showing renewal shall be forwarded. In the event, that the Contractor carried a blanket-type policy, an endorsement by the insurance company is required confirming coverage of this specified project and indicating the extent of coverage.
- .3 Amend paragraph 11.1 by adding paragraphs 11.1.9 and 11.1.10 as follows: "11.1.9 Indemnity/Hold Harmless:
 - .1 The Contractor shall be liable for all injuries to persons and for damage to property caused by his operations, and those of his sub-contractors, and his and their employees, engaged on all operations in connection with the contract both on and off the site, and he shall indemnify and save harmless the Owner from all suits, claims,

expenses, costs, demands, losses and damages to which the Owner may be put to reason of injury including death, to persons, and damages to property of the Owner and others, resulting from negligence, carelessness and any other cause whatsoever in the performance of the work.

- .2 The Contractor shall, until the date of issue of the final Certificate of Approval of the work by the Consultant, indemnify and save harmless the Owner, and protect his own interests against:
 - .1 Theft, burglary or robbery of, and loss or damage to, all materials and equipment brought to the site for use in the work, whether or not such material and equipment are incorporated in the work at the time that any such theft, burglary, robbery, loss or damage occurs.
 - .2 Theft or burglary of, and loss or damage to, any of his own plant and equipment being used on the project and/or stored on the site.
- 11.1.10 In all insurance policies required under this agreement:
 - .1 There shall be an endorsement stating that the insurer will provide 30 days' notice to the Province's Risk Manager (or the acting or assistant) of cancellation or material change in coverage;
 - .2 The insurer shall acknowledge that the policy is primary and any other insurance policies that may be in effect or any other sources of recovery including the Government of Prince Edward Island's Self Insurance and Risk Management Fund shall not contribute in any way to any judgments, awards, payments, or costs or expenses of any kind whatsoever made as a result of actual or alleged claims. The Ultimate Recipient shall provide the Province with current certificates of insurance, in a form and content reasonably acceptable to the Province, evidencing the required insurance policies hereunder within 10 days of the Effective Date and on each renewal of the insurance policies thereafter. Umbrella insurance may be used to achieve the required insured limits above."

.30 GC 12.1 READY-FOR-TAKEOVER

- .1 Delete paragraphs 12.1.1.4 and 12.1.1.5 and replace them with the following:
 - ".4 The delivery to the *Owner* of guarantees, warranties, certificates, testing and balancing reports and spare parts, distribution system diagrams, *Shop Drawings*, maintenance and operating manuals, instructions, samples, existing reports and correspondence from authorities having jurisdiction, and all other close-out materials or documents specified in the *Contract*.
 - .5 The delivery to the Owner of the final As-Built Drawings."
- .2 Add new paragraph 12.1.1.9 as follows:
 - ".9 Confirmation by the *Consultant* that the aggregate cost of completing the remaining *Work* and correcting known defects and deficiencies is the lesser of \$5,000 and 1% of the *Contract Price*."
- .3 Delete paragraph 12.1.2 and replace with the following:
 - "12.1.2 If any prerequisites set forth in paragraphs 12.1.1.3 to 12.1.1.6 are deferred by agreement between the *Owner* and the *Contractor*, *Ready-for-Takeover*

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shall not be delayed."

- .4 Delete paragraph 12.1.6 in its entirety.
- .31 GC 12.2 EARLY OCCUPANCY BY THE OWNER
 - Delete paragraphs 12.2.1 through 12.2.4 and replace them with the following:
 "12.2.1 The Owner, its agents, and Other Contractors shall have the right to enter, occupy and take possession of any portion or all of the undelivered portion of the Project, even though Ready- for-Takeover may not have been attained, provided that such entry, occupation, taking of possession or use will not interfere, in any material way, with the progress of the Work. The entry, occupation, taking of possession or use of any such portion of the Project or Work shall not be deemed to be the Owner's acknowledgement or acceptance of the Work or the Project, nor shall it be deemed to be an acknowledgement or acceptance by the Owner that such Work, or portions of the Work, have met the Ready-for-Takeover requirements described in the Contract Documents.
 - 12.2.2 The *Contractor* shall, as directed by the *Consultant*, give priority to certain parts of the *Work* and bring such parts to a "ready for use" status. Such instructions may require installation of temporary stairs and exits and temporary services, all of which shall be provided and subsequently removed.
 - 12.2.3 The *Contractor* shall maintain full access to the *Work* for the *Owner*'s use, as required. The *Contractor* shall maintain or restore heat and power to areas when necessary or as scheduled and keep existing utilities and services functional.
 - 12.2.4 The entry, occupation, taking of possession or use of any portion of the *Project* by the *Owner*, its agents or *Other Contractors* pursuant to this GC 12.2 EARLY OCCUPANCY BY THE OWNER shall not relieve the *Contractor* of any of its obligations under the *Contract*, including the *Contractor's* designation and obligations as "constructor" under *OHSA* and the *Contractor's* obligations respecting construction health and safety, and all the *Contractor's* obligations, rules, regulations and practices shall continue to apply notwithstanding such entry, occupation, taking of possession or use."

.32 GC 12.3 WARRANTY

- .1 Amend paragraph 12.3.1 by adding the following to the end:
 - "Notwithstanding the foregoing, if an item of Work is not completed at Readyfor-Takeover, except for extended warranties as described in paragraph 12.3.6, the warranty period for such item of Work shall be one year from the date that such item of Work has been completed and accepted in writing by the Owner."
- .2 Add a new paragraph 12.3.1A as follows:
 - "12.3.1A If the Contractor has been permitted to make use of permanent equipment or systems, as provided in GC 3.12 – CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS, such permanent equipment or system shall be subject to the same warranty as described in this GC 12.3 and shall be judged, for purposes of assessing compliance with the warranty, as though the equipment or system was new, clean and unused

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by the Contractor, except for normal commissioning and start-up activities, prior to Ready-for-Takeover."."

Amend paragraph 12.3.4 by adding the following to the end:

"The Contractor shall perform all remedial and warranty work at its own cost and expense and at a time convenient to the Owner, which may be outside of normal working hours. Before performing the remedial and warranty work the Contractor shall provide, for the Owner's review and approval, a proposed schedule for the performance of such work. Except for any extended warranties provided for in the Contract Documents, the warranty period for any corrective work performed by the Contractor pursuant to GC 12.3 – WARRANTY shall commence on the date that such corrective Work was completed."

- .4 Add new paragraphs 12.3.5A and 12.3.5B immediately after paragraph 12.3.5 as follows:
 - "12.3.5A If the Contractor fails to perform the remedial and warranty work and/or fails to correct the defects, deficiencies or items of non-compliant Work or is not diligently working towards completion of the same to the satisfaction of the Consultant, or if the Contractor fails to correct or pay for damage resulting from corrections made, as required in paragraph 12.3.5, the Owner may engage others to perform the work necessary to complete and correct the outstanding defects, deficiencies or items of non-compliant Work at the risk and cost of the Contractor, and may deduct such costs and may pay such costs and damage from the Deficiency Rectification Security. If the costs of completion and correction of such defects, deficiencies and/or non-compliant Work exceed the amount of the Deficiency Rectification Security, the Contractor shall reimburse the Owner for all excess costs and damages. The Owner's rights under this paragraph are in addition to any other rights the Owner may have pursuant to the Contract and/or at law.
 - 12.3.5B Provided that the *Contractor* has completed all outstanding remedial and warranty work and has corrected all defects and deficiencies and has completed all items of non-compliant *Work* and has corrected or paid for all damage resulting from corrections made, all to the satisfaction of the *Consultant*, the *Owner* shall return to the *Contractor* the balance of the *Deficiency Rectification Security*, if any, without interest, 10 *Working Days* after the date that is the later of (a) the date of total completion of the *Contract*, and (b) the date on which the warranty period ends."
- .33 GC 13.1 INDEMNIFICATION

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- Delete GC 13.1 and replace it with the following: "GC 13.1 INDEMNIFICATION
 - 13.1.1 The Contractor shall indemnify and shall defend and save harmless the Owner, its manager, officers, directors, agents, representatives, elected officials, successors, and employees harmless from and against any claims, causes of action, demands, losses, charges, fees, duties, accounts, fines, penalties, expenses and costs (including legal costs on a solicitor and client basis), or other proceedings of every kind or nature whatsoever at law or in equity brought against, suffered by, or imposed on the reason of,
 - .1 the Contractor carrying out or failing to carry out any obligation to

which it is subject including the performance of the Work, or exercising any right to which it is entitled, under the Contract except to the extent that the same are caused by the negligence or deliberate wrong-doing of the Owner or other person entitled to indemnification under this section, or

- .2 any patent, trademark, copyright infringement or other breach of any intellectual property right of any person, for which the contractor or any Subcontractor to the Contractor is responsible.
- 13.1.2 The Contractor shall indemnify and hold harmless the Owner's agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable o, the Contractor's performance of the Contract, provided such claims are attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the Contractor or anyone for whose acts the Contractor may be liable, and made in writing within a period of 6 years from the date of Ready-for-Takeover as set out in the certificate of Ready-for-Takeover, or within such shorter period as may be prescribed by any limitation statute or the province or territory of the Place of the Work."

.34 PART 14 – OTHER PROVISIONS

.1 Add a new "**PART 14 – OTHER PROVISIONS**" as follows:

"PART 14 OTHER PROVISIONS

GC 14.1 LIENS AND ACTIONS

- 14.1.1 The *Contractor* shall save and keep the *Owner* and the *Place of the Work* free from all construction liens and all other liens whatsoever arising out of the *Work*. If any lien is claimed, filed or registered or any written notice of a lien is received by reason of any *Work* supplied or claimed to have been supplied by or through a *Subcontractor* or *Supplier*, the *Contractor* shall, at its own expense, within ten (10) *Working Days* of being notified of the lien or written notice of a lien, secure the discharge, release, vacating or withdrawal of such lien or written notice of a lien by payment or by giving security or in such other manner as is or may be required or permitted by law, failing which the *Owner* may, but shall not be required, take such steps as it, in its absolute discretion, may deem necessary to release, vacate or discharge the lien or written notice of a lien.
- 14.1.2 If a lien action is commenced arising out of a lien described in paragraph 14.1.1, the *Contractor* shall take all reasonable steps to remove the *Owner* from such action and shall indemnify the *Owner* and hold it harmless in such action.
- 14.1.3 All amounts, including legal costs on a full indemnity basis, disbursements, interest, borrowing, premium or other bonding costs and/or charges incurred by the *Owner* in releasing, vacating, discharging and/or otherwise dealing with a *Subcontractor* or *Supplier* lien, written notice of a lien and/or defending or otherwise dealing with a lien action, shall be charged to the *Contractor* and shall be set off and deducted from any amount owing to the *Contractor*. If there is no amount owing by the

Owner to the *Contractor* at that time, then the *Contractor* shall reimburse the *Owner* for all amounts incurred by the *Owner*.

GC 14.2 CONTRACTOR'S DISCHARGE OF LIABILITIES

14.2.1 In addition to the obligations assumed by the *Contractor* pursuant to GC 3.6 – SUBCONTRACTORS AND SUPPLIERS, the *Contractor* agrees to discharge all liabilities incurred by it for services, materials, *Subcontractors* and *Products*, used or reasonably required for use in the performance of the *Work*, except for amounts withheld by reason of legitimate dispute and which have been identified to the party or parties, from whom payment has been withheld.

GC 14.3 OWNERSHIP OF MATERIALS

14.3.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All *Work and Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner*. The *Contractor* shall remove all surplus or rejected materials from the *Place of the Work*.

GC 14.4 DAILY REPORTS/DAILY LOGS

14.4.1 The *Contractor* shall cause its supervisor, or such competent person as it may delegate, to prepare and maintain a daily site log with descriptions of Project activities. Make available to *Owner* for inspection and copying all of the records.

GC 14.5 ADVERTISING AND PUBLIC STATEMENTS

14.5.1 The *Contractor* shall not publish, issue or make any statements or news release, electronic or otherwise, concerning the *Contract*, the *Work*, or the *Project*, and shall not use the *Owner's* name, logo, etc. without the prior express written consent of the *Owner*."

END OF SECTION

1 General

1.1 SCOPE OF WORK

- The Contractor is to provide each item, and properly execute all work as specified herein, .1 indicated by drawings, addenda, or change orders issued with respect to this project.
- .2 The Contractor shall coordinate, administer, and supervise all work, material acquisition and labour.
- Contractor shall coordinate with Owner and facilitate installation of Owner provided .3 equipment.

1.2 WORK BY OTHERS

- Co-operate and coordinate with other Contractors in carrying out the respective work and .1 carry out instructions from Consultant.
- .2 Schedule the Work of this Contract in consultation and cooperation with the Work of other Contractors and/or Owners own forces to produce a coordinated construction schedule.
- .3 The scope of work under this contract requires co-ordination with the precast concrete suppliers and requires execution of work prior to, during and after installation of the precast elements. This contractor is also responsible for cooperating with the City to install, maintain and remove all traffic control devices required during the construction. .4
 - Work specifically excluded from this Contract:
 - Not Applicable. .1

1.3 WORK SEQUENCE

- Construct Work to accommodate Owner's continued use of existing systems during .1 construction.
- .2 Construct Work to provide for continuous public usage. Do not close off public usage of facilities
- .3 Maintain fire access/control.

1.4 PARTIAL OWNER OCCUPANCY

- .1 Schedule and substantially complete designated portions of Work for Owner's occupancy prior to Substantial Performance of entire Work.
- .2 Execute Certificate of Substantial Performance for each designated portion of Work prior to Owner occupancy.

EXECUTION 1.5

.1 Execute work with least possible interference or disturbance to building operations, public and normal use of premises.

1.6 MITIGATION OF IMPACT ON EXISTING SYSTEM

- .1 This Contractor will recognize that the existing system and infrastructure must remain fully functional with minimal disruption during the course of the Work. Any disruption in services must be brought to the attention of the Consultant and receive prior approval before commencement.
- .2 This Contractor is responsible to ensure that the existing systems are kept free from any contamination that may result from any of the Work.

1.7 DOCUMENTS

- The Contract Documents are complementary and what is called for by any one shall be as .1 binding as if called for by all.
- .2 Descriptions of materials or work which have well known technical or trade meanings shall be held to refer to such recognized standards.
- .3 Should the specifications conflict with the drawings, the specifications shall govern.

- .4 In the case of discrepancies between drawings, those of larger scale, or if the scale are the same, those of later date shall govern.
- .5 All drawings and specifications shall be interpreted in conformity with the agreement.

1.8 COMMUNICATION

- .1 All submissions and inquiries shall be directed to the Consultant for review.
- .2 All direction will be transmitted to the Contractor by the Consultant.

1.9 CODES AND REGULATIONS

- .1 Perform work in accordance with National Building Code of Canada (NBC) 2015, applicable CSA and ASTM Standards, and any other code of provincial or local application, provided that in any case of conflict or discrepancy the more stringent requirements shall apply.
- .2 Meet or exceed requirements of contract documents and specified standards.
- .3 References to standards, including manufacturer's direction for installation shall be the latest edition.
- .4 All materials, components and equipment as well as construction methods shall comply with the latest edition of the National Building Code, and all other applicable Provincial codes or regulations.
- .5 The latest edition of the Canadian Electrical Code shall govern all electrical work, whether pre-wired an/or assembled remote from the site or not.
- .6 All equipment supplied or installed shall be CSA approved for the intended use.
- .7 The latest edition of the PEI Occupational Health and Safety Act and Regulations shall govern safe construction practices.
- .8 Provide a copy of all certificates of acceptance issued by Provincial or local authorities.

1.10 CONTRACTOR'S USE OF SITE

- .1 Do not unreasonably encumber site with materials or equipment.
- .2 Move stored products or equipment, which interfere with operations of Consultant or other Contractors.
- .3 Obtain and pay for use of additional off site storage or work areas needed for operations.
- .4 Maintain two way vehicle traffic at all times.
- .5 Maintain all roads, walks, driveways, free from mud and debris tracked from Construction site on a daily basis.

1.11 OWNER'S SITE INSPECTOR

- .1 There will be an Inspector representing the Owner. No work is to be covered without having received approval from the Inspector. The Inspector will have the authority to cause any part of the work to cease should, in his or her opinion, there be cause to do so.
- .2 This work shall be examined by the utility and approval granted to resume when a satisfactory solution has been found out.
- .3 The Inspector does not have authority to authorize changes to work. He or she shall confer with the Consultant who, if necessary will authorize any change.
- .4 The fact that the Inspector does not reject any work shall not remove the responsibility from the Contractor for completing all work as specified.

1.12 SITE INSPECTOR

- .1 No work is to be covered without having received approval from the Consultant. The Consultant will have the authority to cause any part of the work to cease, should in his or her opinion, there be cause to do so.
- .2 This work shall be examined by the Consultant and approval granted to resume when a satisfactory solution has been found out.

1.13 SETTING OUT OF WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations.
- .2 Provide all equipment, materials and devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Consultant's inspection of work.

1.14 CONCEALMENT

.1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.15 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 Consultant of impending installation and obtain his approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.16 CUTTING, FITTING AND PATCHING

- .1 Execute cutting, core drilling, fitting and patching, required to install and make new work under this contract fit properly.
 - .1 Includes all cutting and patching in building for connection of new mechanical and electrical services to service lines.
- .2 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.17 BLOCKING AND BACKING

.1 Provide all blocking, backing, hangers, etc. used for support of all built-in work.

1.18 EXISTING SERVICES

- .1 Before commencing work, establish the location and extent of service lines and notify Consultant of findings if in conflict with information or intent shown.
- .2 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .3 Contractor shall pay for any or all repairs to existing services that have been damaged due to the Contractor's negligence in the course of his work.
- .4 Notify Consultant and utilities of intended interruption of services and obtain permission.
- .5 Where Work involves breaking into or connecting to existing services, give Consultant 24 hours notice for necessary interruption. Minimize duration of interruptions. Carry out Work at times as directed by governing authorities or Owner with minimum disturbance.
- .6 Provide temporary services when directed by Consultant to maintain critical building and tenant systems.
- .7 Provide alternative routes for personnel and vehicular traffic.
- .8 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .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 in accordance with Section 01 56 00 Temporary Barriers and Enclosures.

1.19 ACCESS AND SECURITY

.1 Access and security on the entire job site will be the responsibility of the Contractor.

1.20 ADDITIONAL DRAWINGS

.1 The Consultant may furnish as necessary for the execution of the work, additional instructions, by means of drawings or otherwise. All such additional instructions shall be consistent with the contract documents. In giving such additional instructions, the Consultant shall have authority to make minor changes in the work, not inconsistent with the contract.

1.21 RELICS AND ANTIQUITIES

- .1 Relics and antiquities and items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during the work, shall remain property of the Owner. Protect such articles and request directives from Consultant.
- .2 Give immediate notice to Consultant if evidence of archaeological finds are encountered during construction, and await Consultant's written instructions before proceeding with work in this area.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 Applications for payments.
- .2 Substantial performance procedures.
- .3 Release of holdback procedures.
- .4 Schedule of values.

1.2 **REFERENCES**

- .1 Owner/Contractor Agreement.
- .2 Canadian Construction Documents Committee (CCDC).
 - .1 CCDC 2-2020, Stipulated Price Contract
- .3 Section 00 73 00 Supplementary Conditions.

1.3 APPLICATIONS FOR PROGRESS PAYMENT

- .1 The City of Charlottetown has moved to Electronic Funds Transfer and the successful bidder will be required to provide the necessary information for registration on the City's system.
- .2 Make applications for payment on account as provided in Agreement as Work progresses.
- .3 Date applications for payment last day of agreed monthly payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work at that date.
- .4 Submit to Consultant, at least fourteen (14) days before first application for payment, Schedule of Values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.

1.4 SCHEDULE OF VALUES

- .1 Make schedule of values out in such form and supported by such evidence as Consultant may reasonably direct and when accepted by Consultant, be used as basis for applications for payment.
- .2 Include statement based on schedule of values with each application for payment.
- .3 Support claims for products delivered to Place of Work but not yet incorporated into Work by such evidence as Consultant may reasonably require to establish value and delivery of products.
- .4 Provide, minimum fourteen (14) days before submitting first application for payment, a Schedule of Values, aggregating the Total Contract Price. After approval by the Consultant the Schedule of Values will be used as a basis for the application for progress payments.
- .5 Contractor shall submit with the Schedule of Values, an itemized list of all trades and applicable labour rates for each, which will be used as a basis for labour rates in changes to contract Work.

1.5 PREPARING SCHEDULE OF UNIT PRICE TABLE ITEMS

- .1 Submit separate Schedule of Unit Price items of Work requested in Bid form.
- .2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:
 - .1 Cost of material.
 - .2 Delivery and unloading at site.
 - .3 Installation, overhead and profit.
- .3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.6 PROGRESS PAYMENT

.1 Consultant will issue to Owner, no later than ten (10) days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be properly due. If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.7 SUBSTANTIAL PERFORMANCE OF WORK

- .1 Refer to Section 00 73 00 Supplementary Conditions.
- .2 Prepare and submit to Consultant comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or substantial performance of designated portion of Work when Work is substantially performed if permitted by lien legislation applicable to Place of Work designated portion thereof which Owner agrees to accept separately is substantially performed. Failure to include an item on list does not alter responsibility to complete Contract.
- .3 No later than ten (10) days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than seven (7) days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- .4 Consultant shall state date of Substantial Performance of Work or designated portion of Work in certificate.
- .5 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.8 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

- .1 After issuance of certificate of Substantial Performance of Work:
 - .1 Submit an application for payment of holdback amount.
 - .2 Submit sworn statement that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of Work and for which Owner might in any way be held responsible have been paid in full, except for amounts properly retained as holdback or as identified amount in dispute.
- .2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of holdback amount.
- .3 Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Owner may retain out of holdback amount any sums required by law to satisfy any liens against Work or, if permitted by lien legislation applicable to Place of Work, other third party monetary claims against Contractor which are enforceable against Owner.

1.9 PROGRESSIVE RELEASE OF HOLDBACK

- .1 Where legislation permits, if Consultant has certified that Work of subcontractor or supplier has been performed prior to Substantial Performance of Work, Owner shall pay holdback amount retained for such subcontract Work, or products supplied by such supplier, on day following expiration of holdback period for such Work stipulated in lien legislation applicable to Place of Work.
- .2 Notwithstanding provisions of preceding paragraph, and notwithstanding wording of such certificates, ensure that such subcontract Work or products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.10 WARRANTY HOLDBACK

.1 The Owner will retain the sum of 5% of the tender price of this contract for a period of one (1) year to cover cost associated with warranty items. The money will be released one (1) year from the date of substantial completion, without interest, when the work is rectified and completed to the satisfaction of the Owner and Consultant.

1.11 FINAL PAYMENT

- .1 Submit an application for final payment when Work is completed.
- .2 Consultant will, no later than ten (10) days after receipt of an application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than seven (7) days after reviewing Work.
- .3 Consultant will issue final certificate for payment when application for final payment is found valid.

END OF SECTION

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1 General

1.1 APPOINTMENT AND PAYMENT

- .1 The Contractor will arrange and pay for the services of an independent Consultant to carry out the following tests:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under the supervision of Consultant.
 - .6 Additional tests specified in Article 1.3.7 below.
 - .7 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work.

1.2 CONTRACTOR'S RESPONSIBILITIES

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work for inspection and testing.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.
 - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.
- .5 Provide Consultant with two (2) sets of fully documented test reports, submitted immediately following the testing operations.

1.3 CONTRACTOR'S RESPONSIBILITIES - INSPECTION & TESTING REQUIREMENTS

- .1 Testing of materials and inspection and testing of placement and compaction will be carried out by testing laboratory appointed and paid for by the Contractor, in accordance with the requirements of this Section. Fulltime on site inspection and testing will be required during piping installation and shall be provided during the construction period of this contract.
- .2 Testing of all soil material types at source, including collection of sample material by testing firm, to verify compliance with material specifications.
 - .1 Follow up testing of all soil material types delivered to site.
 - .2 Monitoring placement and verifying compaction densities.
 - .3 Monitoring of upgrading work.
 - .4 Verifying the new compaction densities.
 - .5 Concrete:
 - .1 Slump tests.
 - .2 Compressive strength tests.

1.4 FINAL REPORT

- .1 Submit to the Owner at completion of job, three (3) bound copies of inspection report. This report to include:
 - .1 All copies of test results, indexed to correspond with testing requirements of this Section.

- .2 Written report from the testing firm carrying out the work of this Contract stating that the work as itemized under Par. 4 of this Section has been performed in strict accordance with the requirements of the Contract documents.
- .3 The report will be signed and sealed by a Professional Engineer registered to practice in the Province of Prince Edward Island and practicing in the field of materials testing.

END OF SECTION

1 General

1.1 TIME AND ORDER OF COMPLETION

.1 The Consultant may direct the Contractor in writing as to the time, precedence or order in which any work to be done under the contract shall be performed.

1.2 TIME OF COMMENCEMENT

.1 The Contractor shall commence work within three (3) days after the execution of the Contract, unless specifically indicated or directed otherwise by the Consultant, and shall proceed continuously, diligently and with all reasonable dispatch consistent with the Construction Schedule, and the proper execution of the work, until final completion. The rate of progress made with the work shall be such as to ensure its final completion within the specified time.

1.3 TIME OF COMPLETION

.1 The whole of the work to be done under this contract shall be finally completed in full accordance with all the terms and conditions of this contract on or before the day specified for such completion in the tender which forms part of this contract.

1.4 EXTENSION OF TIME

- .1 An extension of time may be granted in writing by the Consultant in the event of the work being delayed beyond the prescribed time for completion as a result of causes beyond the Contractor's control. Such extensions shall be for such time as the Consultant may prescribe, and the Consultant shall fix the terms on which the said extension may be granted. An application by the Contractor for an extension of time shall be made to the Owner in writing at least fifteen calendar days prior to the date of completion fixed by the contract. Where applicable, all bonds or other surety including Liability Insurance furnished to the Owner by the Contractor shall be amended where necessary at the expense of the Contractor to provide coverage beyond the date of any extension of time granted, and the Contractor shall furnish the Owner with evidence of such amendment of the bonds or other surety and Liability Insurance.
- .2 Any extension of time that may be granted to the Contractor shall be so granted and accepted without prejudice to any rights of the Owner whatsoever under the Contract, and all of such rights shall continue in full force and effect after the time limited in the Contract for the completion of the work and whenever in the Contract, power and authority is given to the Consultant or any person to take any action consequent upon the act, default, breach, neglect, delay, non-observance or non-performance by the Contractor in respect of the work or Contract, or any portion thereof, such powers or authorities may be exercised from time to time and not only in the event of the happening of such contingencies before the time limited in the Contract for the completion of the work but also in the event of the same happening after the time so limited in the case of the Contractor being permitted to proceed with the execution of the work under an extension of time granted by the Consultant.

1.5 SUSPENSION OF WORK

.1 The Contractor shall, upon written notice from the Consultant, discontinue or delay any or all of the work when, in the opinion of the Consultant, it is unwise to proceed for any reason whatsoever, and the work shall not be resumed until the Consultant shall in writing so direct.

1.6 LABOUR DISPUTE

.1 Except to the extent that relief is granted under of the Contract, the Contractor shall bear the risk and responsibility of any loss, damage or expense to the work or to himself or any nature and kind whatsoever arising from strikes or labour disputes other than such loss, damage or expense caused by the failure of the Owner to meet its obligations under the Contract.

1.7 CHARACTER AND EMPLOYMENT OF WORKERS

.1 The Contractor shall employ only orderly, competent and skillful workers to do the work. Whenever the Consultant shall inform the Contractor in writing that any person or persons on the work are, in the opinion of the Consultant, incompetent, unfaithful or disorderly, such person or persons shall be discharged from the work and shall not again be employed on the work without the consent in writing of the Consultant.

1.8 LIMITATIONS OF OPERATIONS

- .1 The Consultant may, in writing, require the Contractor to cease or limit operations under the Contract, on any day or days if the operations are of such nature that the Consultant deems it necessary or expedient to do so.
- .2 The Contractor shall cooperate with other contractors, utility companies and the Owner and they shall be allowed free access to their work at all times. The Consultant reserves the right to alter the method of operations on this Contract to avoid interference with other work.
- .3 The Contractor shall have access to their work to allow the incorporation of a double shift if the Contractor deems it necessary to meet the obligations under the contract.

END OF SECTION

1 General

1.1 SUBMITTALS

- .1 Ten (10) working days after award of contract and prior to commencement of Work, submit to Consultant the following work management documents:
 - .1 Work Schedule as specified herein.
 - .2 Shop Drawing Submittal Schedule specified in Section 01 33 00 Submittal Procedures.
 - .3 Health and Safety Plan specified in Section 01 35 29 Health, Safety, and Emergency Response Procedures.
 - .4 Environmental Plan specified in Section 01 35 43 Environmental Procedures.
 - .5 Dust Control Plan specified in Section 01 56 00 Temporary Barriers and Enclosures.

1.2 WORK SCHEDULE

- .1 Upon notification of tender acceptance submit:
 - .1 Work schedule submitted within seven (7) calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted tender.
- .3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of Work on time and permit effective monitoring of Work progress in relation to established milestones.
- .4 Work schedule content to include as a minimum the following:
 - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
 - .2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
 - .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .5 Work schedule must take into consideration and reflect the required sequence of Work, special conditions and operational restrictions as specified below.
- .6 Schedule Work in cooperation with the Consultant. Consultant's decision is final in regards to time and order of Work. Incorporate within Work Schedule, items identified by Consultant during review of preliminary schedule.
- .7 Completed schedule shall be to the Consultant's approval. When schedule has been approved by Consultant, take necessary measures to complete work within scheduled time. Do not change schedule without Consultant's approval.
- .8 It is the Contractor's responsibility to ensure all subtrades and subcontractors are made aware of the work restraints and operational restriction specified.
- .9 Schedule Updates:
 - .1 Submit when requested by Consultant.
 - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
 - .3 Identify problem areas, anticipated delays, impaction schedule and proposed corrective measures to be taken.
- .10 Consultant will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Consultant. Address and take corrective measures on items of work as identified by reviews and as directed by Consultant. Update schedule accordingly.
- .11 In every instance, change or deviation from work scheduling, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Consultant.

1.3 **PROJECT PHASING**

.1 Be aware that systems must be kept operational for the full duration of work of this contract.

1.4 **PROJECT MEETINGS**

- .1 Schedule and administer project meetings, held on a minimum weekly basis, for entire duration of work and more often when directed by Consultant as deemed necessary due to progress of work of particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing four (4) days in advance of meeting date.
 - .1 Ensure attendance of all subcontractors.
 - .2 Consultant will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Consultant.
- .5 Preside at meetings and record minutes.
 - .1 Indicate significant proceedings and decisions. Identify action items by parties.
 - .2 Distribute to participants by mail or by facsimile within three (3) calendar days after each meeting.
 - .3 Make revisions as directed by Consultant.
 - .4 Consultant will advise whether submission of minutes by email is acceptable. Decision will be based on compatibility of software among participants.
- .6 Consultant will arrange project meetings and assume responsibility for setting times and recording minutes.

1.5 WORK COORDINATION

- .1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.
 - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
 - .1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when deemed required illustrating potential interference between work of various trades and distribute to all affected parties.
 - .3 Submit copy of coordination drawings and meeting minutes to Consultant for information purposes.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
 - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.
- .5 Owner will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved by him at no extra cost to the Contract.
- .6 Contractor to coordinate location and installation of laterals with private property owners and businesses within this phase of the work.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures.
- .2 Section 01 41 00 Bid Form.
- .3 Section 02 61 00 Hazardous Facility Remediation.

1.2 **REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS). .1 Material Safety Data Sheets (MSDS).
- .3 Province of Prince Edward Island
 - .1 Occupational Health and Safety Act, R.S.P.E.I. 1988.
- .4 CSA C22.1-2002 Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .5 CSA C22.3 No. 1-M87 (R2001) Overhead Systems.
- .6 CSA C22.3 No. 7-94 (R2000) Underground Systems.
- .7 COSH, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .8 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
 - .1 FCC No. 301 June 1982 Standard for Construction Operations.
 - .2 FCC No. 302 June 1982 Standard for Welding and Cutting.
 - .3 FCC standards, may be viewed at the Regional Fire Protection Services' office (previously known as the Fire Commissioner of Canada) located at 99 Wyse Road, 8th Floor, Dartmouth, NS, Tel: (902)426-6053.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Part 1: List of individual health risks and safety hazards identified by hazard assessments.
 - .2 Part 2: List specific measures to control or mitigate each hazard and risk identified in part one of Plan. State engineering controls, personal protective equipment and safe work practices to be used for work having identified hazards(s) or risk(s).
 - .3 Part 3: Emergency and Communications Measures as follows:
 - .1 Emergency Procedures: standard operating procedures, evacuation measures and emergency response implemented on site during an accident or incident. State step by step procedures, applicable to each identified hazard.
 - .2 Emergency Communications: list names and telephone numbers of officials, to be contacted if incident, accident or emergency situation occurs, including:
 - .3 General Contractor and all Subcontractors.
 - .4 Provincial Departments and resources from local emergency organizations, based on type of hazard, incident or accident which might occur and as stipulated in applicable laws and regulations.
- .3 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant.
- .4 Submit copies of incident and accident reports.
- .5 Submit WHMIS MSDS Material Safety Data Sheets in accordance with Section 02 61 00 Hazardous Facility Remediation.

- .6 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within five (5) days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within two (2) days after receipt of comments from Consultant.
- .7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- .9 Maintain Worker's Compensation Coverage for duration of contract. Submit Letter of Good Standing to Consultant.

1.4 DEFINITIONS

- .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.
- .3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.
- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.5 SITE CONTROL AND ACCESS

- .1 Control work site and entry points. Grant and allow entry to only workers and other persons so authorized. Immediately stop non-authorized persons from circulating within construction areas and remove from site.
- .2 Prior to gaining access to the site, all contractors, subcontractors and suppliers shall file with the General Contractor their proof of Workers Compensation coverage, proof of required Insurance and proof of contract. Upon request, proof of these documents will be provided to the Owner and Consultant.
- .3 Delineate and isolate construction areas from other areas of site by use of appropriate means. Erect barricades, fences, hoarding and temporary lighting as required. See Section 01 50 00 Facilities and Controls for minimum type of barriers acceptable.
- .4 Erect signage at entry points and at other strategic locations around site, clearly identifying construction area(s) as being "off limits" to non-authorized persons. Signage must be professionally made.
- .5 Ensure persons granted access are fitted and wear appropriate personal protective equipment (PPE).

1.6 PROTECTION

- .1 Provide temporary facilities for protection and safe passage of building occupants, public pedestrian and vehicular traffic around and adjacent to work site.
- .2 Provide safety barricades, lights and signage on work site as required to provide a safe working environment for workers.

1.7 PERMITS

- .1 Obtain and pay for all permits related to project prior to commencement of Work.
- .2 Obtain permits, licenses and compliance certificates, at appropriate times and frequency as stipulated by authorities having jurisdiction.
- .3 Post all permits on site. Submit copies to Consultant.

1.8 FILING OF NOTICE

.1 File Notice of Project and other Notices with Provincial authorities prior to commencement of Work.

1.9 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.
- .2 Perform on-going hazard assessments during the progress of Work identifying new or potential health risks and safety hazards not previously known. As a minimum hazard assessments shall be carried out when:
 - .1 New subtrade work, new subcontractor(s) or new workers arrive at the site to commence another portion of work.
 - .2 The scope of work has been changed by Change Order.
 - .3 Potential hazard or weakness in current health and safety practices are identified by Consultant or by an authorized safety representative.
- .3 Each hazard assessment to be made in writing. Keep copies of all assessments on site for duration of Work. Upon request, make available to Consultant for inspection.
- .4 Contractor to conduct a hazard assessment in conjunction with the Owner's maintenance staff as part of the planning process including isolating existing equipment where applicable and identification of hidden services where anchoring is required. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29 Health, Safety, and Emergency Response Procedures.

1.10 MEETINGS

- .1 Prior to commencement of work hold Health and Safety meeting. Have Contractor's Site Superintendent in attendance.
- .2 Provide site safety orientation session to all workers and other authorized persons prior to granting them access to work site. Brief persons on site conditions and on the minimum site safety rules in force at site.
- .3 Conduct site specific occupational health and safety meetings during the entire work as follows:
 - Formal meetings on a minimum monthly basis.
 - .2 Informal tool box meetings on a regular basis from a predetermined schedule.
- .4 Keep workers informed of anticipated hazards, on safety practices and procedures to be followed and of other pertinent safety information related to:
 - .1 Progress of Work;
 - .2 New sub-trades arriving on site and;
 - .3 Changes in site and project conditions.
- .5 Record and post minutes of meetings. Make copies available to Consultant upon request.

1.11 COMPLIANCE REQUIREMENTS

.1

- .1 Comply with Occupational Health and Safety Act, Occupational Health and Safety Act Regulations, PEI.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.
- .3 Provide Consultant with Material Safety Data Sheets (MSDS).
- .4 Observe and enforce construction safety measures required by National Building code, 2015 Part 8, Provincial Government, Worker's Compensation Board and municipal statutes and authorities.
- .5 Perform lockouts in compliance with:

- .1 Canadian Electrical Code
- .2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 Health, Safety, and Emergency Response Procedures.
- .3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.
- .4 Procedures specified herein.
- .6 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Consultant will advise on the course of action to be followed.

1.12 WHMIS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada and Provincial Department of Labour.
- .2 Submit WHMIS data sheets to Consultant in accordance with Section 01 33 00 Submittal Procedures.
- .3 Maintain WHMIS information station and ensure designated personnel are trained in its use.
- .4 Submit copies of all Tool Box or Safety Meeting notes.
- .5 Submit copies of all Worksite Safety Inspections.

1.13 UNFORESEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Consultant verbally and in writing.

1.14 HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 Have minimum two (2) years site-related working experience specific to activities associated with Construction.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

1.15 CONSTRUCTION SAFETY MEASURES

- .1 Observe and enforce construction safety measures required by National Building Code, 2015 Part 8, Provincial Government, Worker's Compensation Board and municipal statutes and authorities.
- .2 In event of conflict between any provisions of above authorities the most stringent provision governs.
- .3 PEI Occupational Health and Safety Act and regulations, guidelines and code practice, stipulate standard equipment applicable to construction sites such as protective clothing, safety hats and boots, gloves, eye protection.
- .4 Provide and maintain first aid equipment, supplied and medications appropriate to the work and its location in accordance with the First Aid Regulations. Obtain and implement recommendations from Occupational Health and Safety Division specific to the project work site.
1.16 **OVERLOADING**

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

SCAFFOLDING 1.17

Design and construct scaffolding in accordance with CSA S269.2-M87 and maintain in a .1 secure and safe manner.

1.18 **TESTING AND MONITORING**

- Test and monitor for hazardous conditions, as required to demonstrate compliance with .1 provincial regulations.
- .2 If multiple locations are being worked simultaneously, provide monitoring at all locations where work is being carried out, including providing additional monitoring instruments.

1.19 **RECORD KEEPING**

.3

ALL activities associated with Health and Safety shall be recorded daily in a bound notebook. .1 Include as a minimum; activity date, time, location of occurrence, mitigation action taken and results. Records shall be assessed by the Consultant.

1.20 **ISOLATION OF EXISTING SERVICES**

- .1 Obtain Consultant's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.
- .2 To obtain authorization, submit to Consultant following documentation:
 - Written Request for Isolation of the service or facility and; .1
 - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Consultant, and as follows:
 - Fill-out standard forms in current use at the Facility when so directed by Consultant .1 or: .2
 - Where no form exist at Facility, make request in writing identifying:
 - Identification of system or equipment to be isolated, including it's location; .1
 - .2 Time duration, indicating Start time & date and Completion time & date when isolation will be in effect.
 - .3 Voltage of service feed to system or equipment being isolated.
 - Name of person making the request. .4
 - Document to be in typewritten format.
- Do not proceed until receipt of written notification from Consultant granting the Isolation .4 Request and authorization to proceed with the isolation of designated equipment or facility. Consultant may designate other individual at the Facility as the person authorized to grant the Isolation Request.
- Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and .5 other sources of energy and lockout items in accordance with requirement of clause 1.8 below.
- Plan and schedule shut down of existing services in consultation with the Consultant and the .6 Facility Manager. Minimize impact and downtime of facility operations.
- Determine in advance, as much as possible, in cooperation with the Consultant, the type and .7 frequency of situations which will require a Request for Isolation. Follow Consultant's directives in this regard.
- Conduct hazard assessment as part of the planning process of isolating existing equipment .8 and facilities. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29 - Health, Safety and Emergency Response Procedures.

1.21 LOCKOUTS

- .1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.
- .2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.
- .3 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .4 Use industry standard lockout tags.
- .5 Provide appropriate safety grounding and guards as required.
- .6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.
- .7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:
 - .1 Controlling issuance of permits or tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Submitting a Request for Isolation to Consultant when required in accordance with Clause 1.7 above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to proceeding with work.
 - .7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.
- .8 Clearly establish, describe and allocate, within procedures, the responsibilities of:
 - .1 Workers.
 - .2 Designated person controlling issuance of lockout tags/permits.
 - .3 Safety Watcher.
 - .4 Subcontractors and General Contractor.
- .9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.
- .10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.
 - .1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Consultant.
- .11 Procedures to be in typewritten format.
- .12 Submit copy of Lockout Procedures to Consultant, in accordance with submittal requirements of clause 1.6 herein, prior to commencement of work.

1.22 CONFORMANCE

- .1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.
- .2 Brief all persons working on electrical facilities, mechanical and other equipment fed by an energy source on requirements of this section.
- .3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein may result in the issuance of a Non-Compliance Notification at Consultant's discretion with possible disciplinary measures imposed as specified in section 01 35 28.

1.23 FIRE SAFETY REQUIREMENTS

- .1 Comply with requirements of latest standard for Building Construction Operations issued by the Fire Commissioner of Canada and Fire Safety Regulations of Local Authority.
- .2 Implement and follow fire safety measures during Work. Comply with following:

- .1 National Fire Code, 2010.
- .2 Fire Protection Standards FCC 301 and FCC 302.
- .3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in Section 01 35 29 Health, Safety, and Emergency Response Procedures.
- .3 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Consultant will advise on the course of action.

1.24 WELDING AND CUTTING

- .1 Use noncombustible shields for electric and gas welding or cutting executed within two (2) meters of combustible material or in occupied space.
- .2 Place tanks supplying gases as close to work as possible. Fix in upright position, free from exposure to sun or high temperatures.
- .3 Locate fire extinguishing equipment near all welding and cutting operations.

1.25 OPEN FLAMES, SPARKS, EXPLOSION PROTECTION

.1 Keep open flames and sparks to minimum. When flame or sparks are required, follow proper procedures to prevent fire or explosion.

1.26 HOT WORK AUTHORIZATION

- .1 Obtain Consultant's written "Authorization to Proceed" before conducting any form of Hot work on site.
- .2 To obtain authorization submit to Consultant:
 - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
 - .2 Description of the type and frequency of Hot Work required.
 - .3 Sample Hot Work Permit to be used.
- .3 Upon review and confirmation that effective fire safety measures will be implemented during performance of hot work, Consultant will provide authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Consultant. Follow Consultant's directives in this regard.
- .4 Requirement for individual authorization based on:
 - .1 Nature or phasing of work;
 - .2 Risk to Facility operations;
 - .3 Quantity of various trades needing to perform hot work on project or;
 - .4 Other situation deemed necessary by Consultant to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Consultant's written "Authorization to Proceed" for that portion of work.
- .6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Consultant. When directed, perform Hot Work only during non-operative hours of Facility. Follow Consultant's directives in this regard.

1.27 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of section 01 35 29.
 - .2 Use of a Hot Work Permit system for each hot work event.
 - .3 The step by step process of how to prepare and issue permit.

- .4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
- .5 Maintain a fire extinguisher in the immediate area where hot work is being undertaken.
- .6 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 2 hours immediately upon completion of the hot work.
- .7 Compliance with fire safety codes and standards specified herein and Occupational Health and Safety regulations specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.
- .4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:
 - .1 Worker(s),
 - .2 Authorized person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractors and Contractor.
- .5 Brief all workers and Subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
 - .1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Consultant's discretion with possible disciplinary measures imposed as specified in Section 01 35 29 Health, Safety, and Emergency Response Procedures.

1.28 HOT WORK PERMIT

- .1 Hot Work Permit to include, as a minimum, the following data:
 - .1 Project name and project number.
 - .2 Building name, address and specific room or area where hot work will be performed.
 - .3 Date when permit issued.
 - .4 Description of hot work type to be performed.
 - .5 Special precautions required, including type of fire extinguisher needed.
 - .6 Name and signature of person authorized to issue the permit.
 - .7 Name of worker (clearly printed) to which the permit is being issued.
 - .8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time & date and completion time & date.
 - .9 Worker signature with date and time upon hot work termination.
 - .10 Specified time period requiring safety watch.
 - .11 Name and signature of designated Fire Safety Watcher, complete with time & date when safety watch terminated, certifying that surrounding area was under his continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.
- .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .3 Each Hot Work Permit to be completed in full and signed as follows:
 - .1 Authorized person issuing Permit before hot work commences.
 - .2 Worker upon completion of Hot Work.
 - .3 Fire Safety Watcher upon termination of safety watch.
 - .4 Returned to Contractor's Site Superintendent for safe keeping.

1.29 FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut-off, unless approved by Consultant.

- .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than fire fighting.
- .3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

1.30 FIRE SAFETY

- .1 The Sub-Contractors are to participate on the Fire Safety Committee under the Joint Health and Safety Committee. The Fire Safety Committee under the direction of the Contractor is responsible for implementation and maintenance of the Construction Fire Safety Plan.
- .2 Construction Fire Safety Plan: .1 The Construction Fire
 - The Construction Fire Safety Plan will include the following:
 - .1 Introduction of plan and purpose.
 - .2 Fire Safety Committee.
 - .3 Terms of reference.
 - .2 Committee composition.
 - .3 Emergency Procedures.
 - .4 Fire protection equipment.
 - .5 Building description.
 - .6 Provisions for fire fighting.
 - .7 Portable extinguishers.
 - .8 Exits.
 - .9 Emergency Lighting.
 - .10 Reduced drawings.
 - .11 Fire safety maintenance schedule:
 - .1 General.
 - .2 Maintenance levels.
 - .3 Skill categories.
 - .4 Frequency.
 - .5 Checklists.
 - .12 Other information:
 - .1 Instruction on use of fire extinguishers.
 - .2 Emergency Fire Drill procedures.
- .3 Portable Fire Extinguishers:
 - .1 During construction, Contractor is to provide and maintain on the site at all times, ULC listed 25 lb ABC dry chemical type portable fire extinguishers.
- .4 Blockage of Roadways:

.1

- The Fire Department shall be advised of any work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by the Fire Department, erecting of barricades and the digging of trenches.
- .5 Rubbish and Waste Materials:
 - .1 Rubbish and waste materials are to be kept to a minimum.
 - .2 The burning of rubbish is prohibited.
 - .3 Removal:
 - .1 All rubbish shall be removed from the work site at the end of the workday or shift or as directed by Consultant.
 - .4 Storage:
 - .1 Extreme care is required where it is necessary to store oily waste in work areas to ensure maximum possible cleanliness and safety.
 - .2 Greasy or oily rags or materials subject to spontaneous ignition shall be deposited and kept in an approved receptacle and removed as required in 1.7.3.1.
- .6 Flammable Liquids:
 - .1 The handling, storage and use of flammable liquids are to be governed by the current National Fire Code of Canada.

- .2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 liters provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 liters for work purposes, requires the permission of the Fire Department.
- .3 Transfer of flammable liquids having a flash point below 38°C is prohibited within buildings.
- .4 Transfer of flammable liquids shall not be carried out in the vicinity of open flames or any type of heat-producing devices.
- .5 Flammable liquids having a flash point below 38°C, such as naphtha or gasoline, shall not be used as solvents or cleaning agents.
- .6 Flammable waste liquids, for disposal, shall be stored in approved containers located in a safe ventilated area. Quantities are to be kept to minimum and the Fire Department is to be notified when disposal is required.
- .7 Fire Inspection:
 - .1 The Fire Department shall be allowed unrestricted access to the work site.
 - .2 The Contractor shall cooperate with the Fire Department during routine inspections of the work site.
 - .3 The Contractor shall immediately remedy all unsafe fire situations observed by the Fire Department.

1.31 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 Province having jurisdiction, and in consultation with Consultant.

1.32 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.33 BLASTING

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

1.34 POWDER ACTUATED DEVICES

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

1.35 WORK STOPPAGE

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

1.36 SITE SAFETY MEETINGS

- .1 An orientation meeting shall be held with all workers at the start-up of the work, with the presence of the Consultant to review the Health and Safety aspects of the work.
- .2 An orientation meeting shall be held by the Contractor for each new worker on the site following the initial orientation meeting.
- .3 Attend Health and Safety meetings as directed by Consultant.

1.37 HANDLING AND TRANSPORTATION OF DANGEROUS GOODS

- .1 Observe and enforce all measures required by the regulatory agencies including but not limited to Environment Canada, Prince Edward Island Department of Environment, and Transport Canada.
- .2 Most current regulatory guidelines and Acts will apply to the work.
- .3 In case of any conflict, the more stringent requirements will apply.

1.38 OPEN EXCAVATIONS

.1 If open foundations or demolition areas are to be left at the end of a work day, protective fencing must be placed around the entire perimeter to limit access by others. Fencing to be self-supporting, approved by the Department of Labour and the Construction Safety and Industrial Safety Regulations.

1.39 POTENTIAL HAZARDS

- .1 Hazards include, but are not limited to, toxic, flammable and explosion hazards associated with cleaning solvents.
- .2 The Contractor shall become familiar with all potential hazards associated with the work, and shall take necessary measures to avoid injury or damage of any kind.

1.40 HEALTH AND SAFETY PLAN

- .1 Prior to commencement of the work, submit to the Construction Manager a detailed Health and Safety Plan for review. The Health and Safety Plan shall comply with the provisions of this section, and shall illustrate the Contractor's knowledge and understanding of health and safety aspects of the work, the Contractor's intention to maintain a high level of safety on-site, and shall include, but not be limited to:
 - .1 Description of Work
 - .2 Description of Site-specific hazards:
 - .1 Physical
 - .2 Chemical
 - .3 Environmental
 - .3 Protective Equipment:
 - .1 Respiratory
 - .2 Contact
 - .4 Decontamination Procedures:
 - .1 Personal protective equipment (PPE)
 - .2 Equipment
 - .5 Infection Control personal protective equipment required by CSA Z317.13-03.
 - .6 Medical Monitoring:
 - .1 Workers medical profile and suitability to work at the site.
 - .7 Air Monitoring Procedures:
 - .1 Action levels
 - .2 Site monitoring
 - .3 Perimeter monitoring
 - .8 Emergency Procedures:
 - .1 Emergency Equipment
 - .2 Contingency Plans:
 - .9 General Safety:
 - .1 Designation of site-safety officer
 - .2 Safety log
 - .3 Trenching, digging, excavations
 - .4 Storage of flammables, compressed gases
 - .5 Safety inspections
 - .10 Site Training:
 - .1 Initial hazard

.2 Daily safety

.2 All workers shall be trained and be familiar with the Health and Safety Plan and the use of personal protective equipment.

1.41 SITE SAFETY OFFICER

- .1 Each Trade Contractor shall appoint a responsible member of the work force as Site Safety Office (SSO). The selection of the SSO will be subject to the approval of the Consultant, and changes shall be made as requested by the Consultant. The SSO shall be responsible for ensuring that all provisions of the Health and Safety Plan and relevant legislation are implemented. The SSO shall ensure that all monitoring and testing, as specified and at the direction of the Consultant, are conducted. The SSO shall maintain records of all readings that are taken by the Contractor report and any abnormal or dangerous situation to the Consultant and the Municipality, after having implemented emergency measures, as required, work shall not continue or proceed until the situation has been rectified.
- .2 The SSO shall be authorized to act on behalf of the Contractor on all matters related to Health and Safety.

1.42 PERSONAL PROTECTIVE EQUIPMENT

- .1 Use personal protection equipment as required by Occupational Health and Safety Act.
- .2 Training of workers in the proper use, fitting, inspection and storage of personal protective equipment shall be done prior to use of the equipment.

1.43 SANITATION/DECONTAMINATION PRACTICES

- .1 After each use, all disposable protective equipment shall be collected in a dedicated container for disposal.
- .2 All respiratory equipment shall be decontaminated daily after use.
- .3 All tools, pumps and equipment used during cleanup should be dedicated to the handling of contaminants and labeled as such and thoroughly decontaminated at the completion of the project.
- .4 Contaminated work clothing shall not be worn outside of regulated areas.
- .5 Workers shall wash their hands and exposed skin before eating, drinking, smoking or using toilet facilities during work shift, and at the completion of a work shift.
- .6 Food, drink and tobacco products shall not be permitted in regulated areas.

1.44 WORK PRACTICES AND ENGINEERING CONTROLS

- .1 Access to work areas shall be regulated and limited to authorized persons. A daily roster shall be kept of persons entering such areas.
- .2 Handling Contaminants and General Work Practices.
 - .1 Transportation and handling of contaminants to meet applicable local, provincial and federal regulations.
 - .2 Emergency respiratory equipment shall be located in readily accessible locations which will remain minimally contaminated with contaminants in an emergency.
 - .3 Containers and systems shall be handled and opened with care. Approved protective clothing shall be worn by all employees engaged in regulated areas.
 - .4 All wastes and residues containing contaminants shall be collected in appropriate containers.
- .3 Confined or Enclosed Spaces
 - .1 Entry into confined or enclosed spaces, where there is limited egress, shall be controlled by a permit system. Permits shall be signed by an authorized representative of the employer and shall certify that appropriate measures have been taken to prevent adverse effects on the worker's health as a result of his or her entry into such space.

- .2 Confined or enclosed spaces which have contained contaminants shall be thoroughly ventilated to assure an adequate supply of oxygen, tested for contaminants, and inspected for compliance with these requirements prior to each entry. Adequate ventilation shall be maintained while workers are in such spaces. Each individual entering such confined or enclosed space shall be furnished with appropriate personal protective equipment and clothing and be connected by a lifeline harness to standby worker stations outside of the space. The standby worker shall also be equipped for entry with approved personal protective equipment and clothing and have contact with a third person. The standby person shall maintain communication (visual, voice, signal line, telephone, radio, or other suitable means) with the employee inside the confined or enclosed space.
- .3 Workers entering confined spaces and standby workers shall be trained at a recognized confined space training program.

1.45 RECORD KEEPING

.1 ALL activities associated with Health and Safety shall be recorded daily in a bound notebook. Include as a minimum: activity date, time, location of occurrence, mitigation action taken and results. Records shall be assessed by the Consultant.

1.46 SUSPENSION OF ACTIVITIES

- .1 Exposure to contaminants shall be controlled so that no worker is exposed to contaminants at a concentration greater than the Time Weighted Average (TWA) concentration for the contaminant, for up to a 10 hour workday, 40 hour work week.
- .2 The Contractor will halt activities immediately during unsafe conditions. All costs relating to suspension of work for Contractor's failure to maintain Health and Safety procedures shall be borne by the Contractor.

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1.1 FIRES

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

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into storm or sanitary sewers.

1.3 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 POLLUTION CONTROL

- .1 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .2 Place construction equipment so that dust, smoke, fumes and odours do not move toward or enter air intakes or windows of the adjacent building. If dust, smoke, fumes or odours are found to be entering adjacent buildings by any means, the Contractor will be required to stop work at the Contractor's own expense and work will not be allowed to recommence until problem is rectified to satisfaction of Owner and Consultant.
- .3 Maintain noise level of construction work to minimum practical to avoid unnecessary disturbance of adjacent residences.
- .4 Provide dust control for building demolition and site work.
- .5 Arrange for a meeting between the Contractor(s), the Consultant and the Owner prior to commencement of construction.

1.5 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside the building at any time or at any stage of construction.

1.6 ENVIRONMENTAL PERMIT APPROVAL

.1 Comply with requirements contained in the PEI Department of Transportation and Infrastructure Environmental Management Division environmental approval permit for the project and any other permits in force during the construction phase of this project.

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1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) 2015 including all amendments up to tender closing date, Atlantic Canada Standards and Guidelines Manual for the supply, treatment, storage, distribution and monitoring of drinking water systems and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition work, immediately stop work and notify Consultant.
- .2 Should material suspected of containing PCB's be encountered in the course of demolition work, immediately stop work and notify Consultant.

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1.1 **REFERENCES**

.1 Canadian Construction Documents Committee (CCDC) .1 CCDC 2-2020, Stipulated Price Contract.

1.2 INSPECTION

- .1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Consultant may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies are to be engaged by Owner for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Owner.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of Inspection/Testing Agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency may request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Owner. Pay costs for retesting and re inspection.

1.4 PROCEDURES

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 **REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Consultant.

1.6 REPORTS

.1 Submit digital copies of inspection and test reports to Consultant.

.2 Provide digital copies to Subcontractor of work being inspected or tested.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as may be requested.
- .2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Consultant and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
- .2 Construct in all locations acceptable to Consultant.
- .3 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Consultant will assist in preparing a schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Consultant.
- .7 Mock-ups may remain as part of Work as directed by Consultant.

1.9 MILL TESTS

.1 Submit mill test certificates as requested.

1.10 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

1.1 RELATED SECTIONS

.1 Section 01 52 00 - Construction Facilities.

1.2 CONTRACTORS SITE OFFICE

.1 The Contractors site office will be located in an area designated by the Consultant following the Award of Contract.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 WATER SUPPLY

.1 Water supply will be the financial responsibility of the Contractor for construction usage. Make arrangements and pay costs for the use and transportation of such services to work area.

1.5 SANITARY FACILITIES

- .1 The Contractor will provide, at no cost to the Owner, sanitary facilities for work force in accordance with governing regulations and ordinances for entire duration of project.
- .2 The Contractor will post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Sanitary facilities must be located within the limits of the construction.

1.6 POWER

- .1 Provide and pay all costs to supply and install temporary cabling, panel boards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 28 and to lockout requirements specified in section 01 35 25.
- .2 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162lx in all locations.
- .3 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Re-instate all damaged systems. Replace lamps which have been used over period of three (3) months.

1.7 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be non-flameless 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 condensation on surfaces.
 - .4 Provide 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 temperatures of minimum 10°C in areas where construction is in progress.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapors or gases in areas occupied 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 manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .6 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Consultant.
- .7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.8 FIRE PROTECTION

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

1.1 RELATED SECTIONS

- .1 Section 01 50 00 Facilities and Controls.
- .2 Section 01 51 00 Temporary Utilities.
- .3 Section 01 56 00 Temporary Barriers and Enclosures.

1.2 **REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2020, Stipulated Price Contract.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 1-GP-189M, Primer, Alkyd, Wood, Exterior.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN3-A23.1-/A23.2-14, Concrete Materials and Methods for Concrete
 - Construction/Method of Test for Concrete.
 - .2 CSA-0121-17, Douglas Fir Plywood.
 - .3 CAN/CSA-Z321-96(R2006), Signs and Symbols for the Occupational Environment.

1.3 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Provide and maintain scaffolding.
- .2 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87(R1998).
- .3 Erect scaffolding independent of walls. Remove when no longer required.

1.5 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
- .2 Hoists and cranes shall be operated by qualified operator.

1.6 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 a weight or force that will endanger the Work.

1.7 SECURITY

- .1 Contractor is responsible for security on site and within limits of this Contract.
- .2 Where required, provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a 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 a manner to cause least interference with work activities.
- .3 Provide adequate weather tight, heat and ventilation appropriate for the use and storage of equipment, tools and materials.

1.9 CONSTRUCTION SIGNAGE

- .1 Project signs are provided in a location designated by Owner.
- No other signs or advertisements, other than warning signs, are permitted on site. Maintain approved signs and notices in good condition for duration of project. .2
- .3

1.1 RELATED SECTIONS

- .1 Section 01 50 00 Facilities and Controls.
- .2 Section 01 51 00 Temporary Utilities.
- .3 Section 01 52 00 Construction Facilities.
- .4 Section 01 55 26 Traffic Control.

1.2 **REFERENCES**

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.189M, Primer, Alkyd, Wood, Exterior.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-O121-17, Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.4 DUST ENCLOSURES

.1 Provide weather tight closures around work area.

1.5 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 Consultant locations and installation schedule three (3) days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

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1.1 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within seven (7) days of written request by Consultant, submit following information for materials and products proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 Trade name, model and catalog number.
 - .3 Performance, descriptive and test data.
 - .4 Manufacturer's installation or application instructions.
 - .5 Evidence of arrangements to procure.
- .3 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

1.2 **REFERENCE STANDARDS**

- .1 Conform to reference standards, in whole or in part as specifically requested in specifications.
- .2 If there is question as to whether any product or system is in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.
- .3 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.3 CONFORMANCE

.1 When material or equipment is specified by standard or performance specifications, upon request of Consultant, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

1.4 SUBSTITUTION OF MATERIAL

- .1 Proposals for substitution may be submitted only after award of Contract. Such requests must include statements of respective costs of items originally specified and proposed substitutions.
- .2 Proposals will be considered by Consultant if:
 - .1 Products selected by tenderer from those specified, are not available, or
 - .2 Delivery date of products selected from those specified would unduly delay completion of Contract.
 - .3 Alternative products to those specified, which are brought to attention of, and considered by Consultant as equivalent to those specified and will result in credit to Contract amount.
 - .4 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as a result of substitution.
 - .5 Amounts of all credits arising from approval of substitutions will be determined by Consultant and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of Consultant.

1.5 QUALITY OF PRODUCTS

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

- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.6 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.7 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.8 TRANSPORTATION

- .1 Pay costs of transportation and handling of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Owner. Contractor to unload, handle and store such products.

1.9 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.10 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.11 CO-ORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.12 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, color and finish as base metal in which they occur.
- .2 Prevent electrolytic action between dissimilar metals.
- .3 Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- .4 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood plugs not acceptable.
- .5 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .6 Fastenings which cause spalling or cracking are not acceptable.
- .7 Obtain Consultant's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166-M85, and observe restrictions in Section 01 35 29 Health, Safety and Emergency Response Procedures.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and resilient washers with stainless steel.

1.14 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.

1.15 CONCEALMENT

- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.16 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.17 CONSTRUCTION EQUIPMENT AND PLANT

- .1 On request, prove to the satisfaction of Consultant that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.
- .2 Maintain construction equipment and plant in good operating order.

1.1 RELATED SECTION

- .1 Section 01 77 00 Closeout Procedures.
- .2 All Sections

1.2 **PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant.
- .3 Clear snow and ice from access to construction, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use clearly marked separate bins.
- .7 Remove waste and debris from site and deposit in waste container at end of each working day.
- .8 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each 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.

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain work site in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Keep existing building entrances, corridors and stairwells used by workers in clean dust free condition at all times. Conduct thorough cleaning of these areas at end of each work shift.
- .3 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .4 Provide and employ dust barriers, dividers, seals on doors and other dust control measures as required to ensure dust and dirt generated by work are not transmitted to other existing areas of building. Should dust accidentally migrate into areas under use by building occupants or public, employ such means as may be necessary to immediately clean all contaminated surfaces within these area(s) to the satisfaction of the Consultant.

1.4 FINAL CLEANING

- .1 Prior to final review, remove surplus products, tools, construction machinery and equipment.
- .2 Remove waste products and debris.
- .3 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.
- .4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .5 Clean lighting reflectors, lenses, and other lighting surfaces.
- .6 Vacuum clean and dust building interiors, behind grilles, louvers and screens.
- .7 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .8 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

- .9 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .10 Remove dirt and other disfiguration from exterior surfaces.
- .11 Clean and sweep roofs, gutters, area ways, and sunken wells.
- .12 Sweep and wash clean paved areas.
- .13 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.
- .14 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .15 Remove snow and ice from access to construction.

1.1 RELATED SECTIONS

- .1 Section 00 73 00 Supplementary Conditions.
- .2 Section 01 78 00 Closeout Submittals.

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Consultant's Inspection.
- .2 Consultant's Inspection: Consultant, Owner and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and are fully operational.
 - .4 Certificates required by Boiler Inspection Branch have been submitted.
 - .5 Systems have been commissioned
 - .6 Operation of systems have been demonstrated to Owner's personnel.
 - .7 Work is complete and ready for final inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Owner and Consultant. If Work is deemed incomplete by Consultant complete outstanding items and request re inspection.
- .5 Declaration of Substantial Performance: when Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Certificate of Substantial Performance. Refer to CCDC 2, General Conditions Article for specifics to application.
- .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall 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: When Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to CCDC2. If Work is deemed incomplete by Owner, complete outstanding items and request re inspection. Cost of re inspection will be deducted from final payment.
- .8 Payment of Holdback: After issuance of Certificate of Substantial Performance of Work, submit an application of payment of holdback amount in accordance with CCDC2.

1.3 CERTIFICATE OF SUBSTANTIAL PERFORMANCE

- .1 Upon approval, a Certificate of Substantial Performance will be issued to the Owner by the Consultant with a copy delivered to the Contractor. This Certificate will take the form shown in Section 01 77 00 Closeout Procedures.
- .2 The Certificate of Substantial Performance will establish the date of the Consultant's inspection as the date of Substantial Performance of the Contract, and will commence the required 60-day period before release of the lien holdback amount.
- .3 During the 60-day period, Contractor shall continue to complete the work.
- .4 The Contractor shall immediately deliver to the Consultant specified submissions upon receipt of the Certificate of Substantial Performance.

1.4 ESTABLISHMENT OF WARRANTIES

.1 Warranties shall commence at date of Substantial Performance of the Work.

1.5 CERTIFICATE FOR PAYMENT OF LIEN HOLDBACK AMOUNT

- .1 The Contractor shall submit statement and supporting documents for application of Release of Lien Holdback amount. These documents include those listed in Paragraph 2.2.2 and 2.2.3 and the Statutory Declaration Form CCDC 9A.
- .2 Within five (5) working days of receipt of application for Release of Lien Holdback amount and if approved, the Consultant will prepare a Certificate for Payment of the Lien Holdback amount. This Certificate dated on the day following termination of the 60 day period will be issued to the Owner with a copy delivered to the Contractor.
- .3 The Contractor shall submit to the Owner documents confirming that no liens related to the Contract are registered and that no notice of liens has been received at the end of the 60-day period.
- .4 Should no liens exist, the Lien Holdback will be due and payable one day after termination of the 60-day period in the amount indicated on the approved application for Certificate of Substantial Performance.
- .5 The Owner will review jointly with the Contractor's Insurance related to the Contract before the 60-day period is terminated to ensure that all parties are adequately covered.

1.6 TOTAL PERFORMANCE

- .1 The Contractor shall inspect the work to establish its completion in accordance with the Contract Documents and when satisfied of this completion request of the Consultant a final inspection.
- .2 The Consultant will compile a final deficiency list at this inspection and issue it to the Contractor and Owner.
- .3 The Contractor shall correct final deficiencies before a date agreed upon by the Contractor and Consultant.
- .4 When the Contractor has satisfied himself that these corrections have been completed in a satisfactory manner by his inspection, he shall schedule a re-inspection by the Consultant, and the Owner's representatives if required, within five working days of the Contractor's request.
- .5 When the Consultant is satisfied that all deficiencies have been rectified and the work is complete, the Contractor shall submit an application for the final progress payment.
- .6 When "seasonal deficiencies", as determined by the Owner and/or Consultant exist, a sum of money will be withheld in accordance with the requirements of CCDC2 2020-GC5.6.

1.7 WARRANTY PERIOD

- .1 The Owner will advise the Consultant of defects observed during Warranty periods.
- .2 The Consultant will notify the Contractor of these defects and request him to remedy the defects in accordance with the Contract Documents.
- .3 Thirty days before expiration of Warranties the Owner's representatives, the Consultant and the Contractor will review the work as arranged by the Contractor noting defects of products and workmanship.
- .4 The Contractor shall immediately remedy such noted defects.

1.8 CERTIFICATE

.1 CONTRACTOR: _____

PROJECT:

DATE OF SUBSTANTIAL PERFORMANCE:

- .1 Substantial Performance Inspection for above described work was carried out (date) by:
 - .1 For Owner _____
 - .2 For Consultant _____
 - .3 For Contractor
- .2 The items which are not in accordance with the Plans and Specifications and require correction under the Conditions of the Contract Agreement are listed as an attachment to this Document.

CONTRACTOR'S CERTIFICATION

I hereby Certify that the work has been executed in accordance with the Plans and Specifications with the exception of deficiencies listed herewith. The undersigned hereby agrees that notwithstanding the generality of the foregoing, the acceptance of the works shall not prejudice any rights of the Owner or affect any liabilities of the undersigned Contractor pursuant to the provisions of the Contract.

Contractor

Date

OWNER'S ACCEPTANCE

I hereby accept the work on behalf of the Owner providing that the deficiencies listed herewith are completed. This acceptance is not to be construed as relieving the Contractor from the responsibility to correct other defects in the work, whether latent or patent, as may become apparent within the guarantee/warranty period. This acceptance is made without prejudice to the rights of the Owner or to the liabilities of the Contractor which may arise and/or continue after acceptance of the work.

Owner

Date

CONSULTANT'S DECLARATION

Based on periodic visits to the job site and general familiarity with the progress of the work, I declare that, to the best of my knowledge, information and belief, construction is proceeding in accordance with the intent of the design and in general compliance with the plans and specifications, with the exception of the deficiencies listed herewith.

Consultant

Date

1.9 DEFICIENCIES

- .1 The following is a list of deficiencies to be corrected. This acceptance is not to be construed as relieving the Contractor from the responsibility of correcting other defects in the work as may become apparent during the Guarantee/Warranty Period.
 - .1 _____
 - .3

.2

1.1 SECTION INCLUDES

- .1 Project Record Documents as follows:
 - .1 As-built drawings;
 - .2 As-built specifications;
 - .3 Reviewed shop drawings.
 - Operations and Maintenance data as follows:
 - .1 Operations and Maintenance Manual;
 - .2 Maintenance Materials;
 - .3 Spare Parts;
 - .4 Special Tools.

1.2 RELATED SECTIONS

- .1 Section 01 45 00 Quality Control.
- .2 Section 01 77 00 Closeout Procedures.
- .3 Section 01 91 13 General Commissioning Requirements.

1.3 PROJECT RECORD DOCUMENTS

- .1 Consultant will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Consultant at any time during construction.
- .4 As-Built Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to interim inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Consultant. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
 - .2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
 - .3 Record following information:
 - .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
 - .2 Field changes of dimension and detail.
 - .3 Location of all capped or terminated services and utilities.
 - .4 Chases for mechanical, electrical and other services.
 - .5 Ceiling and floor elevations.
 - .6 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices.
 - .7 Plumbing, heating, air conditioning and ventilation, sprinkler and electrical service installation locations; all to be dimensioned and referenced to building columns or load bearing walls.
 - .8 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions.
 - .9 Any details produced in the course of the contract by the Consultant to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document.
 - .10 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

- .5 As-built Specifications: legibly mark in red each item to record actual construction, including: .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.
 - .2 Changes made by Addenda and Change Orders.
 - .3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-built documents current as the contract progresses. Consultant will conduct reviews and inspections of the documents on a regular basis. Frequency of reviews will be subject to Consultant's discretion. Failure to maintain as-builts current and complete to satisfaction of the Consultant shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.4 **REVIEWED SHOP DRAWINGS**

- .1 Compile full set of shop drawings and product data reviewed on project and incorporate into Operations and Maintenance Manual. Supply number of shop drawing sets equal to the required number of final Operations and Maintenance manuals.
- .2 Submit shop drawing sets at same time and as part of the contents of the Operation and Maintenance manuals specified in this section.

1.5 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Consultant's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Consultant, three (3) final copies of operating and maintenance manuals in English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.
- .9 Failure to deliver maintenance materials, spare parts, special tools and as-builts will delay progress payments.

1.6 CONTENTS - EACH VOLUME

- .1 Table of Contents: 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 clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 Quality Control and Section 01 77 00 Closeout Procedures.
- .6 Training: Refer to Section 01 91 13 General Commissioning Requirements.

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 All original as-built drawings and records shall be submitted in the following form:

- .1 Drawings shall be submitted as:
 - .1 One copy print paper
 - .2 One complete electronic copy in AutoCAD 2014 format.
 - .3 Paper size to 762mm x 1067mm (30" x 42")
 - .4 NO SEPIAS
- .2 All drawings shall be dimensioned to be plotted at 1:500 Horizontal and 1:100 Vertical with a single plan view (on top of sheet) and single profile view (on bottom of sheet) per sheet, details sheet to be separate. Drawings are to be to scale.
- .3 As-built drawings shall be a true reflection of what was built and not a reissued construction plans.
- .4 Drawings shall accurately reflect the location of all as-built site features including concrete curb and gutters, edge of asphalt pavement, concrete bases, driveways, storm sewer systems, traffic control devices, signs, utility poles, retaining walls, top and bottom of slopes, ditches, trees, and all site features. Record coordinates, elevation, size and other relevant data.
- .5 Drawings shall accurately reflect the location of manholes, gate valves, service boxes, lateral pipes, fire hydrants, etc. if necessary to accurately depict what has been built post construction total station or GPS surveys may be required.
- .6 As-built drawings shall include physical ties (measurements) to assist with locating all gate valves, manholes, fire hydrants, distance between hydrant and hydrant control valve, water service laterals and sanitary sewer laterals. Ties shall be referenced to permanent fixture such as survey pins, power poles, manholes, etc.
- .7 As built records shall include the number of turns and direction to open for full operation of all gate valves and fire hydrants.
- .8 All elevations are to be geodetic with locations of all survey monuments and other benchmarks from which elevations were derived included on original as-builts. Currently the City records are in accordance with the PEI Double Stereographic Projection, NAD83 Datum with CSRS98 Realization.

1.8 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by Subcontractors, suppliers, and manufacturers where specifically requested by individual specification sections, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

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1.1 RELATED WORK

- .1 Section 01 35 29 Health, Safety and Emergency Response Procedures
- .2 Section 01 56 00 Temporary Barriers and Enclosures

1.2 DESCRIPTION OF WORK

- .1 Architectural Works
 - .1 Demolition of the existing concrete foundation and removal of bulk concrete sections. Remove any lumber, windows, insulation, or other building materials located in the crawlspace.
 - .2 Demolish the existing entry stairs, deck and wheelchair ramp, as well as the stairs near the emergency exit.

.2 Electrical Works

- .1 Disconnect the existing electrical service in coordination with the utility provider, demolish the existing service mast and meter socket. Cap the conduit at the building entrance in preparation for the facility relocation.
- .2 Disconnect the existing telecommunications service entrance in coordination with the utility provider, cap exterior conduit location on building in preparation for the facility relocation.
- .3 Disconnect and remove any branch circuit wiring, communications cabling, or other wiring located in the crawlspace in preparation for the facility relocation.
- .3 Mechanical Works
 - .1 Demolish the existing fuel oil tank refer to section 02-65-00 for additional information. Pump out the existing fuel oil and transfer to the city works garage fuel tank, dispose of any remaining fuel which cannot be transferred in accordance with governing regulations. Works to be completed prior to the facility relocation.
 - .2 Demolish the existing furnace, and associated accessible ductwork, and all ductwork located in the crawlspace, prior to the facility relocation. Patch all resultant floor openings with 3/4" plywood, overlapping the floor by 2" in all directions.
 - .3 Demolish the existing domestic hot water heater and all accessible piping in the mechanical room.
 - .4 Disconnect the incoming water utility in coordination with the service provider, demolish all domestic water distribution piping located in the crawlspace up to the line of the floor. Remove all piping within the crawlspace up to the foundation wall.
 - .5 Disconnect the sewer connection in coordination with the utility provider up to the foundation wall.

1.3 **PROTECTION**

- .1 Size, depth and location of existing utilities and structures as indicated are for guidance only; completeness and accuracy are not guaranteed.
- .2 Protect existing items designated to remain. In event of damage, immediately replace such items or make repairs to approval of Consultant and at no additional cost to the Owner.
- .3 Protect existing surface features which may be affected by work from damage while work is in progress and repair damage resulting from work.
- .4 Prevent movement, settlement or damage of adjacent utilities and structures. Provide bracing, shoring and underpinning required. Make good damage and be liable for injury caused by demolition.
- .5 If safety of structure being repaired or adjacent structures appear to be endangered, cease operations and notify Consultant and Owner. Take precautions to support structures.
- .6 Maintain and protect from damage, all structures, utilities encountered during the execution of Work. Obtain direction of Consultant before moving or otherwise disturbing utilities or structures.
- .7 Record locations of maintained, re-routed and abandoned underground lines.

.8 Make good and pay for damage to any lines resulting from work.

1.4 SAFETY CODE

.1 Carry out demolition work in accordance with ALL applicable codes and regulations.

2 Products

2.1 NOT APPLICABLE

.1 Not applicable.

3 Execution

3.1 **PREPARATION**

- .1 Inspect building and site and verify items designated for removal and items to be preserved.
- .2 Locate and protect all utility services.
- .3 Any damage to existing utilities and services shall be immediately repaired to the satisfaction of the Owner.

3.2 REMOVAL OF SALVAGED ITEMS

- .1 Remove items designated for salvage and stockpile on site or inside building as designated by Owner.
- .2 Items not designated for salvage and re-use shall be removed and dispose of off-site by the Contractor.

3.3 DISPOSAL OF MATERIAL

- .1 Dispose of all removed materials off-site.
- .2 Pay all fees that may be charged to dispose of materials at licensed disposal sites.
- .3 Remove all material contaminated with oil, gasoline, calcium chloride or other toxic or dangerous materials and dispose of in manner to minimize danger at site and to a location off site approved by Provincial Authority governing such disposal.

3.4 **RESTORATION**

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

3.5 ASBESTOS DISCOVERY

.1 Should material resembling asbestos containing materials be encountered in the course of work, stop work and notify the consultant immediately. Do not proceed until written instructions have been received from the consultant.

1.1 RELATED REQUIREMENTS

.1 Section 31 14 00 - Earth Stripping and Stockpiling.

1.2 **PROTECTION**

.1 Protect existing items designated to remain. In event of damage, immediately replace such items or make repairs to approval of Consultant and at no additional cost to Owner.

1.3 DESCRIPTION OF WORK

.1 Perform all demolition and removal as specified in this Section and indicated on the Drawings.

1.4 DEMOLITION

- .1 Demolish the following items:
 - .1 Demolish the existing underground water utility piping from the foundation wall to the shutoff valve and cap below grade for future extension following the building relocation. Complete in coordination with the utility provider.
 - .2 Provide for an evaluation of the existing utility shutoff valve and connection for suitability for reuse/extension of the valve for use in the planned new water service. Advise the consultant of findings promptly in writing.
 - .3 Demolish the existing underground sewer utility piping from the foundation wall to the tie in point at the sewer utility and cap, in coordination with the utility provider.
 - .4 Demolish any asphalt or concrete surfaces which are to be removed as outlined in the project drawings.

1.5 SALVAGE

.1 Contractor to salvage, separate, and stockpile onsite any topsoil and natural fill material excavated to facilitate construction of the new foundations. Stockpiled materials to be used to backfill the area occupied by the existing foundation and regrade the lots where permissible prior to using purchased material.

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1.1 SECTION INCLUDES

- .1 Preparing structure for move.
- .2 Moving structure to new location.
- .3 Setting structure on new foundation.

1.2 RELATED SECTIONS

.1 Section 31 23 00 : Excavation and Fill.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Pre-moving Conference: Convene [one (1)] week before starting work of this section.
- .3 Discuss the following:
 - .1 Ascertain the method of determining damage to existing structure and finishes, before and after the move.
 - .2 Identify existing damage to sidewalks, roads, and curbs.
 - .3 Identify method and responsibility for repairs after moving.
 - .4 Review the intended route for moving.
 - .5 Address coordination with affected utility companies.
- .4 Scheduling: Arrange schedule with General Contractor.

1.4 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

2 Products

2.1 EQUIPMENT

.1 Equipment and Supports: As required to achieve a successful structure move.

3 Execution

3.1 EXAMINATION

- .1 Section 01 70 00: Verify existing site conditions, surrounding access routes, and conditions of structure to be moved.
- .2 Identify utility services and obstructions to be removed, relocated, or abandoned during progress of the work.
- .3 Verify route load limits to ensure conditions are adequate to support moving loads of structure.
- .4 Damage Determination:
 - .1 Before the move, inspect existing structure thoroughly and notify [Owner] [Consultant] in writing of visible defects and factors which could affect safe movement of structure to final location.
 - .2 Compile a list of visible defects to building structure and, finishes. This list will form the basis of determining required repair work after the move.
 - .3 Photograph interior and exterior for record purposes.

3.2 **PREPARATION**

- .1 Prepare site, route of transport, and destination site.
- .2 Coordinate the work of municipal utility disconnection and re-connection with the work of this section.

- .3 Disconnect and cap existing site utility services. Remove overhead or exposed utility services to provide clear working and moving space around and below structure.
- .4 Secure supplementary framing and bracing to structure.
- .5 Secure operating, moving, or suspended items, such as doors, windows, and light fixtures, in a manner to prevent damage to items or to the structure during move.
- .6 Protect elements surrounding the structure from damage or disfiguration.

3.3 RAISE STRUCTURE

- .1 Cut structure free of foundation and portions of structure not being moved.
- .2 Reinforce, brace, and raise structure clear of foundation, in manner to prevent damage.
- .3 Provide necessary framing, bracing, closures, supports, and blocking.
- .4 Secure structure to temporary supporting structural members to prevent shifting of structure during move.

3.4 MOVE STRUCTURE

- .1 Provide transport vehicles for moving structure to new site.
- .2 Move structure, control speed, and provide anchor and restraining devices so that integrity of structure will be maintained.

3.5 REINSTALL STRUCTURE

- .1 Position structure over prepared [foundation] [site] and [lower] [transfer full load] onto site foundation.
- .2 Remove moving equipment.
- .3 Leave reinforcing, framing, and bracing intact until structure is fully attached, and structure loads are supported by new foundation.
- .4 Adjust structure on foundation:
 - .1 To permit doors to swing freely.
 - .2 So that floor surfaces are level, walls are plumb.

3.6 REINSTALLATION TOLERANCES

- .1 Maximum Variation from Level and Plumb.
- .2 Maximum Offset from True Position.

3.7 CLEANING

.1 Remove moving equipment and materials from original site, final site, and route of travel.

.1

1 General

1.1 REFERENCES

- Canadian Council of Ministers of the Environment (CCME). .1
 - CCME PN1055-1993, Environmental Code of Practice for Underground Storage Tank .1 Systems Containing Petroleum Products and Allied Petroleum Products. .2
 - CCME PN1299-1999, Canadian Environmental Quality Guidelines.
 - Chapter 7-Updated 2002, Canadian Soil Quality Guidelines for the Protection .1 of Environmental and Human Health.
- .2 **Canadian Federal Legislation**
 - Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - Section 53 Technical CEPA Guidelines for Underground Storage Tank .1 Systems Containing Petroleum Products and Allied Petroleum Products 1995.
 - .2 Canadian Environmental Assessment Act (CEAA), 1992, c. 37.
 - Canada Labour Code (R.S. 1985, c. L-2). .3
 - Part II (September 200) Occupational Health and Safetv. .1
 - Transportation of Dangerous Goods Act (TDGA), 1992, c. 34. .4
- .3 Underwriters' Laboratories of Canada (ULC).
 - ULC-S603-2000, Underground Steel Tanks. .1
 - ULC-S615-1998, Underground Reinforced Plastic Tanks. .2

1.2 SUBMITTALS

- Submit written tank description in accordance with Section 01 33 00 Submittal Procedures. .1
- .2 Provide written description of tank, its former contents, location and reason for removal.
- .3 Provide Consultant with copy of vapour removal test results.
- Forward affidavit of destruction of underground storage tanks to authority having jurisdiction. .4

1.3 QUALITY ASSURANCE

- Contractor must be licensed/certified by Province authorities having jurisdiction for removal of .1 storage tanks.
 - License/certificate, title and number must accompany tender document. .1
 - .2 Regulatory Requirements: Ensure Work is performed in compliance with CEPA.

1.4 WASTE MANAGEMENT AND DISPOSAL

- Separate waste materials for reuse in accordance with Waste Management Plan. .1
- Divert metal materials from landfill to metal recycling facility. .2
- Segregate and deliver non-salvageable or non-recyclable materials, including waste liquids .3 and sludges to Provincially licensed waste facility.
- A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe .4 condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 NOT USED

.1 Not Used.

3 Execution

3.1 PREPARATION SAFETY AND SECURITY

Conform to or exceed Federal and Provincial codes, local municipal by-laws, by-laws, and .1 codes and regulations of utility authorities having jurisdiction.

.2 Do construction occupational health and safety in accordance with Section 01 35 29 - Health, Safety and Emergency Response Procedures.

.3 Protection.

- .1 Meet safety requirements of Occupational Safety and Health, Canada Labour Code Part II and Regulations for Construction Projects.
- .2 Disconnect or remove source of ignition from vicinity of tank.
- .3 Provide temporary protection for safe movement of personnel and vehicle traffic.
- .4 Cut, braze or weld metal only in monitored areas established to be free of ignitable vapour concentrations.
- .5 Ground and bond metal equipment, including tanks and transfer pipes, before operating equipment or transferring flammable materials.
- .6 Use non-sparking tools and intrinsically safe electrical equipment.
- .7 Smoking is not permitted.

3.2 DRAINING

- .1 Drain and flush piping into tank.
- .2 Pump out liquid from tank.
 - .1 Use explosion proof, air driven or hand pump.
- .3 Remove sludge from tank bottom.
 - .1 Dispose of product and sludge in accordance with local, Provincial regulations using waste disposal carrier licensed by Provincial Environmental Agency having jurisdiction.

3.3 DECOMMISSIONING AND DEMOLITION

- .1 Provide protective material around work area.
- .2 Provide constant supervision during excavation and backfilling.
- .3 Disconnection: .1 Disconr
 - Disconnect piping.
 - .1 Remove fill tube.
 - .2 Disconnect fill gauge, product and vent lines.
 - .3 Cap or plug open ends of lines that are not to be used further.
 - .4 Remove piping.
 - .2 Temporarily plug tank openings.

3.4 TANK REMOVAL

- .1 Remove tank in accordance with CCME Code of Practice PN1055 and place in secure location.
- .2 Block tank to prevent movement.
- .3 Contact Consultant immediately if there is evidence of contamination in tank excavation, stop Work until further notice.
- .4 Remove and replace contaminated soil with clean fill common to local area in accordance with Section 31 23 00 Excavation and Fill.

3.5 VAPOUR REMOVAL

- .1 Purging:
 - .1 Purge vapors to less than 10% of lower explosive limit (LEL).
 - .2 Verify with combustible gas meter.
- .2 Inverting:
 - .1 Displace oxygen to levels below necessary to sustain combustion.
 - .2 Verify with combustible gas meter.
- .3 Dry Ice Method:
 - .1 Add 1.85 gm of solid carbon dioxide (dry ice) for each 100 liter capacity.
 - .2 Crush and distribute ice evenly over greatest area to secure rapid evaporation. Avoid skin contact.
 - .3 Verify dry ice has vaporized.

.4 Air Method:

- .1 Ventilate tank with air using small gas exhauster operated with compressed air.
- .2 Air to enter opening at one end and to exit opening at other end to quickly remove vapour.
- .3 Test interior of tank to determine when tank is free of vapour.

3.6 CAPPING

- .1 Plug holes after tank has been freed of vapors and before tank is moved from site.
 - .1 Leave vents open.
- .2 Plug corrosion leak holes using screwed (boiler) plugs.
- .3 Leave 3 mm vent hole in one plug to prevent tank from being subjected to excessive pressure differential caused by extreme temperature change.

3.7 SECURING AND REMOVAL FROM SITE

- .1 Check vapour levels prior to transport.
 - .1 Remove vapour if required.
- .2 Dispose of tank in accordance with local, Provincial and Federal regulations.
- .3 Truck removal.
 - .1 Secure tank on truck for transport to disposal site.
 - .2 Cut suitable openings in tank sides to render tank unusable.
 - .3 Ensure 3 mm vent hole located at uppermost point on tank.

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1.1 RELATED REQUIREMENTS

- .1 Section 03 20 00 Concrete Reinforcing.
- .2 Section 03 30 00 Cast-in-Place Concrete.
- .3 Section 03 35 00 Concrete Finishing.
- .4 Section 07 92 00 Joint Sealants.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A23.1-2014, Concrete Materials and Methods of Concrete Construction.
 - .2 CAN/CSA-O86-19, Engineering Design in Wood (Limit States Design).
 - .3 CSA O121-17, Douglas Fir Plywood.
 - .4 CSA O151-17, Canadian Softwood Plywood.
 - .5 CSA O153-13 (R2017), Poplar Plywood.
 - .6 CAN3-O188.0, Standard Test Methods for Mat-Formed Wood Particleboards and Waferboard.
 - .7 CSA O437 Series-93 (R2013), Standards for OSB and Waferboard.
 - .8 CSA S269.1-2016, Falsework for Construction Purposes.
 - .9 CAN/CSA-S269.3-M92 (R2013), Concrete Formwork.
- .2 Council of Forest Industries of British Columbia (COFI)
 - .1 COFI Exterior Plywood for Concrete Formwork.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 Submittal Procedures.
- .2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings.
- .3 Indicate sequence of erection and removal of formwork/falsework as directed by Consultant.
- .4 Each shop drawing submitted shall bear stamp and signature of qualified professional engineer registered or licensed to practice in the Province of Prince Edward Island, Canada.

1.4 QUALITY CONTROL

- .1 Pre-Pour Meeting
 - .1 Attend a quality control meeting including all relevant sub-trades to review the quality of the formwork, reinforcement installation, exposed concrete finishes, under floor services, pour sequence and related issues.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material generated by this Section.
- .2 Place in appropriate on-site bins in accordance with Waste Management Plan.
- .3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.
- .4 Place materials defined as hazardous or toxic waste in designated containers.
- .5 Ensure emptied containers are sealed and stored safely for disposal.
- .6 Use sealers, form release and stripping agents that are non-toxic, biodegradable and have zero or low VOC's.

2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121.
 - .2 For concrete with special architectural features, use formwork materials to CAN/CSA-A23.1.
- .2 Tubular column forms: round, spirally wound laminated fiber forms, smooth, non patterned PVC internally treated with release material. Spiral pattern to show in hardened concrete.
- .3 Form ties:
 - .1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface.
 - .2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .4 Form release agent: non-toxic.
- .5 Form release agent: chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing concrete from sticking to forms.
- .6 Falsework materials: to CSA-S269.1.
- .7 Sealant: to Section 07 92 00 Joint Sealing. Allow for sleeves through the foundation as 1
 - Allow for sleeves through the foundation as follows. Locations to be as directed on site.
 - .1 1-150mm diameter sleeve;
 - .2 1-250mm diameter sleeves;
 - .3 3-300mm diameter sleeves;
 - .4 1-400mm diameter sleeves;

3 Execution

3.1 FABRICATION AND ERECTION

- .1 Verify lines, levels and centers before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 Obtain Consultant's approval for framing openings not indicated on drawings.
- .3 Hand trim sides and bottoms of excavation and remove loose earth from earth forms before placing concrete.
- .4 Fabricate and erect falsework in accordance with CSA S269.1.
- .5 Refer to architectural drawings for concrete members requiring architectural exposed finishes.
- .6 Do not place shores and mud sills on frozen ground.
- .7 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.
- .8 Align form joints and make watertight. Keep form joints to minimum.
- .9 Locate horizontal form joints for exposed columns 2400 mm above finished floor elevation.
- .10 Use 25 mm chamfer strips on external corners and square at interior corners, joints, unless specified otherwise.
- .11 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .12 Construct forms for architectural concrete, and place ties as indicated and/or as directed. Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.
- .13 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .14 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.

3.2 REMOVAL

- .1 Leave formwork in place for following minimum periods of time after placing concrete.
 - .1 72 hours for walls and sides of beams.
 - .2 72 hours for columns.
 - .3 28 days for beam soffits, slabs, decks and other structural members, or 7 days when replaced immediately with adequate shoring to standard specified for falsework.
 - .4 72 hours for footings and abutments.
- .2 Re-use formwork and falsework subject to requirements of CAN/CSA-A23.1.

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1.1 **RELATED REQUIREMENTS**

- Section 03 10 00 Concrete Forming and Accessories. .1
- Section 03 30 00 Cast-in-Place Concrete. .2
- .3 Section 32 16 00 - Curbs, Gutters, Sidewalks and Driveways.

1.2 REFERENCES

- American Concrete Institute (ACI) .1
 - ACI 315R-2018, Manual of Engineering and Placing Drawings for Reinforced .1 Concrete Structure.
 - .2 American National Standards Institute/American Concrete Institute (ANSI/ACI) ANSI/ACI 315-99, Details and Detailing of Concrete Reinforcement. .1 .3
 - American Society for Testing and Materials (ASTM)
 - ASTM A775 / A775M-91c, Specification for Epoxy-Coated Reinforcing Steel .1 Bars.
 - .4 Canadian Standards Association (CSA)
 - CAN/CSA-A23.1-14, Concrete Materials and Methods of Concrete .1 Construction.
 - .2 CAN3-A23.3-14, Design of Concrete Structures for Buildings.
 - CSA G30.3-M1983 (R1998), Cold Drawn Steel Wire for Concrete .3 Reinforcement.
 - .4 CSA G30.5-M1983 (R1998), Welded Steel Wire Fabric for Concrete Reinforcement.
 - .5 CSA G30.14-M1983 (R1998), Deformed Steel Wire for Concrete Reinforcement.
 - CSA G30.15-M1983 (R1998), Welded Deformed Steel Wire Fabric for .6 Concrete Reinforcement.
 - .7 CAN/CSA-G30.18-09 (R2014), Billet-Steel Bars for Concrete Reinforcement.
 - .8 CAN/CSA-G40.21-13, Structural Quality Steels.
 - CAN/CSA-G164-2018, Hot Dip Galvanizing of Irregularly Shaped Articles. .9
 - CSA W186-M1990 (R2016), Welding of Reinforcing Bars in Reinforced .10 Concrete Construction.

1.3 SOURCE QUALITY CONTROL

- Upon request, provide Consultant with certified copy of mill test report of reinforcing steel, .1 showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcing work.
- .2 Upon request inform Consultant of proposed source of material to be supplied.

1.4 SHOP DRAWINGS

- Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 .1 Submittal Procedures.
- .2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and mechanical splices if approved by Consultant, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada, ANSI/ACI 315 and ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.
- Detail lap lengths and bar development lengths to CAN3-A23.3, unless otherwise indicated. .3 Provide type A tension lap splices where indicated.
- .4 Each shop drawing submitted shall bear stamp and signature of qualified professional engineer registered or licensed to practice in the Province of Prince Edward Island, Canada.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material generated by this Section.
- .2 Place in appropriate on-site bins in accordance with Waste Management Plan.
- .3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Consultant.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Cold-drawn annealed steel wire ties: to CSA G30.3.
- .4 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only. .1 All 152 x 152 MW x 18.7 x 18.7
- .5 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.
- .6 Mechanical splices: subject to approval of Consultant.
- .7 Steel Fiber: DRAMIX 3D 55 / 60 to Manufacturers recommendations.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures unless indicated otherwise.
- .2 Obtain Consultant's approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

3 Execution

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Consultant.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1.
- .2 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply a thick even film of mineral lubricating grease.
- .3 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.
- .4 Ensure cover to reinforcement is maintained during concrete pour.
- .5 Protect epoxy coated portions of bars with covering during transportation and handling.
- .6 Provide concrete half-bricks to support welded wire mesh in proper position in floor slabs during placing of concrete.
- .7 Provide 20mm dowels into thickened concrete slabs at 1200mm on center or as noted on drawings for all masonry load bearing walls.

3.3 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

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1.1 DESCRIPTION OF WORK

- .1 The work of this Section comprises the furnishings of all equipment, labor and materials necessary for the provision of all concrete for the work of this project, which includes but is not necessarily limited to, the following:
 - .1 All concrete work required for the building which includes, but is NOT necessarily limited to:
 - .1 Foundation walls and footings.
 - .2 Entrance/exit slabs and sidewalks.
 - .3 Floor slabs on grade and related concrete stairs.
 - .4 Suspended slab at top of elevator hoist way.
 - .5 Infill at treads and landings of metal stair pans.
 - .6 All concrete work including housekeeping pads and reinforcement, both inside and outside of building, required for the work of Mechanical and Electrical Division. This work will be the financial responsibility of, and carried out by the General Contractor under the direction of the Mechanical and Electrical Division Subcontractors, respectively.

1.2 RELATED REQUIREMENTS

- .1 Section 03 10 00 Concrete Forming and Accessories.
- .2 Section 03 20 00 Concrete Reinforcing.
- .3 Section 03 35 00 Concrete Finishing.
- .4 Section 04 05 00 Common Work Results for Masonry.
- .5 Section 05 50 00 Metal Fabrications.
- .6 Section 31 23 00 Excavation and Fill.
- .7 Section 32 16 00 Curbs, Gutters, Sidewalks and Driveways.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM C109/C109M-16, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50-mm Cube Specimens).
 - .2 ASTM C260-10a (2016), Specification for Air-Entraining Admixtures for Concrete.
 - .3 ASTM C309-11, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .4 ASTM C332-17, Specification for Lightweight Aggregates for Insulating Concrete.
 - .5 ASTM C494-17, Specification for Chemical Admixtures for Concrete.
 - .6 ASTM C827-16, Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
 - .7 ASTM C939-16a, Test Method for Flow of Grout for Preplaced-Aggregate Concrete.
 - .8 ASTM D1751-04 (2013), Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).
 - .9 ASTM D1752-04a (2013), Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.
- .3 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A3000-18, Cementitious Materials Compendium.
 - .2 CAN/CSA-A23.1-14, Concrete Materials and Methods of Concrete Construction.
 - .3 CAN/CSA-A23.2-14, Methods of Test for Concrete.

1.4 CERTIFICATES

- .1 Submit certificates in accordance with Section 01 33 00 Submittal Procedures.
- .2 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.
- .3 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.

1.5 TESTING AND INSPECTION

- .1 Testing and inspection of concrete and concrete materials will be carried out by testing laboratory engaged and paid by the Contractor _____Owner_____in accordance with Section 01 29 83 - Payment Procedures: Testing Laboratory Services. Frequency of tests will be determined by the testing laboratory.
- .2 Remove defective concrete and embedded debris and repair as directed by Consultant.

1.6 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 Quality Control.
- .2 Pre-Pour Meeting
 - .1 Convene a pre-pour meeting 2 weeks prior to beginning concrete works.
 - .2 Ensure concrete forming, finishing and concrete supplier personnel, attend.
 - .3 Verify project requirements.
 - .4 Review all aspects of the work including construction sequence, access to work by other Trade Contractors, Quality of falsework for trueness to dimensions, quality of finish expected at exposed concrete and all other aspects of the work.
- .3 Submit to Consultant, minimum 4 weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.
- .4 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures for review by Consultant on following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Curing.
 - .5 Finishes.
 - .6 Formwork removal.
 - .7 Joints.

1.7 ENVIRONMENTAL CONDITIONS

- .1 Provide all protection during concrete placing and curing in hot and in cold weather, and to CAN/CSA-A23.1, Clause 21.
- .2 Prior to placing, ensure that all needed material and equipment is on hand, and obtain the Consultant's approval for particular methods to be used.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material generated by this Section.
- .2 Place in appropriate on-site bins in accordance with Waste Management Plan.
- .3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.
- .4 Use excess concrete for: additional paving, post footing anchorage, swale rip-rap reinforcing, mud slab, flowable fill, retaining wall footing ballast, storm structure covers, underground utility pipe kickers, storm pipe flared end section, toe wash protection, shoulder and toe outfall restraints for temporary erosion pipes.
- .5 Use trigger operated spray nozzles for water hoses.
- .6 Designate a cleaning area for tools to limit water use and runoff.
- .7 Carefully coordinate the specified concrete work with weather conditions.

- .8 Ensure emptied containers are sealed and stored safely for disposal.
- .9 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, noncombustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.
- .10 Choose least harmful, appropriate cleaning method which will perform adequately.

2 **Products**

2.1 MATERIALS

- Portland cement: to CAN/CSA-A5. .1
- Blended hydraulic cement: to CSA A362-98. .2
- .3 Supplementary cementing materials: to CAN/CSA-A23.5.
- .4 Cementitious hydraulic slag: to CAN/CSA-A363.
- Water: to CAN/CSA-A23.1. .5
- .6 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.
- Air entraining admixture: to CSA CAN3 A 266.1 .7
- .8 Chemical admixtures: to CSA CAN3 - A 266.2 Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .9 Shrinkage compensating grout: premixed compound consisting of metallic aggregate. Portland cement, water reducing and plasticizing agents.
 - Compressive strength: 50 MPa at 28 days. .1
 - .2 Consistency:

.3

- Fluid: to ASTM C827. Time of efflux through flow cone (ASTM C939), under .1 30s.
- .2 Flowable: to ASTM C827. Flow table, 5 drops in 3s, (ASTM C109, applicable portion) 125 to 145%.
- .3 Plastic: to ASTM C827. Flow table, 5 drops in 3s, (ASTM C109, applicable portions) 100 to 125 %.
- .4 Dry pack to manufacturer's requirements.
- Net shrinkage at 28 days: maximum nil %.
- .10 Curing compound: to CAN/CSA-A23.1 white and to ASTM C309, Type 1-chlorinated rubber. Coordinate with finish floor materials for compatibility.
- .11 Premoulded waterstops: bentonite and polyethylene sandwich, minimum 19mm thickness x 25mm wide, water-activated, expanding type forming compression seal. .1
 - Acceptable Material:
 - Parastop. .1
 - .2 Volclay Waterstop-RX.
 - Hydrotite. .3
- Ribbed waterstops: extruded PVC, 150mm long, flanges tapered 6.3mm to 9.5mm at center .12 bulb with pre-welded corners and intersecting pieces to following properties:
 - Tensile strength: to ASTM D412, Die C method, minimum 11.4MPa. .1
 - .2 Elongation: to ASTM D412, Die C method, minimum 275%.
 - .3 Tear resistance: to ASTM D624, Die B method minimum 48 kN/m.
 - .4 Acceptable Material:
 - W.R. Meadows Sealtight No. 6380. .1
 - .2 CPD No. 5.
- Labyrinth waterstops: extruded PVC Arctic Grade of sizes indicated with prewelded corner .13 and intersecting pieces.
 - Tensile strength: to ASTM D412, method A, Die "C". .1
 - .2 Elongation: to ASTM D412, method A, Die "C", minimum 250%.
 - .3 Tear resistance: to ASTM D624, method A, Die "B", minimum 30 kN/m.
- Premoulded joint fillers: .14
 - Bituminous impregnated fiber board: to ASTM D1751. .1
- Weep hole tubes: galvanized steel or plastic. .15

.16 Dampproofing:

- .1 Refer to Section 07 11 13 Bituminous Dampproofing.
- .17 Polyethylene film: 10 mil thickness to CAN/CGSB-51.34.
- .18 Joint Sealer: chemical curing, multi-component, Class B, Type I for horizontal joints, Type II for vertical joints to CAN/CGSB 19.24.
- .19 Under Slab Vapor Barrier: see Section 31 23 00 Excavation and Fill.
- .20 The use of super plastizer for the structural slab and retaining wall is acceptable provided it meets the requirements of CAN/CSA-A23.1.

2.2 MIXES

- .1 Proportion normal density concrete in accordance with CAN/CSA-A23.1, Alternative 1 to give following properties:
 - .1 Concrete foundation walls and footings, except where specified otherwise:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 25 MPa.
 - .3 Class of exposure: F-2.
 - .4 Nominal size of coarse aggregate: 20mm.
 - .5 Slump at point and time of discharge: 80mm +/- 20.
 - .6 Air content: 4 to 7%
 - .2 Concrete floor slabs generally, office and _____ area:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 25 MPa.
 - .3 Class of exposure: N.
 - .4 Nominal size of coarse aggregate: 20mm.
 - .5 Slump at point and time of discharge: 80mm +/- 20
 - .3 Concrete floor slabs Service Bay:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Class of exposure: C-2.
 - .4 Nominal size of coarse aggregate: 20mm.
 - .5 Slump at point and time of discharge: Mass Concrete 40mm ±20 & Structural Concrete 80mm +/- 20.
 - .6 Air content: to Table 10.
 - .4 Concrete floor slabs Suspended Floor and Columns:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 30 MPa.
 - .3 Class of exposure: N.
 - .4 Nominal size of coarse aggregate: 20mm.
 - .5 Slump at point and time of discharge: Mass Concrete 40mm ±20 & Structural Concrete 80mm +/- 20.
 - .6 Air content: 0%.
 - .5 Concrete exterior retaining walls & ramps structurally reinforced:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Class of exposure: C-1.
 - .4 Nominal size of coarse aggregate: 20mm.
 - .5 Slump at point and time of discharge: Mass Concrete 40mm ±20 & Structural Concrete 80mm +/- 20.
 - .6 Air content: to Table 10.
 - .6 Exterior Concrete Slabs and Sidewalks:
 - .1 Cement: use Type 10 Portland cement.
 - .2 Minimum compressive strength at 28 days: 35 MPa.
 - .3 Class of exposure: C-2.
 - .4 Nominal size of course aggregate: 20 mm.
 - .5 Slump at point and time of discharge: 80 mm +/- 20.

- .6 Air content: to Table 10.
- .2 Topping at Service Bay Floor: 25mm thick Mastertop Anvil Top 300.
- .3 If requested by Consultant, provide certification that plant, equipment, and all materials to be used in concrete comply with the requirements of CAN/CSA-A23.1.
- .4 Use of calcium chloride not permitted.

2.3 ADMIXTURES

- .1 Admixtures will be permitted only to correct deficiency in mixture or to make correct placement requirements as recommended by Testing Laboratory and approved by Consultant.
- .2 Use of accelerating admixtures, if approved by Consultant, will not relax cold weather placement requirements of CAN/CSA-A23.1. Use of calcium chloride not permitted.

2.4 POWDER PIGMENTS

- .1 Color selected from manufacturers standard range by Consultant.
- .2 Acceptable Material:
 - .1 Davis Colors powder pigments. www.daviscolors.com.
 - .2 MasterTop 100 with MasterKure HD 200 WB.

3 Execution

3.1 **PREPARATION**

- .1 Obtain Consultant's approval before placing concrete. Provide 24 hours notice prior to placing of concrete.
- .2 Pumping of concrete will be permitted. Place concrete in accordance with CAN/CSA-A23.1 to meet all requirements of mix design at point of placement.
- .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .4 Prior to placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .6 In locations where new concrete is doweled to existing work, drill holes in existing concrete. Place steel dowels of deformed steel reinforcing bars and pack solidly with shrinkage compensating grout or as noted on drawings to anchor and hold dowels in positions as indicated.
- .7 Do not place load upon new concrete until authorized by Consultant.

3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CAN/CSA-A23.1.
- .2 Sleeves and inserts.
 - .1 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated or approved by Consultant.
 - .2 Where approved by Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 x 100 mm not indicated, must be approved by Consultant.
 - .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Consultant before placing of concrete.
 - .4 Check locations and sizes of sleeves and openings shown on drawings.
 - .5 Sleeve, do not core required openings.
- .3 Anchor bolts.
 - .1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
- .4 Drainage holes and weep holes:

- .1 Form weep holes and drainage holes in accordance with Section 03 10 00 Concrete Forming and Accessories.
- .2 If wood forms are used, remove them after concrete has set.
- .3 Install weep hole tubes and drains as indicated.
- .5 Dowels: In locations where new concrete is doweled to existing concrete drill holes in existing concrete to depths, diameters and spacing indicated and install dowels using natural aggregate grout mixed to flow consistency to suit application, in strict accordance with manufacturer's instructions or as noted on drawings.
- .6 Placing Grout: Place shrinkage compensating grout under base plates for structural steel and other equipment, using procedures in accordance with manufacturer's recommendations, which result in 100%, contact over grouted area.
 - .1 Refer to structural drawings for thickness and edge profile of grout under base plate for structural steel.
- .7 Finishing.
 - .1 Finish concrete to CAN/CSA-A23.1 with final finishing as follows:
 - .1 Foundation walls: ensure that all form ties etc. are cut back to minimum 15mm below surface and depressions packed with cement mortar. Remove fins and other projections on exterior face to provide smooth surface for installation of membrane waterproofing, damp proofing, insulation or polyethylene slip sheet, as applicable at exterior and insulation on interior.
 - .2 Refer to Section 03 35 00 for interior & exterior slab finish.
 - .2 Rub exposed edges of concrete with Carborundum to produce 3mm radiused edges unless otherwise detailed.
- .8 Waterstops.
 - .1 Install waterstops to provide continuous water seal. Do not distort or pierce water stop in such a way as to hamper performance. Do not displace reinforcement when installing waterstops. Use equipment to manufacturer's requirements to field splice waterstops. Tie waterstops rigidly in place.
 - .2 Use only straight heat sealed butt joints in field. Use factory welded corners and intersections unless otherwise approved by Consultant.
- .9 Joint fillers.
 - .1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Consultant. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
 - .2 Locate and form isolation joints as indicated. Install joint filler.
 - .3 Use 12 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 12 mm of finished slab surface unless indicated otherwise.
- .10 Under Slab Vapor Barrier.
 - .1 Install Under slab Vapor Barrier directly under concrete slabs-on-grade inside building.
 - .2 Lap membrane minimum 150 mm at joints and seal.
 - .3 Seal punctures in membrane before placing concrete. Use patching material at least 150 mm larger than puncture and seal.
- .11 Polyethylene Slip Sheet/Bond Breaker
 - .1 Install 10mil polyethylene slip-sheet at exterior face of all foundation walls from top of footing to future finished grade. Provide temporary support until backfilling is completed.
 - .2 Use 10mil polyethylene sheet as bond breaker between foundation walls and slabson-grade and slabs on steel floor decking. Provide temporary support until slabs are placed. Trim flush with top of slab.

3.3 SITE TOLERANCE

.1 Concrete tolerance in accordance with CAN/CSA-A23.1 straight edge method.

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1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 Cast-in-Place Concrete.
- .2 Section 32 16 00 Curbs, Gutters, Sidewalks and Driveways.

1.2 DESCRIPTION OF WORK

- .1 The work of this section comprises the furnishing of all labor, material and equipment necessary for the following, in accordance with the requirements of this Section and as shown on the Drawings.
 - .1 Finishing of all interior floor slabs, stair treads and landings and in-fill areas.
 - .2 Finishing of exterior slabs at entrances, exits and walkways.
 - .3 Supply and application of all curing, sealing, hardening compounds.
 - .4 Saw-cutting of all saw-cut control joints.
 - .5 Filling of saw-cut control joints at interior concrete floor slabs.
 - .6 Sandblasting concrete finishes.

1.3 REFERENCES

.2

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
 - Canadian Standards Association (CSA)
 - .1 CSA-A23.1-09, Concrete Materials and Methods of Concrete Construction.

1.4 **PERFORMANCE REQUIREMENTS**

- .1 Product quality and quality of work in accordance with Section 01 61 00 Common Product Requirements.
- .2 Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

1.5 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00 Submittal Procedures.
- .2 Submit WHMIS MSDS Material Safety Data Sheets in accordance with Section 01 33 00 -Submittal Procedures. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for concrete floor treatment materials. Indicate VOC content.
- .3 Include application instructions for concrete floor treatments.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Work area:
 - .1 Make the work area water tight protected against rain and detrimental weather conditions.
- .2 Temperature:
 - .1 Maintain ambient temperature of not less than 10°C from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 80% during same period.

.3 Moisture:

- .1 Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.
- .4 Safety:
 - .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
- .5 Ventilation:
 - .1 Contractor will arrange for ventilation system to be operated during installation of concrete floor treatment materials.

- .2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. .3
 - Provide continuous ventilation during and after coating application.

1.7 QUALITY CONTROL

- .1 **Pre-Pour Meeting**
 - Attend a pre-pour quality control meeting including all relevant sub-trades to review .1 the quality of exposed concrete finishes, hardener/sealer application, saw cuts, prepared sub-base, under floor services, pour sequence and related issues.
 - .2 Prior to pouring concrete, provide a 750mm high x 450mm x 450mm sample complete with chamfered corners for the purpose of establishing finish quality of exposed concrete columns, walls and ceilings.
 - The quality of the finished concrete is to be equal or better than the accepted sample. .3
 - .4 Where the quality of finished concrete falls short of accepted sample for exposed concrete, the Contractor must pay all associated costs to achieve quality of exposed concrete as provided by approved sample.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material generated by this Section.
- Place in appropriate on-site bins in accordance with Waste Management Plan. .2
- .3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.
- Place materials defined as hazardous or toxic waste in designated containers. .4
- Ensure emptied containers are sealed and stored safely for disposal. .5
- Use chemical hardeners that are non-toxic. .6
- Dispose of surplus chemical and finishing materials in accordance with federal, provincial and .7 municipal regulations.
- .8 Dispose of waste from stripping of floors in a manner that will not have unfavorable effects on the environment.

2 **Products**

2.1 **CHEMICAL HARDENERS**

- Type 1 Sodium silicate. .1
- .2 Water: potable.

2.2 SEALING COMPOUNDS

- Surface sealer: to CAN/CGSB-25.20, Type 1 solvent-based, clear. .1
- Surface sealers may not be manufactured or formulated with aromatic solvents hexavalent .2 chromium and their compounds.

2.3 **CURING AND SEALING COMPOUNDS**

- Curing for plain interior floor slabs: all new interior floors at ground floor level shall be moist .1 cured in accordance with the requirements of CAN/CSA A23.1-00, Par, 21.1.6.1 (a) and/or (b). The use of proprietary curing and sealing compounds not permitted.
 - Moist cure shall not be achieved with flooding which may cause damage to existing .1 adjacent occupied areas.
- .2 Curing and sealing compound for floor slab and housekeeping pad: liquid type, water-based acrylic to ASTM C-309.
 - Acceptable Material: .1
 - Meadows "Vocomp 20". .1
 - .2 CPD Acrylic Cure and Seal (Water Based).
 - .3 Sternson Florseal WB.
 - Master Builders "Master-Kure-100W". .4

- Pecora DynaTrol II SG. .5
- Cementitious Saw-Cut Control Joint Filler:
 - One-component, non-shrink, fast-setting and drying, polymer-modified cementitious .1 mortar, compatible with adhesive for resilient sheet flooring. .2
 - Acceptable Material:
 - MAPEI Planipatch. .1
 - Master Builders EMACO R-300.
- .4 Flexible Saw-Cut Control Joint Filler:
 - Two component, non-priming, self-leveling, chemical curing polyurethane sealant. .1
 - .2 Acceptable Material:

.2

- Tremco "THC-900". .1
- .2 Sonneborn "SL-2".
- .3 Pecora NR 200.
- .5 Use compatible additives, admixtures, curing compounds and hardeners.
- .6 Do not sprinkle dry cement or dry cement and sand mixture over concrete surfaces.

2.4 MIXES

.3

Mixing, ratios and application in accordance with manufacturer's instructions. .1

3 Execution

3.1 **EXAMINATION**

.1 Verify that slab surfaces are ready to receive work and elevations are as indicated on shop drawings. Refer also to Section 03 10 00 - Concrete Forming and Accessories.

3.2 PREPARATION OF EXISTING SLAB

- Rub exposed sharp edges of concrete with carborundum to produce 3 mm radiused edges .1 unless otherwise indicated.
- .2 Saw cut control joints to CSA-A23.1, 24 hours maximum after placing of concrete. Saw cuts not cut straight will be rejected and concrete replaced.
- .3 Use strong solvent to remove chlorinated rubber or existing surface coatings.
- Use protective clothing during stripping of chlorinated rubber or existing surface coatings. .4

3.3 APPLICATION

- .1 After floor treatment is dry, seal control joints and joints at junction with vertical surfaces with Joint Filler.
- .2 Apply floor treatment in accordance with Sealer manufacturer's written instructions.
- Clean over spray. Clean sealant from adjacent surfaces. .3
- .4 Co-ordinate curing and sealing compounds with floor finishes.

3.4 **CONCRETE FINISHES**

- Finish concrete in accordance with CAN3-A23.1. .1
 - Interior floor slabs: Hard, smooth dense, troweled to flat tolerance classification (5mm .1 in 3m).
 - .2 Finishes:
 - Exposed concrete is to be smooth, even, joints are to be rubbed to remove .1 joint edges and free from excess air pockets. All as evaluated against the submitted sample.
- .2 Do not sprinkle dry cement or dry cement and sand mixture over concrete surfaces.
- Saw cut crack control joints to CAN3-A23.1, to match existing locations and to layouts .3 indicated on drawings.

3.5 APPLICATION OF CURING AND SEALING COMPOUNDS

- .1 Apply in strict accordance with manufacturer's instructions and at rate recommended by manufacturer to meet moisture-retention requirements of ASTM C309.
- .2 Apply to concrete floor slab using appropriate type as specified under PART 2 of this section. Use ONLY curing and sealing compound by same manufacturer as manufacturer of hardener, and recommended by manufacturer as compatible with hardener.
 - .1 Where applicable apply curing and sealing compound following application of hardener at time recommended by manufacturer.
 - .2 Coordinate with finish schedule for applied flooring.

3.6 **PROTECTION**

.1 Protect finished installation in accordance with manufacturer's instructions.

3.7 FILLING OF SAW-CUT CONTROL JOINTS

- .1 Clean and prepare saw-cut control joints at interior floor slabs to joint filler manufacturer's requirements.
- .2 Install self-leveling sealant at the bottom of all saw-cut control joints in the concrete floor slabs.
- .3 Install cementitious joint filler over flexible sealant in all joints. Strike filler flush with surface of concrete slab and leave ready for installation of floor finish.

3.8 APPLICATION OF EXTERIOR SEALING COMPOUNDS

.1 After concrete has cured for thirty (30) days apply sealing compound to all exterior concrete walks, in accordance with manufacturer's recommendations.

1.1 SUMMARY

- .1 Work included: Provide metal fabrications including but not limited to following:
 - .1 Sliding grille track supports.
 - .2 Rolling shutter steel jamb framing.
 - .3 Overhead door jambs and headers.
 - .4 Overhead door track and operator anchorage.
 - .5 Medical gas ceiling column supports.
 - .6 Door jamb extensions for doors with power operators.
 - .7 Steel supports within architectural woodwork.
 - .8 Steel support of low walls.
 - .9 Lighting valance supports.
 - .10 All glass partition supports.
 - .11 Swing-up grab bar supports.
 - .12 Metal brackets to support lights and steel columns.
 - .13 Integral sink and counter support.
 - .14 Locker room bench supports.
 - .15 Miscellaneous sections and framing.
 - .16 Bollards.
 - .17 Roof Ladder.
 - .18 Miscellaneous mechanical equipment brackets.
 - .19 Miscellaneous masonry angles, lintels & brackets.

1.2 RELATED REQUIREMENTS

- .1 Following description of work is included for reference only and shall not be presumed to be complete:
 - .1 Section 03 30 00 Cast-in-Place Concrete.
 - .2 Section 04 05 00 Common Work Results for Masonry.
 - .3 Section 04 05 19 Masonry Anchorage and Reinforcing.
 - .4 Section 05 12 23 Structural Steel For Buildings.
 - .5 Section 05 21 00 Steel Joist Framing.
 - .6 Section 05 31 00 Steel Deck.
 - .7 Section 05 51 00 Metal Stairs.
 - .8 Section 06 20 00 Finish Carpentry.
 - .9 Section 06 41 00 Architectural Wood Casework.
 - .10 Section 09 91 00 Painting.
 - .11 Division 10 Specialties.

1.3 **REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-07, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A269-10, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-07b, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .4 ASTM A123/A123M-09, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .5 ASTM A153/A153M-09, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - .6 ASTM A325M-07a, Specification for High-Strength Bolts for Structural Steel joints.
 - .7 ASTM A653M-09a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

- .8 ASTM B117-09, Practice for Operating Salt Spray (Fog) Apparatus.
- .9 ASTM E119-09c, Test Methods for Fire Tests of Building Construction and Materials.
- .10 ASTM E736-00 (2006), Test Method for Cohesion/Adhesion of Sprayed Fire-
- Resistive Materials Applied to Structural Members.
- .11 ASTM F436M-10, Specification for Hardened Steel Washers.
- .12 ASTM F738M-02 (2008), Specification for Stainless Steel Metric Bolts, Screws, and Studs.
- .13 ASTM F836M-02, Specification for Style 1 Stainless Steel Metric Nuts.
- .14 ASTM F844-07a, Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB 1.181-99, Ready Mixed Organic Zinc-Rich Coating
 - .3 CAN/CGSB 85.10-99, Protective Coatings for Metals
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA S16-09, Design of Steel Structures.
 - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding).
 - .6 CSA S136-07 North American Specification for the Design of Cold Formed Steel Structural Members (Using Appendix B provisions applicable to Canada).
 - .7 CSA W47.1-09 Certification of Companies for Fusion Welding of Steel.
 - .8 CSA W47.2-M1987 (R2008) Certification of Companies for Fusion Welding of Aluminum.
 - .9 CSA W48.1-M1991 (R1998) Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.
 - .10 CSA W48-06 Filler Metals and Allied Materials for Metal Arc Welding.
 - .11 CSA W59-03 (R2008) Welded Steel Construction (Metal Arc Welding).
 - .12 CSA W117.2-06 Safety in Welding, Cutting, and Allied Processes.
 - .13 SSPC Steel Structures Painting Council, "Steel Structures Painting Manual, Vol. 2".

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submission procedures.
- .2 Shop Drawings:
 - .1 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - .2 Indicate welded connections using standard welding symbols. Indicate net weld lengths.
 - .3 Each shop drawing submitted shall bear stamp and signature of qualified professional engineer registered or licensed to practice in the Province of Prince Edward Island, Canada.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 00: Submission procedures.

1.7 QUALITY ASSURANCE

.1 Welders' Certificates: Submit to Section 01 33 00 requirements, certifying welders employed on the Work, verifying qualification within the previous twelve (12) months to CSA-W47.1 (steel) CSA-W47.2 (aluminum) CSA-W55.3.

- .2 elded Steel Construction: CSA-W59.
- .3 Welded Aluminum Construction: CSA-W59.2.
- .4 Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Coordinate deliveries to comply with construction schedule and arrange ahead for strategic off-the-ground, undercover storage locations. Do not load areas beyond the designed limits.
- .2 Handle and store metal materials at job site in such a manner to prevent damage to other materials, (to existing buildings) or property.
- .3 Handle components with care, and Provide protection for surfaces against marring or other damage. Ship and store members with cardboard or other resilient spacers between surfaces. Use lifting chokers of material which will not damage surface of steel members.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material generated by this Section.
- .2 Place in appropriate on-site bins in accordance with Waste Management Plan.
- .3 A clean worksite is mandatory at all times. Failure to maintain the site in a clean, safe condition shall result in the Owner initiating a clean-up and related costs being deducted from progress claims.

2 Products

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2.1 MATERIALS

- .1 Steel sections and plates: New Material Conforming to CAN/CSA-G40.20/G40.21, Grade 300W.
- .2 Hollow Structural Sections: New material conforming to CSA G40.20 and CSA G40.21, Grade 350W, Class H.
- .3 Steel Pipe: ASTM A53, Type E or S, Grade A or B, Standard weight, Schedule 40.
- .4 Stainless Steel:
 - .1 Provide highest architectural quality in various forms, straight and true. Ensure there are no scratches, scars, creases, buckles, ripples or chatter marks. Provide finished surfaces suitable for polishing where required. Ensure finished surfaces exposed to view are free of pitting, seam marks, roller marks, oil-canning, stains, discolorations or other imperfections.
 - .2 Stainless Steel Sheet, Strip, Plate, and Flat Bar: ASTM A167 or ASTM A666, Type 304 and Type 316 alloy with exposed surfaces having No. 4 polished finish. Sizes as required to meet design requirements.
 - .3 Stainless Steel Tubing: ASTM A554, Grade MT 304.
 - .4 Stainless Steel Exterior Tubing: ASTM A554, Grade MT 316.
 - .5 Stainless Steel Pipe: ASTM A312M, Grade TP 304.
 - .6 Stainless Steel Exterior Pipe: ASTM A312M, Grade TP 316.
 - .7 Castings: ASTM A743M, Grade CF 8 or Grade CF 20. Type 304.
 - .8 Castings: ASTM A743M, Grade CF 8M. Type 316.
- .5 Structural aluminum: to CSA HA series M, Type 6061-T6, clear anodized.
- .6 Welding Materials: Conforming to CSA W48.1-M and CSA W59-M.
 - High Strength Bolts: Supply bolts, nuts and washers conforming with ASTM A 325M. Supply each type and size of bolt and nut of same manufacture and of same lot.
 - .1 Bolts: Heavy, hexagon head high strength structural bolts, of standard size, of lengths required for thickness of members joined and for type of connection.
 - .2 Nuts: Heavy hexagon semi-finished nuts.
 - .3 Washers: For general use bolt, nut and stud application to provide increased bearing surfaces, spacing and to prevent galling. Flat and smooth hardened washers, quenched and tempered to suit applications and conforms to ASTM F844. Provide AISI Type 304 stainless steel washers at exterior locations.

- .4 Hardened Steel Washers: To suit applications and conforms to ASTM F436M.
- .5 Stainless Steel Bolts: To suit applications and conforms to ASTM F738M.
- .6 Stainless Steel Nuts: To suit applications and conforms to ASTM F836M.
- .7 Lock Washers: Helical spring type steel "lock" washers to suit applications and conforms to federal specification FF-W-84. Provide AISI Type 304 stainless steel lock washers at exterior locations.
- .8 Security Fasteners: Button head Torx® Plus R screw tamper resistant # 10, 25 mm long 2 per glass stop minimum stainless steel machine screws.
- .8 Common or Ordinary Bolts and Anchor Bolts: Unfinished bolts conforming with ASTM A307, Grade A, with hexagon heads and nuts where exposed in the finish work. Supply common bolts of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers. Supply anchor bolts of lengths noted, but projecting not less than 13 mm beyond nut unless otherwise noted.
- .9 Galvanized Primer Paint: Zinc rich conforming to CAN/CGSB-1.181 for new galvanized metal.
- .10 High Performance Corrosion Protection for Perimeter Steel: 1 component, moisture cured, micaceous iron oxide/zinc filled primer, UL Classified in accordance with UL 263 (ASTM E119), corrosion protection in accordance with ASTM B117, meeting Class B Slip Certification in accordance with American Institute of Steel Construction (AISC) requirements for slip critical bolted connections, tested in accordance with ASTM E736 for its suitability for application of primer over steel to receive sprayed fireproofing "Series394, Perime Prime" by Tnemec Company Incorporated; www.tnemec.com.
- .11 Steel Pipe Handrails: Conforming to ASTM A53M, Type "S", Schedule 40, Grade A steel pipe of sizes down.
- .12 Steel Pipe Bollards: Conforming to ASTM A53M, Schedule 80 steel pipe of sizes shown.
- .13 Galvanized: Hot dipped galvanized with minimum zinc coating of 600 g/m2 to CAN/CSA-G164-M.
- .14 Galvanized Sheet Steel: Supply 0.91 mm (20 ga) core thickness commercial quality to ASTM A653M, CS Type A, with Z275 zinc coating designation to ASTM A653M.
- .15 Perforated Sheet Steel: Commercial flattened sheet steel of thickness indicated, with machine die cut round holes of 3 mm dia. at 5.537 mm oc in 60° staggered pattern and similar to sheet stock manufactured by Greening Donald Co. Ltd., or by Unalloy WRC-a division of Samuel Manu-Tech Inc. or by Gerard Daniel Worldwide.
- .16 Expanded Steel Mesh: Flattened, expanded, carbon steel mesh of 10 msg gauge thickness, weighing minimum 112 lbs/100 sq ft, style 1.330" SWD x 3.2000" LWD, 11-1/2" No. 9 by Gerard Daniel Worldwide, Canadian Division, or Expanded Metal Corporation or Dramex International.
- .17 Aluminum Extrusions: ASTM B209M, size accurately formed as shown on Drawings, extruded aluminum alloy AA-6063-T5 or T6 for aluminum. Ensure surfaces are free from defects impairing appearance, strength and durability.
- .18 Aluminum Sheet: ASTM B221M, Minimum thickness 3 mm of type and characteristics to match finished extrusions; sheet which is not exposed shall be Utility Aluminum mill finished; for intricate forming with decorative finishes use AA 1100 and for siding and exposed panels use AA-3003 with specified finish.
- .19 Handrail Wall Brackets: In accordance with OBC requirements and to meet design requirements indicated on Drawings.
- .20 Grout:
 - .1 Cementitious, non shrinking, non expanding grout: 'Sika Grout 212' by Sika Canada Inc., or 'Non Shrink Structural Grout - Dry Pack Grout' by Euclid Chemical Company or 'Sealtight CG 86 Construction Grout' by W.R. Meadows.
 - .2 Epoxy, non-shrinking, non expanding grout: 'Sika Anchor Fix.
 - .3 Master Flow 100.
 - .4 Master Emaco ADH 1420.

2.2 FABRICATION

- .1 Fabricate each item of work of this Section in accordance with following general requirements:
 - .1 Members square and straight.
 - .2 Members plumb and true.
 - .3 Joints accurately and tightly fitted.
 - .4 Intersecting members in true, finish planes.
 - .5 Fasteners concealed.
- .2 Fabricate, fit and assemble work in shop where possible. Where shop fabrication is not possible, make trial assembly in shop.
- .3 Provide hangers, rods, bars, bolts, anchors, brackets, rivets, bearing plate and bracing, fitting, drilling, stopping, soldering, as required for a complete assembly.
- .4 Isolate dissimilar metals to prevent galvanic corrosion.
- .5 Weld connections unless otherwise indicated.
- .6 Shop Welding:
 - .1 Execute welding to avoid damage or distortion to work. Should there be, in the opinion of Consultant or Inspection Company, doubts as to adequacy of welds, they shall be tested for efficiency and any work not meeting Standards be removed and replaced with new work satisfactory to Consultant. Carry out welding in accordance with following standards:
 - .1 Fabricator shall be fully certified by Canadian Welding Bureau for fusion welding of steel structures to CSA W47.1 and for fusion welding of aluminum to CSA W47.2.
 - .2 CSA W48-M for Electrodes (if rods are used, only coated rods are allowed).
 - .3 CSA W59-M for design of connections and workmanship.
 - .4 CSA W117.2 for safety.
- .7 Thoroughly clean welded joints and steel exposed for a sufficient space to properly perform welding operation. Neatly finish welds. Ensure welds exposed to view and finish painted are continuous and ground smooth.
- .8 Provide exposed metal fastenings and accessories of same material, texture, color and finish as base metal to which they are applied or fastened.

2.3 FINISHES

- .1 Cleaning and Shop Painting:
 - .1 Clean steel to SSPC SP6 and remove loose mill scale, weld flux and splatter.
 - .2 Shop prime steel with 1 coat of primer paint to dry film thickness of 0.025 mm (1 mil). Paint on dry surfaces free from rust, scale, grease. Do not paint when temperature is lower than 7 deg C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.
 - .3 Shop prime non galvanized perimeter steel members and structural steel members to receive sprayed fire resistive materials with 1 coat of high performance corrosion protection primer to dry film thickness of 0.025 mm (1 mil). Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 deg C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.
 - .4 Shop prime galvanized steel in accordance with CAN/CGSB-85.10.
 - .5 Clean but do not paint surfaces being welded in the field and surfaces in contact after assembly.
- .2 Hot Dip Galvanizing:

- .1 After fabrication, hot dip galvanize specific miscellaneous steel items noted on Drawings and/or called for herein. Plug relief vents air tight. After galvanizing, remove plugs, ream holes to proper size and re-tap threads. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with "Galvafroid" by W.R. Meadows in accordance with manufacturer's printed directions.
- .2 Galvanized members exposed to elements when in final location; members embedded in concrete; members specified in this Section or noted on Drawings.
- .3 Hot-dip galvanize members, in accordance with CAN/CSA-G164-M and the requirements of following ASTM standards, with minimum coating weights or thickness as specified:
 - .1 Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123M; average weight of zinc coating per sq/ft of actual surface, for 4.8 mm and less thickness members 2 ounces, for 6 mm and heavier members 2.3 ounces.
 - .2 Iron and Steel Hardware: ASTM A153M; minimum weight of zinc coating, in ounces per sq ft of surface shall be in accordance with Table 1 of ASTM A153M, for the various classes of materials used on the Project.
 - .3 Steel Sheet: ASTM A653M; weight of zinc coating, per sq ft on both sides of sheet. Coating designation Z275 (G90), minimized spangle and chemically treated.
- .3 Color: to be selected by Consultant.
- .4 Aluminum: Exposed aluminum surfaces shall have clear anodized coating (Architectural Class II). Pre-treat aluminum with caustic tech treatment prior to applying integral, clear, anodic oxide coating. Apply clear, anodic oxide coating in accordance with AAMA 611, 0.4 mils minimum coating thickness and also conforms to Aluminum Finish Designation AA-M12C22A31, Architectural Class II. Protect clear anodized coating with removable protective film.
- .5 Zinc-rich primer: Ready, mixed, zinc-rich primer conforming to CAN/CGSB-1.181.
 - .1 Acceptable material:
 - .1 Sealtight Galvafroid Zinc-Rich Coating by W.R. Meadows of Canada Limited.
 - .2 Zinc Clad No. 7 Organic Zinc Rich Primer by Sherwin Williams Company of Canada Ltd.
- .6 Isolation Coating: Bituminous paint, alkali-resistant bituminous paint or epoxy resin solution to provide dielectric separation which will dry to be tack-free and withstand high temperatures. Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers. Carboline Bitumastic 50 by Carboline Canada, or Copper Creek Top Service 760 Black by Sherwin Williams Company, 410-02 by Bakor Inc. or other Product and manufacturer acceptable to Consultant.

2.4 ANGLE LINTELS

- .1 Steel angles: galvanized, sizes indicated for masonry openings. Provide 200 mm minimum bearing at ends.
- .2 Weld or bolt back-to-back angles to profiles as indicated.
- .3 All exterior lintels are to be galvanized.
- .4 Finish: shop painted.
- .5 Leave ready for painting by Section 09 91 00 Painting.

2.5 CONCRETE BLOCK LATERAL SUPPORT ANGLES

- .1 Location: top of concrete block walls.
- .2 Refer to drawings.

2.6 ELEVATOR HOIST BEAMS AND CROSS BEAMS

.1 Size: W200 x 36.
.2 Plates at bearing ends: 300mm x 190mm x 15mm thick steel with two 15mm diameter, 150mm long anchors with a 50mm hook.

2.7 ELEVATOR PIT COVER AND PERIMETER FRAMING

- .1 Gray cast iron, ASTM A48-74, Class 30, complete with frame cast into slab on grade.
- .2 Light duty.
- .3 Cover to have diamond tread pattern with recess type lift handle, (not projecting above top of cover.
- .4 Type S350/S351, 610mm grate size by I.M.P. Foundry Division, Dartmouth N.S.

2.8 ELEVATOR PIT LADDERS

- .1 Steel stringers: 50 x 9mm flat bar
- .2 Rungs: 19mm diameter, plug weld into side rails
- .3 Support: 450 x 75 x 6mm x 150mm long bent plate anchor, bolt to concrete with 13mm Hilti epoxy anchors. Anchors to be at top and bottom of ladders with 8 required per ladder.
- .4 Finish: shop prime

2.9 EXTERIOR BENCH SUPPORTS

- .1 Fabricate from steel HSS and plate as indicated.
- .2 All members galvanized.
- .3 Finish: Shop prime painted.
- .4 Leave ready for painting by Section 09 91 00 Painting.

2.10 MILLWORK SUPPORTS

- .1 50mm x 75mm HSS supports for build-in to front edge of millwork for spans in excess of 1200mm.
- .2 Prime paint.
- .3 Turn over to millwork Trade for build-in.

2.11 PIPE BOLLARDS

- .1 Fabricate from HSS Round, Grade 250 W to size 203mm nominal, complete with anchor lugs.
- .2 Supply to Section 03 30 00 Cast-In-Place Concrete for installation in concrete bases.
- .3 Provide post guards of 1/8" high density polyethylene (HDPE) with guaranteed fade resistance for six (6) years, complete with cap.
- .4 Post Guard Colour: Yellow.
- .5 Acceptable Material:
 - .1 Post Guard by Sure Guard.
 - .2 Global Industries.
 - .3 Uline.
 - .4 Idealshield.
 - .5 Innoplast.

2.12 RADON PIT FRAME & COVER

- .1 75mm x 75mm x 6mm galvanized angle cover support & frame.
- .2 6mm checker board plate cover.
- .3 6mm galvanized square edge bar cover support, 4 edges.
- .4 6mm galvanized retractable lift handle, 150mm long.

2.13 SHELF ANGLE

- .1 Steel angles: galvanized, size 90mm x 150mm x 8mm as indicated.
- .2 Cut horizontal leg to suit
- .3 Epoxy in place with 16mm bolts at 760mm O/C, drill to 100mm deep.

2.14 STEEL SUPPORTS WITHIN ARCHITECTURAL WOODWORK

- .1 Provide miscellaneous steel items required as part of the work of Section 06 41 00 -Architectural Wood Casework (e.g.: valance supports, vanity support brackets).
- .2 Finish: alkyd prime painted.

2.15 STEEL SUPPORT FOR PARTIAL HEIGHT WALLS

- .1 Provide fully welded frames of HSS 75 x 75 x 6mm complete with 75 x 200 x 9mm offset mounting plates at all floor connections.
- .2 Finish: alkyd prime painted.

2.16 WIRE MESH PARTITIONS

- .1 Fabricate support framing above ceiling from steel angles as indicated. Weld framing and bracings to roof structure to provide support for continuous ceiling angle located directly below underside of ceiling.
- .2 Fabricate partition framing and doors from HSS as indicated c/w steel flat bar retainers for wire mesh screening. Weld to ceiling angle and anchor to concrete floor slab.
- .3 Wire mesh screening: welded wire mesh, hot-dipped galvanized after fabrication, 25mm square pattern fabricated from 2mm diameter wire.
- .4 Acceptable Material:
 - .1 Greening Donald Co. Ltd. Regalvanized Hardware Grade Cloth.
- .5 Fabricate wire mesh screening from flat sheets cut to suit framing. Tack weld at 150mm o.c. to framing members and install flat bar retainers as indicated.
- .6 Fabricate doors c/w hinges and hasps as indicated. Weld hinges to door and framing member.
- .7 Hinges: .1
 - Acceptable Material:
 - .1 Hager 1850 x 75 x 75 x flat
- .8 Provide partitions c/w all fasteners and anchoring devices.

3 Execution

3.1 ERECTION

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

3.2 INSTALLATION

- .1 Verify dimensions at the Place of the Work to ensure work of this Section fits to that of other parts of the Work.
- .2 Erect the work of this Section plumb, square, true and level.

- .3 Securely anchor work of this Section and rivet, weld or bolt to structural framing of the building. Where secured to concrete, Provide bolts for setting in concrete. Provide expansion bolt supports to masonry.
- .4 Provide necessary fitting, setting and cutting required in connection with the fitting of work of this Section to other parts of the Work.
- .5 Field Painting: Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up with matching paint, shop primer damaged during transit and installation.
- .6 Erect stair work to line, plumb, square, true and level, with runs of stairs registering level with floor levels.

3.3 CLEANING

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

END OF SECTION

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1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.1-21, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
 - .2 CAN3-C235-83 (R2015), Preferred Voltage Levels for AC Systems, 0 to 50,000V.
 - .3 CSA Z462-21, Workplace Electrical Safety.
- .2 Institute of Electrical and Electronics Engineers (IEEE) / National Electrical Safety Code Product Line (NESC).
 - .1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standard Terms, 7th Edition.

1.2 **DEFINITIONS**

.1 Electrical terms used in electrical specifications and on electrical drawings are those defined by IEEE SP1122.

1.3 CARE, OPERATION AND START-UP

- .1 Instruct Consultant and operating personnel in the operation, care and maintenance of systems, system equipment and components.
- .2 Operating instructions to include following:
 - .1 Start up, proper adjustment, operating, maintenance, and shutdown procedures.
 - .2 Safety precautions.
 - .3 Procedures to be followed in event of equipment or component failure.
 - .4 Other items of instruction as recommended by manufacturer of the system or equipment.
- .3 Arrange and pay for manufacturer's factory service technician to supervise start-up, installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .4 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.4 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235-83 (R2015).
- .2 Equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.5 SITE VISIT

.1 Prior to tender submission visit the site and become familiar with the job and all conditions which may affect the overall cost. Ignorance of existing conditions will not be considered as basis for extra claims. Refer to Division 01 - General Requirements for additional information.

1.6 SUBMITTALS

- .1 Submit shop drawings and product data in accordance with Division 01 General Requirements.
 - .1 Submit shop drawings for light standard concrete bases.
 - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, piping, and other items that must be shown to ensure coordinated installation.
 - .3 If changes are required, resubmit corrected shop drawings.

- .2 Manufacturer's Field Reports: submit to Consultant within 7 days of review, verifying compliance of work and electrical system and instrumentation testing, as described in PART 3 FIELD QUALITY CONTROL.
- .3 Submit WHMIS MSDS information in accordance with Division 01 General Requirements.
- .4 Upon completion of work submit As-Built Drawings, Maintenance Manuals, and Submittals in accordance with Division 01 General Requirements.

1.7 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Division 01 General Requirements.
- .2 All electrical work is to be carried out by qualified, licensed electricians or apprentices for the province of Prince Edward Island and the electrical contractor must have a valid contractor license issued by the province of Prince Edward Island.
 - .1 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.
- .3 The Consultant reserves the right to approve the quality of material and workmanship, and to call for any tests which they deem necessary to establish the integrity of the installation during the progress of the work and a complete test of each system at the completion of the work. The cost of such tests are not to be considered as extras.
- .4 Health and Safety: in accordance with Division 01 General Requirements.
 - .1 Protect exposed live equipment during construction for personnel safety.
 - .2 Shield and mark all live parts "LIVE 120 VOLTS", or with appropriate voltage in English.
 - .3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision of an electrician.
- .5 Quality Control: in accordance with Division 01 General Requirements.
 - .1 Provide CSA certified equipment and material. Where CSA certified equipment and material is not available, submit such equipment and material to the authority having jurisdiction for approval before delivery to site.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Upon completion of work, submit load balance report as described in PART 3 LOAD BALANCE.
 - .4 Submit certificate of acceptance from authority having jurisdiction upon completion of work to Consultant.

1.8 PERMITS, FEES AND INSPECTION

- .1 Submit to Electrical Inspection Division and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
- .2 Pay all associated fees.
- .3 Notify Consultant of changes required by Electrical Inspection Division prior to making changes.
- .4 Submit Certificates of Acceptance from Electrical Inspection Division or authorities having jurisdiction on completion of work to Consultant.

1.9 CO-ORDINATION

- .1 Co-ordinate all work with work of other divisions to avoid conflict and notify Consultant if any changes are required.
- .2 Locate electrical systems, equipment, and materials to provide minimum interference and maximum usable space.
- .3 Contractor to locate all existing underground services before commencing work and be responsible for any damages caused by failure to coordinate with and preserve underground services.
- .4 Where interference occurs, the Consultant must approve relocation of equipment and materials regardless of installation order.

- .5 Notwithstanding the review of shop drawings, the Electrical Contractor may be required to relocate electrical equipment which interferes with the equipment of other trades, due to lack of co-ordination of the Electrical Contractor with other trades. The cost of this relocation will be the responsibility of the Electrical Contractor and the Consultant will determine the extent of relocation required.
- .6 Leave space clear, and install equipment to accommodate future materials and/or equipment as indicated or specified, or to accommodate equipment and/or materials supplied by other Contractors.
- .7 Verify that the spaces in which the equipment is to be installed is sufficient and install all equipment to maintain head room and clearances, to conserve space, comply with codes, and to ensure adequate space for future servicing.
- .8 The Drawings for the Electrical work are diagrammatic performance Drawings only and are intended to convey the scope of work and indicate the general arrangement, locations, and size of equipment fixtures and outlets. The Drawings do not show Architectural, Mechanical or Structural details.
- .9 Do not scale or measure Drawings, but obtain information regarding accurate dimensions, by site measurements. Follow the Electrical Drawings for laying out the work.

1.10 CUTTING AND PATCHING

.1 Electrical Contractor to inform all other divisions in time, of required electrical openings and/or penetrations. Where this requirement is not met, the cost of all cutting and associated work to provide openings and/or penetrations will be the responsibility of the Electrical Contractor. Keep hole sizes to a minimum and be responsible to repair damage caused by lack of coordination.

1.11 DELIVERY, STORAGE AND HANDLING

- .1 Provide Consultant with material delivery schedule within two weeks after award of Contract.
- .2 Arrange for delivery access and unloading and/or storage areas with General Contractor.

1.12 INSPECTION OF WORK

.1 Periodic visits to the site during construction phase will take place to ascertain reasonable conformity to plans and specifications. The Contractor will be responsible for the execution of their work in conformity with the construction documents, the Contract, and the requirements of the inspection authority.

1.13 SCHEDULING OF WORK

- .1 Work is to be scheduled in phases as described in Division 01 General Requirements.
- .2 Become familiar with the phasing requirements for the work and comply with these conditions.
- .3 No additional monies will be paid for Contractor's requirement to comply with work phasing conditions.
- .4 Overtime work, and work outside normal work hours deemed necessary to meet the schedule are the responsibility of the Contractor and must meet the requirements of the PEI Employment Standards Act. All costs resulting from such overtime work must be included in the Contractor's total tender price.

2 Products

2.1 PRIOR APPROVAL OF PRODUCTS

.1 The use of any product not listed by name in the specification must be approved by Consultant prior to tender submission.

2.2 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment in accordance with Division 01 - General Requirements.

.2 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Division prior to delivery and submit such approval as described in Part 1 - Submittals.

2.3 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
 - .1 Paint outdoor electrical equipment "equipment green" finish to EEMAC Y1-1.

2.4 WARNING SIGNS

- .1 As specified and to meet requirements of Electrical Inspection Department.
- .2 Porcelain enamel or acrylic decal signs, minimum size 175 x 250 mm.

2.5 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.6 WIRING IDENTIFICATION

- .1 Identify wiring with indelible pre-printed self-adhesive vinyl tape, indicating panel and circuit number. Wiring to be identified at both ends and at junction, pull boxes and splices.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour code: to CSA C22.1-21, Canadian Electrical Code.

2.7 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits.
- .2 Code with plastic tape or paint at points where conduit enters foundation wall, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.
 - .1 Colours indicated below are for reference only. If an existing colour coding scheme exists within the building, then the existing colour coding scheme is to be utilized.

SYSTEM	PRIME COLOR	AUXILIARY COLOR
240/120V (normal)	Yellow	
Communications	Blue	

3 Execution

3.1 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.2 LOCATION OF EQUIPMENT

.1 Change location of equipment at no extra cost or credit, providing distance does not exceed 3000 mm, and information is given before installation.

3.3 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete. Sleeves through concrete: schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm.
- .2 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.
- .3 Prior to rough-in, coordinate locations of conduit runs with other trades.

3.4 FIELD QUALITY CONTROL

- .1 All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentices program will be permitted, under the direct supervision of a qualified licensed electrician.
 - .1 Permitted activities are to be determined based on the level of training attained and the demonstration of ability to perform specific duties.
- .2 The work of this division to be carried out by a contractor who holds a valid Code 1 Electrical Contractor License as issued by the Province.

3.5 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

END OF SECTION

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1 General

1.1 DESCRIPTION OF WORK

- .1 Work of this Section consists of the complete removal of all obsolete or abandoned electrical equipment including, but not limited to:
 - .1 Existing obsolete electrical service in coordination with the Maritime Electric, along with the removal of the existing power service mast, utility meter and rigid PVC conduits.
 - .2 Existing communications service entrance in coordination with communications service provider
 - .3 Disconnect and remove any branch circuit wiring, communications cabling, or other wiring located in the crawlspace in preparation for the facility relocation.
- .2 All removal or alteration work of electrical construction to be done in accordance with the safety standards outlined in the Canadian Electrical Code.

1.2 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Division 01 - General Requirements.

1.4 SITE SURVEY

- .1 Prior to Tender submission, visit the site and survey and quantify the extent of the removals and alterations required for this contract and include for all costs in the total tendered price. Any existing conditions information indicated on the drawings is for general guidance only.
- .2 In conjunction with site visit, review all drawings and include all costs due to existing conditions in total tendered price.

1.5 **PROTECTION**

.1 The Contractor is to provide and coordinate the protection of existing structures and systems which may be damaged by work activities and is to be responsible for any damages to existing structures or systems as a result of lack of coordination and/or protection.

1.6 SALVAGE MATERIAL

- .1 Existing equipment and devices designated for reuse are to be removed, stored, cleaned and re-installed as indicated on the drawings.
- .2 Identify any damaged equipment or materials intended for reuse prior to demolition and point out deficiencies to the Consultant at that time.

2 Products

2.1 NOT APPLICABLE

.1 Not Applicable.

3 Execution

3.1 GENERAL REMOVALS

- .1 Where indicated remove all obsolete or abandoned equipment or electrical services including wire and conduit back to the source.
- .2 Coordinate work of this Section with other trades.

- .3 Schedule all removal work with the Owner. Do not disrupt building operations except as permitted by the Schedule.
- .4 Any existing conduit, wiring, boxes or equipment that is to remain in service is to be properly supported as required by the Canadian Electrical Code. Any additional hangers, straps or fasteners required are to be supplied under this contract.
- .5 Any existing electrical circuits and/or equipment that are interrupted during construction to accommodate alterations but are to remain in service are to be reconnected and circuits made good.
- .6 Any relocating of existing equipment and any rerouting of existing wire and conduit to coordinate with new work to be included in total tendered price.

3.2 CUTTING

.1 Cutting required for removals and alterations to be to the approval of the Consultant and performed with appropriate power tools.

END OF SECTION

1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.2 No. 45, Rigid Metal Conduit.
 - .2 CSA C22.2 No. 211.2 (R2011), Rigid PVC (Unplasticized) Conduit.
 - .3 CSA C22.2 No. 227.3, Nonmetallic Mechanical Protection Tubing (NMPT), a National Standard of Canada.
 - .4 CSA C22.2 No. 18.3-12 (2022), Conduit, Tubing, and Cable Fittings (Tri-National Standard with ANCE NMX-J-017 & UL 514B).
 - .5 CSA 22.1-21, Canadian Electrical Code, Part 1, 25th Edition.

1.2 SUBMITTALS

.1 Provide shop drawings and product data in accordance with Division 01 - General Requirements.

1.3 LOCATION OF CONDUITS

.1 Drawings do not show all conduits. Those shown are in diagrammatic form only.

2 Products

2.1 CONDUITS

- .1 Rigid metal conduit: to CSA C22.2 No. 45, hot dipped galvanized steel threaded.
- .2 Epoxy coated conduit: to CSA C22.2 No. 45, with zinc coating and corrosion resistant epoxy finish inside and outside.
- .3 Rigid PVC conduit: to CSA C22.2 No. 211.2.
- .4 Flexible PVC conduit: to CAN/CSA-C22.2 No. 227.3.

2.2 CONDUIT FITTINGS

- .1 Fittings: To CAN/CSA C22.2 No. 18.3, manufactured for use with conduit specified. Coating: same as conduit.
- .2 Factory "ells" where 90° bends are required for 25 mm and larger conduits, unless indicated otherwise.
- .3 Ensure conduit bends other than factory "ells" are made with an approved bender. Making offsets and other bends by cutting and rejoining 90 degree bends is not permitted.
- .4 Connectors and couplings for EMT. Steel set-screw type, size as required.

2.3 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Watertight expansion fittings with integral bonding jumper suitable for 100mm linear expansion to suit installation and 19 mm deflection in all directions.
- .2 Weatherproof expansion fittings for linear expansion at entry to panel.

2.4 FISH CORD

.1 Polypropylene.

.1

2.5 SEALANT

- .1 Low VOC mastic compound.
 - Acceptable material:
 - .1 DS-321.
 - .2 Flex Grip.
 - .3 Kingco 11-600.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install all conduit, conduit fittings and accessories in accordance with the latest edition of the Canadian Electrical Code in a manner that does not alter, change or violate any part of the installed system components or the certification of the components.
- .2 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .3 Surface mount conduits to exterior facade of building.
- .4 Use rigid hot dipped galvanized steel threaded conduit for exposed work below 2.4 m above finished floor.
- .5 Use epoxy coated conduit underground in corrosive areas and where exposed to exterior elements. (ie: pole mounted service entrance conduits)
- .6 Use rigid PVC conduit underground and buried in or under concrete slab on grade.
- .7 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .8 Mechanically bend steel conduit over 21 mm dia.
- .9 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .10 Install fish cord in empty conduits.
- .11 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .12 Dry conduits out before installing wire.

3.3 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Do not pass conduits through structural members except as indicated.

3.4 CONDUITS UNDERGROUND

- .1 Slope conduits to provide drainage.
- .2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

3.5 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials rubbish, tools and equipment.

END OF SECTION

1 General

1.1 WORK INCLUDED

- .1 Planning and executing measures to prevent and control soil erosion.
- .2 Furnishing, installing and maintaining erosion control materials.

1.2 **REFERENCE STANDARDS**

.1 The requirements of the P.E.I. Department of Environment and as directed on site by Consultant.

1.3 **PRODUCT CONDITIONS**

- .1 Schedule temporary seeding, mulching and other erosion control measures to take place as soon as possible, prior to beginning any work.
- .2 When temporary seeding cannot be accomplished to have established or visible growth by October 15, the disturbed areas shall be covered with 150 mm mulch for the winter.

2 Products

2.1 MATERIALS

- .1 Hay Bales: Securely tied baled at least 355 mm x 460 mm x 760 mm.
- .2 Geotextile fabric, including means of anchoring.
- .3 Mulch Material: Select mulch material for erosion control that will best meet the site conditions from the following:
 - .1 Hay or Stray- Shall be dry, free to mold and weed seeds.
 - .2 Wood chips Shall be dry, free of soil and other foreign material.
- .4 Mulch Anchoring: When mulch must be held in place, one of the following mulch anchoring materials shall be used:
 - .1 Mulch Netting (plastic, or plastic and wood fiber); North American Green, SC 150 or equal.
- .5 Fertilizer: Complete fertilizer 10-20-20 (standard product).
- .6 Lime: Ground limestone containing not less than 95% total carbonates (calcium or magnesium).
- .7 Temporary Seed Mixture: as follows: 30% Regent Kentucky Bluegrass 30% Park Kentucky Bluegrass 30% Creeping Red Fescue 10% Fiesta 2 Perennial Ryegrass

3 Execution

3.1 EROSION AND SEDIMENT CONTROL

- .1 Provide sediment protection measures as indicated on design drawings and as specified under this Section and in accordance with PEI Department of Transportation and Infrastructure, PEI Department of Environment.
- .2 Install geotextile fabric over top of new and existing catch basins to eliminate sediment from entering into sanitary or storm sewer system. Maintain as required.
- .3 Install sediment control berm, silt fences and silt screens where required to prevent siltation. Construct and install silt fences as indicated just up-slope of the area to be protected in order to prevent silt from being conveyed to an adjacent property or watercourse/wetland.
- .4 Maintain erosion control structures to coordinate with the schedule and sequence of the site work. Adjust erosion control structures as required.
- .5 Construct and maintain ditch dams properly designed to prevent migration of silt caused by the construction activities.
- .6 Maintain sediment control features throughout the construction period. Repair damage to original condition.

- .7 Remove accumulated sediment from behind berm and fences as necessary. Trapped sediment shall be removed when it has accumulated to a level half the height of the fence/barrier and shall be disposed of at a location outside the buffer zone of a watercourse and such that it cannot enter a watercourse or other environmentally sensitive area.
- .8 Do not remove any control features until authorized by Consultant.
- .9 Remove berm and fences when reinstatement has been well established and there will be no further erosion

3.2 GENERAL CONSTRUCTION SEQUENCE TO MINIMIZE EROSION

- .1 Erect hay bale dikes and/or silt fences as shown on Drawings and as may be required in the field to protect property, waterways, grassed areas, roadways, parking lots, existing features and springs.
- .2 Commence excavation. Stockpile soil so that erosion is minimized. Extra precautions shall be taken when soil is saturated.
- .3 Backfill excavation to grade. Grade site so that soil erosion caused by runoff will be minimized.
- .4 Seed and mulch exposed ground.

3.3 SEEDING AND MULCHING

.1 All areas which will remain open shall be seeded and mulched within five (5) days of being stripped or backfilled and graded.

3.4 HAY BALES

- .1 Embed hay bales into soil and anchor in place with stakes as shown on the drawings. Butt hay bales together tightly.
- .2 Hay bales shall be replaced when they become clogged with soil particles or as directed by the Consultant.

3.5 DAMAGE AND REPAIR

.1 Repair all damages caused by soil erosion or construction equipment at or before the end of each working day.

END OF SECTION

General 1

SCOPE OF WORK 1.1

- The work of this Section comprises the furnishing of all equipment, labour and materials .1 necessary for the excavation, trenching and backfilling, as specified in this Section and indicated on the drawings, which includes, but is NOT necessarily limited to: .1
 - Building:
 - All excavation, as required, through compacted structural fill and/or .1 undisturbed in-situ material for building foundations, including all related backfilling and compaction.
 - .2 Supply and installation of all structural fill, vapour barrier and granular base for concrete floor slab.
 - .3 Supply and installation of both vertical and/or horizontal perimeter insulation.
 - All excavation, trenching, bedding, backfilling and compaction required for the .4 work of Mechanical and Electrical Divisions inside the building.
 - .5 Contractor to provide a 100mm of crushed stone above the structural fill as a working surface to facilitate the formwork for the structural slab.
 - Outside of building: .2
 - All excavation, as required, through compacted structural fill and/or .1 undisturbed in-situ material for concrete aprons, including all related backfilling and compaction.
 - .2 Supply and installation of all structural fill, polyethylene vapour barrier and granular base for concrete aprons.
 - .3 All excavation, trenching, bedding, backfilling and compaction required for the work of Mechanical and Electrical Divisions outside the building.
 - .4 All areas under sidewalks, aprons, slabs and roadways,
 - .5 All excavation and backfill for miscellaneous items such as bollards.
- .2 The work of this Section comprises the furnishing of all labor, materials, and equipment necessary for the control of dust and other airborne pollutants or contaminants generated by the work of this project.
- .3 It is the responsibility of the Contractor to perform the entire work of this project in a manner which will reduce airborne dust to an absolute minimum and prevent the blowing of dust beyond the limits of construction area. This will require the strict observance of all control measures specified in this Section and other restrictions as may be deemed necessary by the Contractor, Consultant or Owner's representative during the course of construction, including the requirement to cease operations.
- .4 The requirements of the following Prince Edward Island, Department of Transportation and Infrastructure Specifications are to be followed for all work relating to the material specifications for fill materials and bedding sand within the foundation walls for the Building.
 - 401 Aggregate .1
 - .2 402 - Bedding Sand

1.2 **RELATED SECTIONS**

- Section 01 33 00 Submittal Procedures. .1
- .2 Section 01 35 29 - Health, Safety, and Emergency Response Procedures.
- .3 Section 01 35 43 - Environmental Procedures.
- .4 Section 01 56 00 - Temporary Barriers and Enclosures.
- .5 Section 02 41 16 - Structure Demolition.
- .6 Section 31 22 19 - Finish Grading.
- Section 33 05 13 Manholes and Structures. .7
- Section 33 11 13 Public Water Utility Distribution Piping. .8
- Section 33 31 13 Public Sanitary Utility Sewerage Piping. .9
- .10 Section 33 41 13 - Public Storm Utility Drainage Piping.

1.3 **REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C117-03, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
 - .2 ASTM C136-01, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .3 ASTM D422-632002, Standard Test Method for Particle-Size Analysis of Soils.
 - .4 ASTM D698-00ae1, Standard Test Methods for Laboratory Compaction
 - Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3) (600 kN-m/m3).
 ASTM D1557-02e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2,700 kN-m/m3).
 - .6 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
 - Canadian Standards Association (CSA International)
 - .1 CAN/CGSB-51.20-M87, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/CGSB-51.34-M86, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.

1.4 DEFINITIONS

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- .1 Dust as defined in this Section is any airborne particulate that may result from the work of this project, which includes, but is not limited to:
 - .1 Soil particles.
 - .2 Fertilizer.
 - .3 Limestone.
 - .4 Soil additives.
 - .5 Sand.
- .2 Rock:
 - .1 Any solid material in excess of 1.00 m3 and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m3 bucket. Frozen material not classified as rock.
- .3 Common excavation:
 - .1 Excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .4 Topsoil:
 - .1 Material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
 - .2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds, and other litter, and free from cobbles, stumps, roots, and other objectionable material larger than 25 millimeters in any dimension.
- .5 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .6 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.
- .7 Cohesionless soil: For compaction purposes, cohesionless soil is:
 - .1 Materials having less than 20% passing 75 micrometres sieve, regardless of plasticity of fines.
- .8 Cohesive soil: For compaction purposes, cohesive soil is soil not having properties to be classified as cohesionless.
- .9 Unsuitable materials:
 - .1 Weak, chemically unstable, and compressible materials.
 - .2 Frost susceptible materials:

- .1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422.
- .2 Sieve sizes to CAN/CGSB-8.1. .3 Table:

SIEVE DESIGNATION	% PASSING
2.00mm	100
0.10mm	45-100
0.02mm	10-80
0.005mm	0-45

1.5 VEHICLE REQUIREMENTS

- .1 All trucks bringing fill materials to site and removing surplus materials from site are to have a heavy-duty tarpaulin covering the truck box, properly tied down, to prevent the spillage of materials or blowing of dust during transportation.
- .2 Vehicles not equipped with a tarpaulin will not be allowed on site.

1.6 WORK RESTRICTIONS

.1 Contractor will be required to stop work when wind speed, or unusually dry conditions are such, that in the Contractor's, Consultant's or Owner's representative's opinion, the control measures required under this Section are, or will be, unable to prevent the blowing of dust beyond the limits of the site.

1.7 AFTER WORKDAY REQUIREMENTS

.1 During unusually dry conditions and when predicted wind speed is of a velocity, that in the Contractor's, Consultant's or Owner representative's opinion will result in dust being blown beyond the limits of the site, the Contractor will continue the control measures specified in this Section throughout non-working hours, as required to prevent the blowing of dust.

1.8 PROTECTION OF EXISTING FEATURES

- .1 Existing buried utilities and structures:
 - .1 Size, depth and location of existing utilities and structures as indicated are for guidance only; completeness and accuracy are not guaranteed.
 - .2 Prior to commencing any excavation work, notify applicable Utility or authorities, establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.
 - .3 Confirm locations of buried utilities by careful test excavation.
 - .4 Maintain and protect from damage, water, sewer, gas, electric or other utilities encountered.
 - .5 Obtain direction of Consultant before moving or otherwise disturbing utilities or structures.
 - .6 Where indicated, re-route existing lines in area of excavation.
 - .7 Pay costs for such work.
 - .8 Record in accordance with requirements of Section 01 78 00 Closeout Submittals, locations of maintained, re-routed and abandoned underground services.
 - .9 Make good and pay for damage to any lines resulting from work.
- .2 Existing surface features:
 - .1 Protect existing surface features, which may be affected by work from damage while work is in progress and repair damage resulting from work.
 - .2 Where excavation necessitates root or branch cutting do so only under direct control of Consultant.
 - .3 Provide protection around bench markers, layout markers, survey markers, geodetic monuments and signage.

1.9 SHORING BRACING AND UNDERPINNING

- .1 Comply with Section 01 35 29 Health, Safety, and Emergency Response Procedures and applicable local regulations and to protect existing features.
- .2 Whenever shoring, sheeting, timbering and bracing of excavations or underpinning is required engage services of a Professional Engineer registered in Prince Edward Island, Canada, to design and assume responsibility for adequacy of shoring, bracing and underpinning.
- .3 Design and supporting data submitted to bear the stamp and signature of qualified Professional Engineer registered in Canada.

1.10 COMPACTION DENSITIES

.1 Compaction densities indicated are Standard Proctor Maximum Dry Densities.

1.11 GENERAL REQUIREMENTS

- .1 Following the removal of the 600 mm of topsoil and rootmat under the work of Section 31 14 00 - Earth Stripping and Stockpiling, the Owner's Geotechnical Engineer will visually inspect the exposed underlying material and issue instructions with respect to the extent of the excavation, backfilling and compaction work required within the foundation walls.
- .2 Do not proceed with any excavation work until instructions with respect to the extent of the work have been received from the Geotechnical Engineer. The cost of any geotechnical investigation will be borne by the Contractor.
- .3 For bidding purposes include for the removal of all existing in-situ material within the limits of the foundation walls down to the bottom of the new footings.
- .4 For bidding purposes include for the supply, installation and compaction of Type 5 fill from the bottom of the new footings, up to the underside of the granular base for the floor slab.
- .5 If, resultant from the Consultant's inspection, the underlying material is found to be acceptable, or acceptable in part, as a sub base for the structural fill and granular base for the floor slabs, the Contractor shall submit a credit quotation for the deletion or partial deletion of the excavation, backfilling and compaction work.

1.12 SUBMITTALS

- .1 Samples:
 - .1 Submit samples in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Inform Consultant at least 2 weeks prior to beginning Work, of proposed source of fill materials and provide analysis if requested.

1.13 DELIVERY, STORAGE AND HANDLING

- .1 Storage and Protection:
 - .1 Protect existing features in accordance with Section 01 50 00 Facilities and Controls and applicable local regulations.

1.14 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal waste material in appropriate on-site bins in accordance with Waste Management Plan.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Ensure emptied containers are sealed and stored safely.
- .4 Divert excess aggregate materials from landfill for reuse.

2 Products

2.1 MATERIALS

.1 Type 1 Fill: Crushed rock composed of hard sound, durable uncoated, cubical fragments of consistent quality produced from non-sedimentary bedrock or non-sedimentary boulders, to comply with the P.E.I. Department of Transportation and Infrastructure Specification 401 - Aggregate, for Class 'A' material graded within the following limits:

ASTM SIEVE SIZE	PERCENT PASSING
31.55mm	100
25.0mm	95-100
12.5mm	50-83
4.75mm	30-60
1.18mm	15-40
600mm	10-32
300mm	5-22
75mm	3-9

.2 Type 2 Fill: Crushed rock composed of hard sound, durable uncoated, cubical fragments of consistent quality produced from non-sedimentary bedrock or non-sedimentary boulders, to comply with the P.E.I. Department of Transportation and Infrastructure Specification 401 - Aggregate, for Class 'B' material graded within the following limits:

ASTM SIEVE SIZE	PERCENT PASSING
31.55mm	100
25.0mm	95-100
12.5mm	50-83
4.75mm	30-60
1.18mm	15-40
600mm	10-32
300mm	5-22
75mm	3-9

- .3 Type 3 Fill: imported, classified as Common Fill, or material from excavation or other sources, approved by Consultant for use intended, unfrozen, free from rocks larger than 75mm, cinders, ashes, sods, refuse or other deleterious materials.
- .4 Type 4 Fill: natural sand or crushed rock screening, free from clay, shale or organic matter, to comply with P.E.I. Department of Transportation and Infrastructure Specification 402 Bedding Sand, graded with the following limits:

ASTM SIEVE SIZE	PERCENT PASSING
9.5mm	100
4.75mm	87-98
2.36mm	55-95
1.18mm	30-90
600mm	10-70
300mm	0-35
150mm	0-15
75mm	0-8

.5 Type 5 Fill: to requirements of Prince Edward Island, Department of Transportation and Infrastructure 1998 Specification #206.02.02 - Select Borrow as follows:

- .1 Borrow shall be non-plastic and composed of clean, uncoated particles free from lumps of clay or other deleterious material with a maximum particle size of 100mm, and a maximum of 30% of the material passing the 4.75 sieve shall pass the 0.075 mm sieve.
- .6 Type 6 Fill: clean, washed coarse sand free from clay, shale and organic matter and graded within the following limits:

SIEVE SIZE	PERCENT PASSING
12.5mm	100
4.75mm	90-100
0.85mm	40-100
0.35mm	0-75
0.25mm	0-38
0.75mm	0-8

.7 Type 7 Fill: Crushed rock, composed of hard, sound, durable, uncoated, cubical fragments of consistent quality produced from non-sedimentary bedrock or non-sedimentary boulders, graded within the following limits, to comply with the P.E.I. Department of Transportation and Infrastructure Specification 401 - Aggregate for Class 'D' Material.

ASTM SIEVE SIZE	PERCENT PASSING
50.0mm	100
38.0mm	60-100
31.5mm	50-100
25.0mm	35-70
19.0mm	20-50
12.5mm	10-35
9.5mm	5-25
4.75mm	0-10

- .8 Underslab Vapor Retarder: polyolefin film to meet ASTM E-1745 Class A, B and C.
 - Acceptable Material:

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- .1 Moistop Ultra 10 manufactured by Fortifiber Building Systems Group.
- .2 Perminator, Sealtight distributed by W.R. Meadows.
- .9 Insulation: Rigid insulation, Board insulation adhesive: Type A to CGSB 71-GP-24M, Type 2 (trowel applied), Class A.
 - Acceptable Material:
 - .1 Dow Styrofoam SM.10.
 - .2 Celfort Celfortec 300.
 - .3 Owens Corning Foamular C-300.
- .10 Concrete Faced Insulated Panel
 - .1 Extruded polystyrene insulation with factory applied 8mm thick latex-modified concrete facing.
 - .2 Finished panel surface 610mm x 1220mm with tongue and groove along the 1220mm edge.
 - .3 50mm thick _____ 75mm thick.
 - .4 Installation using specially designed galvanized steel mounting clips.
 - .5 Provide 26 ga, 'J' flashing, grey to match panel at exposed end condition.
 - .6 Acceptable Material:
 - .1 Concrete faced insulated wall panels by T. Clear Corp., 3255 Symmes Road, Hamilton, OH 45015, 1-800-544-7394, www.tclear.com,
 - .2 Tech-Crete Processors Ltd. www.tech-crete.com. Tel: 205-832-9705.
- .11 Prefabricated Drainage Composites:
 - .1 High strength three-dimensional polymeric core drain board with a non-woven geotextile fabric fully bonded to the top dimples of the core.

- .2 Product water flow rate 15.25 m³/hr.
- .3 Core thickness 10mm.
- .4 Core material polypropylene.
- .5 Core compressive strength 723 kN/m².
- .6 Acceptable Material:
 - .1 Bakor DB 6000.
- .12 Foundation drainage:
 - .1 100mm diameter perforated PVC foundation drainage pipe with integral filter fabric wrap.
 - .2 150 mm perforated and non perforated drain tile, c/w geotextile membrane wrap on perforated sections.
- .13 Filter Fabric:
 - .1 Filter light-weight, non-woven polypropylene fiber fabric, needle punched and heat set.
- .14 Dampproofing:
 - .1 Emulsified asphalt, mineral colloid type, unfilled: to CAN/CGSB-37.2, and to Section 07 11 13 Bituminous Dampproofing.
- .15 Polyethylene film: 6 mil and 10 mil thickness.
- .16 Soflomax corrugated wall catch basin. 600 mm Iron grate and frame including 600 mm diameter corrugated wall catch basin, high density polyethylene pipe.
- .17 Corrugated Plastic Culvert
 - .1 ASTM F 405- [93], Specification for Corrugated Polyethylene (HDPE) Tubing and Fittings.
 - .2 Corrugated Polyethylene (HDPE) open-profile sewer pipe to CSA B182.8 (nonperforated) with integral swap-type bell end and double bell silt tight integrated gasket. Size as indicated.
 - .3 Acceptable Material:
 - .1 Soleno Inc. Solflo Flowmax.
- .18 Tunnel Joint Gaskets:
 - .1 Low expansion butyl based hydrophilic sealing gasket.
 - .2 Hydrostatic pressure, up to 207 Kpa.
 - .3 Acceptable Material:
 - .1 Conseal CS231 by Parchem, www.parchem.com
- .19 Foundation Waterproofing:
 - .1 SBS modified bitumen, self-adhering sheet membrane complete with a triple-ply woven complex.
 - .2 Thickness: 1.5 mm.
 - .3 Tensile Strength 11.3/15.4 KNm.
 - .4 Peel Strength SATM D903, 3000 N/m.
 - .5 Vapor permeance: 0.99 ng/Pa.m².s (0.0086 perms) to ASTM E96.
 - .6 Elongation: > 1000%.
 - .7 Acceptable Materials:
 - .1 Soprema Colphene 3000.
 - Primer: Elastocol Stick as recommended by manufacturer
- .20 Corrugated Tree Protection
 - .1 Galvanized, corrugated, circular culvert sections, in the diameter and height indicated on drawings.
- .21 Light Base

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- .1 To match light standard for height. Coordinate with electrical.
- .2 Acceptable Material:
 - .1 Ellamy 610R by Artforms International Inc.

2.2 EQUIPMENT

- .1 For application of water use pressurized distributor equipped with a spray system that will ensure even distribution of controlled quantities of water with means of shut-off to avoid dumping of excess water.
- .2 Following final grading and seeding use only a water distribution vehicle with tires of sufficient size that any impression left by the tires can, if necessary, be repaired by a light hand raking.

3 Execution

3.1 GENERAL

.1 Carry out work to prevent blowing dust and debris during construction.

3.2 APPLICATION

- .1 Apply water over entire area of operation in sufficient quantities to prevent blowing of dust, but not to create excess moisture that will prevent segregation of materials, or interfere with proper placement of materials. Application of water is required at all stages of work, which includes, but is not limited to, the following.
 - .1 Stripping of topsoil.
 - .2 Excavation Work.
 - .3 Grading operations.
 - .4 Placement of fill materials.
 - .5 Placement of topsoil.
 - .6 Removal of surplus materials.

3.3 PROTECTION OF STOCKPILES

.1 Apply water to materials during stockpiling operations and either cover stockpile at end of day or continue with application of water both during workday and after hours in to ensure acceptable dust control.

3.4 TRANSPORTATION OF MATERIALS

- .1 Leave tarpaulins in place during dumping of fill materials being brought to the site.
- .2 Water materials being loaded onto trucks for removal from site and secure tarpaulins before leaving loading area.

3.5 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly in accordance with Section 02 41 13 Selective Site Demolition.

3.6 STRIPPING OF TOPSOIL

- .1 Begin topsoil stripping of areas as indicated after area has been cleared of brush and removed from site.
- .2 Strip topsoil to depths as indicated. Do not mix topsoil with subsoil.
- .3 Stockpile in locations as indicated or directed by Consultant. Stockpile height not to exceed 2 m and should be protected from erosion.
- .4 Dispose of unused topsoil to location as indicated.

3.7 STOCKPILING

- .1 Stockpile fill materials in areas designated by Consultant. Stockpile granular materials in manner to prevent segregation.
- .2 Protect fill materials from contamination.

.3 Implement sufficient erosion and sediment control measures to prevent sediment release off construction boundaries and into water bodies.

3.8 SHORING, BRACING AND UNDERPINNING

- .1 Maintain sides and slopes of excavations in safe condition by appropriate methods.
- .2 Obtain permit from authority having jurisdiction for temporary diversion of water course.
- .3 Construct temporary Works to depths, heights and locations as indicated.
- .4 Upon completion of substructure construction:
 - .1 Remove shoring and bracing.
 - .2 Remove excess materials from site.

3.9 DEWATERING AND HEAVE PREVENTION

- .1 Keep excavations free of water while Work is in progress.
- .2 Protect open excavations against flooding and damage due to surface run-off.
- .3 Dispose of water in accordance with Section 01 35 43 Environmental Procedures to approved collection and in manner not detrimental to public and private property, or portion of Work completed or under construction.
- .4 Provide settling basins, or other facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas.

3.10 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Remove concrete and other obstructions encountered during excavation.
- .3 Excavation must not interfere with normal 45° bearing splay of adjacent foundations.
- .4 Following completion of excavation work and prior to placement of any structural fill material proof roll existing sub-grade exposed by excavation with a large vibratory roller (CAT CS-563E or equivalent). Remove 'soft' material and replace with new structural fill in accordance with requirements of this Section compacted to 100% density.
- .5 Do not disturb soil within branch spread of trees or shrubs that are to remain.
- .1 If excavating through roots, excavate by hand and cut roots with sharp axe or saw. .6 For trench excavation, do not excavate more than 30 m of trench in advance of installation
- operations and do not leave open more than 5m at end of day's operation.
- .7 Keep excavated and stockpiled materials safe distance away from edge of trench.
- .8 Restrict vehicle operations directly adjacent to open trenches.
- .9 Dispose of surplus and unsuitable excavated material in approved location on site.
- .10 Do not obstruct flow of surface drainage or natural watercourses.
- .11 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .12 Notify Consultant when bottom of excavation appears unsuitable.
- .13 Obtain Consultant's approval of completed excavation.
- .14 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by Consultant.
- .15 Correct unauthorized over-excavation as follows:
 - .1 Fill under bearing surfaces and footings with Type 2 fill compacted to not less than 98% of corrected Standard Proctor maximum dry density.
- .16 Hand trim, make firm and remove loose material and debris from excavations.
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
- .17 Rock excavation:
 - .1 For the purpose of bidding it is to be assumed that solid sandstone bedrock, as defined under Par. 1.4 above, will not be encountered during the work of this Section.

3.11 FILL TYPES AND COMPACTION

.1 Dimensions specified in following paragraphs are minimum dimensions of fill after compaction.

- .2 Interior side of perimeter foundation walls of addition:
 - .1 Backfill with Type 5 (structural) fill up to underside of granular base for floor slabs. Compact to 100% density, in lifts not exceeding 300mm.
 - .2 Refer to Par. 1.8 above for general requirements relating to the extent of back filling within the foundation walls and other limitations and requirements.
 - .3 At excavation through new Type 5 Fill for interior foundation walls and footings, backfill with Type 5 Fill to underside of granular base for floor slabs. Compact to 100% density, in lifts not exceeding 300mm.
 - .4 Excavated material may be used if uncontaminated and approved by testing laboratory.
 - .5 Install Type 1 fill (granular base) to thickness indicated, directly over structural fill, compacted to 100% density.
 - .6 Level granular base to accommodate full thickness of concrete floor slab.
 - .7 Install sheet vapour retarder in accordance with Par. 3.9 below.
- .3 Exterior Concrete Aprons:
 - .1 Backfill with Type 5 fill up to underside of granular base for concrete aprons at building exterior.
 - .2 Install Type 2 fill to thickness indicated, directly over structural fill, compacted to 100% density.
 - .3 Level granular base to accommodate full thickness of concrete aprons.
- .4 Underground services:
 - .1 Use Type 4 Fill (bedding sand) to provide bedding and cover as indicated compacted full width of trench to minimum 95% density.
 - .2 Use excavated material to underside of granular base for floor slab at interior of addition, compacted to 100% density.
 - .3 Use Type 3 Fill to underside of topsoil at landscaped areas compacted to density at least equal to adjacent undisturbed soil or minimum 95%.
- .5 Interior Concrete Slab on Grade:
 - .1 Backfill with Type 5 Fill (select borrow) to a minimum thickness of 300 mm and to suit grade. Compact to 100% SPDD.
 - .2 Install Type 1 Fill minimum 300 mm compact to 100% SPDD, Class "A".

3.12 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular material for bedding and surround of underground services as indicated.
- .2 Place bedding and surround material in unfrozen condition.

3.13 PERIMETER INSULATION

- .1 Install horizontal and vertical perimeter board insulation to width and thickness indicated, directly under floor slabs, adjacent to exterior perimeter walls, as indicated.
- .2 Install boards on walls using a Type A adhesive to temporarily support boards tight against face of wall until backfilling is complete.
- .3 Install boards to tight fit against abutting boards.

3.14 PERIMETER FOUNDATION INSULATION (VERTICAL)

- .1 Install polystyrene boards to depth and thickness indicated against inside face of exterior perimeter foundation walls, as indicated.
- .2 Install boards on walls using a Type A adhesive to temporarily support boards tight against face of wall until backfilling is complete.
- .3 Install boards to tight fit against abutting boards.

3.15 CONCRETE FACED INSULATED WALL PANEL

.1 Install vertically in accordance with manufacturers instructions.

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3.16 BACKFILLING

- .1 Do not proceed with backfilling operations until Consultant has inspected and approved installations.
- .2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Backfilling around perimeter foundation walls.
 - Do NOT place fill material against perimeter foundation walls until:
 - .1 Concrete has cured for a minimum of 14 days.
 - .2 Floor structures are permanently in place, unless approved by Consultant. Provide bracing as directed by Consultant and leave in place until removal is approved by Consultant.
 - .3 Exercise care not to damage insulation at interior face of foundation walls and polyethylene slip sheet at exterior face of the foundation walls.
- .5 Backfilling around site installations.
 - .1 Place bedding and surround material as specified and indicated in applicable Section for service or utility to be installed.
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing.
 - .3 Place layers simultaneously on both sides of installed work to equalize loading.
 - .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 - .1 Permit concrete to cure for minimum of 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval has been obtained from Consultant or:
 - .2 If approved by Consultant erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Consultant.
 - .5 Place material by hand under, around and over installations until 600mm of cover is provided, except where specifically permitted otherwise. Dumping material directly on installations will not be permitted.
 - .6 Place backfill material in uniform layers not exceeding 150mm up to grades indicated. Compact each layer before placing succeeding layer. Use methods to prevent damage to installations.

3.17 SLIP SHEET/BOND BREAKER

- .1 Polyethylene Slip Sheet/Bond Breaker
 - .1 Install 10mil polyethylene slip-sheet at exterior face of all foundation walls from top of footing to future finished grade. Provide temporary support until backfilling is completed.
- .2 Use 10mil polyethylene sheet as bond breaker between foundation walls and slabs-on-grade and slabs on steel floor decking. Provide temporary support until slabs are placed. Trim flush with top of slab.

3.18 UNDERSLAB VAPOUR BARRIER

- .1 Install underslab vapor barrier over entire area of granular base. Lap all joints minimum 300 mm and seal with water impermeable adhesive tape.
 - .1 Turn vapour barrier, minimum 100mm, up face of existing foundation walls, perimeter Insulation at exterior foundation walls and interior piers.
- .2 Seal punctures in sheets before concrete is placed. Use patching material minimum 150 mm larger than puncture, and seal.

3.19 TESTING AND INSPECTION

.1 The responsibilities for test and payment will be as outlined in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.

3.20 RESTORATION

- .1 Upon completion of work, remove surplus materials and debris, trim slopes and correct defects noted by Consultant.
- .2 Clean and reinstate areas affected by work to satisfaction of Consultant.

3.21 SURPLUS MATERIAL

- .1 Remove all surplus material from site, and pay all fees as may be charged at disposal site.
- .2 Remove all soil contaminated with oil, gasoline, calcium chloride or other toxic or dangerous materials resulting from the work of this contract and dispose of in manner to minimize danger at site and in a manner and to a location off site approved by Provincial Authority governing such disposal.

END OF SECTION

1 General

1.1 SECTION INCLUDES

.1 Materials and installation for water mains, hydrants, valves, valve boxes, and valve chambers, including service connections.

1.2 RELATED SECTIONS

- .1 Section 31 23 00 Excavation and Fill.
- .2 Section 03 20 00 Concrete Reinforcing.
- .3 Section 03 30 00 Cast-in-Place Concrete.
- .4 Section 04 05 13 Masonry Mortaring.

1.3 **REFERENCES**

- .1 American National Standards Institute/American Water Works Association (ANSI/AWWA)
 - .1 ANSI/AWWA B300-99, Hypochlorites.
 - .2 ANSI/AWWA B301-99, Liquid Chlorine.
 - .3 ANSI/AWWA B303-00, Sodium Chlorite.
 - .4 ANSI/AWWA C111/A21.11-00, Rubber-Gasket Joints for Ductile-Iron and Gray Iron Pressure Pipe and Fittings.
 - .5 ANSI/AWWA C110/A21.10-98, Ductile-Iron and Gray Iron Fittings, 3 inch through 48 inch (75 mm through 1200 mm), for Water.
 - .6 ANSI/AWWA C150/A21.50-02, Thickness Design of Ductile-Iron Pipe.
 - .7 ANSI/AWWA C151/A21.51-02, Ductile-Iron Pipe, Centrifugally Cast, for Water.
 - .8 ANSI/AWWA C153/A21.53-00, Ductile-Iron Compact Fittings for Water Service.
 - .9 ANSI/AWWA C200-97, Steel Water Pipe 6 in (150 mm) and Larger.
 - .10 ANSI/AWWA C203-02, Coal Tar Protective Coatings and Linings for Steel Water Pipelines Enamel and Tape Hot Applied. (Includes Addendum C203a-99).
 - .11 ANSI/AWWA C206-97, Field Welding of Steel Water Pipe.
 - .12 ANSI/AWWA C207-01, Steel Pipe Flanges for Waterworks Service, 4 Inch through 144 Inch (100 mm through 3,600 mm).
 - .13 ANSI/AWWA C208-01, Dimensions for Fabricated Steel Water Pipe Fittings.
 - .14 ANSI/AWWA C500-02, Metal-Seated Gate Valves for Water Supply Service (Includes Addendum C500a-95).
 - .15 ANSI/AWWA C504-00, Rubber-Seated Butterfly Valves.
 - .16 ANSI/AWWA C600-99, Installation of Ductile-Iron Water Mains, and Their Appurtenances.
 - .17 ANSI/AWWA C651-99, Disinfecting Water Mains.
 - .18 ANSI/AWWA C800-01, Underground Service Line Valves and Fittings (Also Included: Collected Standards for Service Line Materials).
 - .19 ANSI/AWWA C900-97, Polyvinyl Chloride (PVĆ) Pressure Pipe, and Fabricated Fittings, 4 Inch through 12 Inch (100 mm 300 mm), for Water Distribution.
- .2 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A53/A53M-02, Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless.
 - .2 ASTM A307-02, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
 - .3 ASTM B88M-99, Standard Specification for Seamless Copper Water Tube Metric.
 - .4 ASTM F714-01, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.
- .3 American Water Works Association (AWWA)/Manual of Practice
 - .1 AWWA M11-1989, Steel Pipe A Guide for Design and Installation.
 - .2 AWWA M17-1989, Installation, Field Testing, and Maintenance of Fire Hydrants.
- .4 Canadian Standards Association (CSA International)

- .1 CSA B137 Series-02, Thermoplastic Pressure Piping Compendium. (Consists of B137.0, B137.1, B137.2, B137.3, B137.4, B137.4.1, B137.5, B137.6, B137.8, B137.9, B137.10, B137.11 and B137.12).
- .2 CSA B137.3-02, Rigid Polyvinyl Chloride (PVC) Pipe for Pressure Applications.
- .3 CAN/CSA-G30.18-M92(R1998), Billet Steel Bars for Concrete Reinforcement.
- .4 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
- Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S520-1991, Hydrants.
 - .2 CAN4-S543-1984, Internal-Lug, Quick Connect Couplings for Fire Hose.

1.4 SUBMITTALS

.5

- .1 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures.
- .2 Submit complete shop drawings and construction schedule for water mains 600 mm diameter and larger. Include method for installation of water main.
- .3 Inform Consultant of proposed source of bedding materials and provide access for sampling at least 4 weeks prior to commencing work.
- .4 Submit manufacturer's test data and certification that pipe materials meet requirements of this section at least 4 weeks prior to beginning work. Include manufacturer's drawings, information and shop drawings where pertinent.
- .5 Pipe certification to be on pipe.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide data to produce record drawings, including directions for operating valves, list of equipment required to operate valves, details of pipe material, location of air and vacuum release valves, hydrant details, maintenance and operating instructions in accordance with Section 01 78 00 Closeout Submittals.
- .2 Include top of pipe, horizontal location of fittings and type, valves, valve boxes, valve chambers and hydrants.

1.6 SCHEDULING OF WORK

- .1 Schedule Work to minimize interruptions to existing services.
- .2 Submit schedule of expected interruptions to Consultant for approval and adhere to interruption schedule as approved by Consultant.
- .3 Notify Consultant minimum of 72 h in advance of interruption in service.
- .4 Do not interrupt water service for more than 3 h and confine this period between 10:00 and 16:00 h local time unless otherwise authorized.
- .5 Notify fire department of any planned or accidental interruption of water supply to hydrants.
- .6 Provide "Out of Service" sign on hydrant not in use.
- .7 Advise local police department of anticipated interference with movement of traffic.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal waste material in appropriate on-site bins in accordance with Waste Management Plan.
- .3 Separate for reuse and place in designated containers Steel waste in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Ensure emptied containers are sealed and stored safely.
- .7 Divert unused metal materials from landfill to metal recycling facility.
- .8 Divert unused concrete and aggregate materials from landfill to local quarry.
- .9 Do not dispose of unused disinfection material into sewer system, streams, lakes, onto ground or in other location where they will pose health or environmental hazard.

2 Products

2.1 POTABLE WATER (CHARLOTTETOWN)

- .1 Plastic Pipe and Fittings
 - .1 Polyvinyl chloride pressure pipe: to AWWA C900 and CAN/CSA B137.3, pressure class 150, gasket bell end with rubber gasket to size indicated.
 - .2 Acceptable Material:
 - .1 IPEX "Blue Brute" DR18 PVC pipe and fittings.
 - .3 Fittings (PVC Alternate): Cast iron, mechanical joint, to ANSI/AWWA C153/A21.53.
- .2 Service Connections
 - .1 Tapping sleeve and valve:
 - .1 Heavy welded steel body with recessed grooves to retain gasket, for 150 psi service, c/w test plug, steel/flat face flange recessed for standard tapping valve, to ANSI/AWWA C207, Class D, ANSI 150 lb, and gaskets for 212° service.
 - .2 Acceptable Material:
 - .1 Ford "Style FTS".
 - .2 Confirm acceptance of this product with Charlottetown Water and Sewer Utility.
- .3 Reaction Backing
 - .1 Concrete: 20 Mpa compressive strength.
- .4 Pipe Disinfection
 - .1 Sodium or calcium hypochlorite to AWWA B300 to disinfect water mains.

2.2 PIPE DISINFECTION

- .1 Sodium hypochlorite to ANSI/AWWA B300 to disinfect water mains.
- .2 Undertake disinfection of water mains in accordance with ANSI/AWWA C651.

3 Execution

3.1 PREPARATION

- .1 Clean pipes, fittings, valves, hydrants, and appurtenances of accumulated debris and water before installation.
 - .1 Inspect materials for defects to approval of Consultant.
 - .2 Remove defective materials from site as directed by Consultant.

3.2 TRENCHING

- .1 Do trenching work in accordance with Section 31 23 00 Excavation and Fill.
- .2 Trench line and depth require approval prior to placing bedding material and pipe.
- .3 Do not backfill trenches until pipe grade and alignment have been checked and accepted by Consultant.

3.3 CONCRETE REACTION BACKING

- .1 Place concrete thrust blocks between valves, tees, plugs, caps, bends, changes in diameter, reducers, hydrants, fittings, and undisturbed ground as indicated, or as directed by Consultant or City Engineer.
- .2 Keep joints and couplings free from concrete.
- .3 Provide polyethylene sheet bond breaker between pipe, fittings, etc., and concrete.

3.4 GRANULAR BEDDING

- .1 Place granular bedding and cover materials to details indicated or directed by consultant.
- .2 Shape bed true to grade and to provide continuous uniform bearing surface for barrel of pipe. Do not use blocks when bedding pipe.
- .3 Shape transverse depressions as required to receive bell if bell and spigot pipe are used.

- .4 Compact fill width of bed to at least 95% density.
- .5 Fill excavation below bottom of specified bedding adjacent to manholes, catchbasins or structures with sandstone fill.

3.5 INSTALLATION OF TAPPING SLEEVE

- .1 Install in strict accordance with the manufacturer's written instructions and recommendations.
- .2 Carry out work under the supervision of the City Engineer.
- .3 Apply field coating of coal tar or similar product over entire installation to the satisfaction of the City Engineer.

3.6 PIPE INSTALLATION

- .1 Lay and join pipe in accordance with CSA B182.2-95 and manufacturer's recommendations.
- .2 Handle pipe by methods recommended by pipe manufacturer. Do not use chains or cables passed through rigid pipe bore so that weight of pipe bears upon pipe ends.
- .3 Lay pipes on prepared bed, true to line and grade with pipe inverts smooth and free of sags or high points. Ensure barrel of each pipe is in contact with shaped bed throughout its full length. Take up and replace defective pipe. Correct pipe which is not in true alignment or grade or pipe which shows undue settlement after installation.
- .4 Face socket ends of pipe in direction of laying. For mains on a grade of 2% or greater, face socket ends up-grade.
- .5 Do not exceed maximum joint deflection recommended by pipe manufacturer.
- .6 Do not allow water to enter pipes during construction except as may be permitted by Consultant.
- .7 Whenever work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.
- .8 Joints:
 - .1 Join plastic pipe in strict accordance with manufacturer's recommendations.
 - .2 Do not use excavating equipment to force pipe sections together.
- .9 Cut pipes as required for fittings or closure pieces in a neat manner, as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- .10 Ensure completed joints are restrained by compacting bedding material alongside and over installed pipes or as otherwise approved by Consultant.
- .11 When stoppage of work occurs, block pipes in an approved manner to prevent creep during down time.
- .12 Recheck plastic pipe joints assembled above ground after placing in trench to ensure that no movement of joint has taken place.
- .13 Leave joints and fittings exposed for hydrostatic and leakage testing.
- .14 Hand place granular material in uniform layers not exceeding 6 inches to 12 inches over top of pipe. Do not dump material directly on top of pipe. Place layers uniformly on each side of pipe to prevent lateral displacement of the pipe. Compact each layer to at least 95% density.

3.7 TESTING & DISINFECTION

- .1 Notify Consultant twenty-four (24) hours in advance of all proposed tests. Perform tests in presence of and under direction of Consultant.
- .2 Before testing, bed and cover pipe between joints in accordance with paragraph 3.6 to such an extent that movement or snaking of line is prevented when test pressure is applied.
- .3 Leave joints and fittings exposed.
- .4 Strut and brace caps, bends, tees, and valves, to prevent movement when test pressure is applied.
- .5 Open valves.
- .6 Expel air from main by slowly filling main with potable water. Install corporation stops at high points in main where no air-vacuum release valves are installed. Remove stops after satisfactory completion of test and seal holes with plugs.
- .7 Examine exposed pipe, joints, fittings and appurtenances while system is under pressure.

- .8 Repeat hydrostatic test until defects have been correct.
- .9 Apply leakage test pressure of 100 psi after complete backfilling of trench, based on elevation of lowest point in main and corrected to elevation of gauge, for a period of 2 hours.
- .10 Define leakage as amount of water supplied from water storage tank in order to maintain test pressure for 2 hours.
- .11 Do not exceed allowable leakage as stated in pipe manufacturer's printed literature.
- .12 Locate and repair defects if leakage is greater than amount specified.
- .13 Repeat test until leakage is within specified allowance.
- .14 Flushing and disinfecting operations to be carried out by contractor and witnessed by City Engineer. Notify City Engineer and Consultant at least 4 days in advance of proposed date when flushing operation to commence.
- .15 Flush water through available outlets with a sufficient flow to produce a velocity of 1.5 m/s, for 10 minutes or until foreign materials have been removed and flushed water is clear.
- .16 Cut pipes in approved manner as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- .17 Provide connections and pumps required.
- .18 Open and close valves, hydrants, and service connections to ensure thorough flushing.
- .19 When flushing has been completed to satisfaction of City Engineer, introduce a strong solution of chlorine into water line and ensure that it is distributed throughout entire system.
- .20 Disinfect water lines.
- .21 Rate of chlorine application to be proportional to rate of water entering pipe.
- .22 Chlorine application to be close to point of filling water line and to occur at same time.
- .23 Flush line to remove chlorine solution after 24 hours.
- .24 Measure chlorine residuals at extreme end of line being tested, in accordance with and to satisfaction of requirements of City Engineer and Provincial Authority.
- .25 After installing and backfilling over lines, restore surface to original condition as directed by Consultant.

END OF SECTION

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1 General

1.1 RELATED SECTIONS

- .1 Section 31 23 00 Excavation and Fill.
- .2 Section 33 05 13 Manholes and Structures.
- .3 Section 33 41 13 Public Storm Utility Drainage Piping.

1.2 **REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C14M-99, Standard Specification for Concrete Sewer, Storm Drain and Culvert Pipe (Metric).
 - .2 ASTM C76M-02, Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe (Metric).
 - .3 ASTM C136-01, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 - .4 ASTM C443M-02, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets (Metric).
 - .5 ASTM D2680-01, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly (Vinyl Chloride) (PVC) Composite Sewer Piping.
 - .6 ASTM D3034-00, Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - .7 ASTM D3350-02, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A257 Series-M92(R1998, Standards for Concrete Pipe.
 - .2 CSA B1800-02, Plastic Non-pressure Pipe Compendium B1800 Series (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8 and B182.11).
 - .1 CSA B182.2-02, PVC Sewer Pipe and Fittings (PSM Type).
 - .2 CSA B182.6-02, Profile Polyethylene Sewer Pipe and Fittings for Leak-Proof Sewer Applications.
 - .3 CSA B182.11-02, Recommended Practice for the Installation of Thermoplastic Drain, Storm, and Sewer Pipe and Fittings.

1.3 DEFINITIONS

.1 Pipe section is defined as length of pipe between successive manholes and/or between manhole and any other structure which is part of sewer system.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 Submittal Procedures.
- .2 Indicate proposed method for installing carrier pipe for undercrossings.
- .3 Inform Consultant at least 4 weeks prior to beginning Work, of proposed source of bedding materials and provide access for sampling.
- .4 Ensure certification is marked on pipe.
- .5 Submit manufacturers information data sheets and instructions in accordance with Section 01 33 00 Submittal Procedures.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 SCHEDULING OF WORK

- .1 Schedule work to minimize interruptions to existing services and to maintain existing flow during construction.
- .2 Submit schedule of expected interruptions for approval and adhere to approved schedule. Notify Consultant 72 hrs in advance of any changes to said schedule.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate into on site bins waste materials in accordance with Waste Management Plan.
- .2 Place materials defined as hazardous or toxic in designated containers.
- Divert unused aggregate materials from landfill to quarry for reuse. .3
- Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional .4 and Municipal regulations.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

2 Products

2.1 PLASTIC PIPE AND FITTINGS

- Type PSM Polyvinyl Chloride (PVC): to ASTM D3034. .1
 - Standard Dimensional Ratio (SDR): 35. .1
 - .2 Locked-in steel reinforced gasket and integral bell system.
 - .3 Nominal lengths: 4 m.
- Size as indicated. .2 .3
 - Acceptable material:
 - **IPEX** "Ring Tite" .1

SERVICE CONNECTIONS 2.2

- Type PSM Poly (Vinyl) Chloride: to CSA-B182.2. .1
- .2 Plastic pipe: to CSA B182.1, with push-on joints.
- .3 Vitrified clay pipe and fittings: to ASTM C700, standard strength, unglazed bore, bell and spigot type with flexible type joints.
- Cast iron pipe: to CAN/CSA-B70, with rubber gasket push-on joints to ANSI/AWWA .4 C111/A21.11. Fittings: to CAN/CSA-B70.
- .5 Cast iron service saddles: with oil resistant gaskets, bronze clamp and oil resistant "0" rings in branch end.

2.3 **CEMENT MORTAR**

- .1 Portland cement: to CAN/CSA-A5, normal type 10.
- .2 Mix mortar one part by volume of cement to two parts of clean, sharp sand mixed dry.
 - Add only sufficient water after mixing to give optimum consistency for placement. .1
 - .2 Do not use additives.

2.4 PIPE BEDDING AND SURROUND MATERIALS

- Granular material to Section 31 23 00 Excavation and Fill and following requirements: .1
 - .1 Crushed or screened stone, gravel or sand.
 - .2 Gradations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1.
- .2 Concrete mixes and materials for cradles, encasement, supports: to Section 03 30 00 - Castin-Place Concrete.

2.5 PIPE INSULATION

Extruded polystyrene to CAN/ULC-5701-1997, Type IV, RS1 value of 0.87 per 25mm .1 thickness (R-50), ship-lapped edges to thickness indicated.
- .2 Standard of Acceptance:
 - .1 Dow Styrofoam SM
 - .2 Celfort Celfortec 300

2.6 BACKFILL MATERIAL

- .1 As indicated.
- .2 Type 3, in accordance with Section 31 23 00 Excavation and Fill.

3 Execution

3.1 **PREPARATION**

.1 Clean pipes and fittings of debris and water before installation. Carefully inspect materials for defects before installing. Remove defective materials from site.

3.2 TRENCHING

- .1 Do not allow contents of any sewer or sewer condition to flow into trench.
- .2 Trench line and depth require approval prior to placing bedding material and pipe.
- .3 Do not backfill trenches until pipe grade and alignment have been checked and accepted by Consultant.

3.3 GRANULAR BEDDING

- .1 Place bedding in unfrozen condition.
- .2 Place granular bedding materials in uniform layers not exceeding 150 mm compacted thickness or as directed by Consultant.
- .3 Shape bed true to grade and to provide continuous, uniform bearing surface for pipe. .1 Do not use blocks when bedding pipe.
- .4 Shape transverse depressions as required to suit joints.
- .5 Compact each layer full width of bed to at least 95 % corrected maximum dry density.
- .6 Fill excavation below bottom of specified bedding adjacent to manholes or structures with compacted bedding material.

3.4 INSTALLATION

- .1 Do installation in conformance with City of Charlottetown requirements.
- .2 Lay and join pipes to: ASTM C12.
- .3 Lay and join pipes in accordance with manufacturer's recommendations and to approval of Consultant.
- .4 Handle pipe by methods recommended by pipe manufacturer. Do not use chains or cables passed through rigid pipe bore so that weight of pipe bears upon pipe ends.
- .5 Lay pipes on prepared bed, true to line and grade with pipe inverts smooth and free of sags or high points. Ensure barrel of each pipe is in contact with shaped bed throughout its full length. To establish grade of gravity sewer pipe, pipe will be laid using surveyor's level or laser equipment designed for this purpose.
- .6 Commence laying at lower end and proceed in upstream direction with bell ends of pipe facing upgrade.
- .7 Do not exceed maximum joint deflection recommended by pipe manufacturer.
- .8 Do not allow water to flow through pipes during construction except as may be permitted by Consultant.
- .9 Whenever work is suspended, install removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.
- .10 Joints:
 - .1 Join plastic pipe in strict accordance with manufacturer's recommendations.
 - .2 Use only adapters and/or joint connectors recommended by plastic pipe manufacturer for connection to sanitary sewer line at building foundation wall.

- .11 Cut pipes as required for drops in manholes, special inserts, fittings or closure pieces in a neat manner, as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- .12 Make watertight connections to manholes and catch basins. At existing units or where gaskets are not integral with opening in wall of manhole or catch basin use rubber ring stretched over pipe grouted solidly in wall with non-shrink grout.
- .13 Use prefabricated saddles or other approved field connections for connecting pipes to existing sewer pipes. Joint to be structurally sound and watertight, and where applicable acceptable to Provincial or Municipal authority.
- .14 Upon completion of pipe laying and after Consultant has inspected pipe joints, place specified granular material to dimensions indicated or directed by Consultant. Leave joints exposed until ex-filtration test results are completed.
 - .1 Install pipe insulation where shown to width and thickness indicated with underside 150mm above top of pipe. Extend minimum 600mm wide around manhole at same elevation.
- .15 When test results are acceptable to Consultant backfill remainder of trench.

3.5 BACKFILL

- .1 Place backfill material in unfrozen condition.
- .2 Place backfill material, above pipe surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.
- .3 Under paving and walks, compact backfill to at least 95 % corrected maximum dry density.
 - .1 In other areas, compact to at least 90 % corrected maximum dry density.

3.6 UNDERCROSSING (DELETE IF NOT REQUIRED)

- .1 Excavate working pit to dimensions indicated, outside right-of-way to be crossed.
- .2 Excavate working pit to minimum of 0.5 m below lowest invert of encasing pit.
- .3 Dewater excavation.
- .4 Dewater area of undercrossing.
- .5 Install heavy timber backstop.
- .6 Place encasing pipe to exact line and grade as indicated.
 - .1 Encasing pipe: undercross obstruction at ____ degrees.
- .7 Install encasing pipe by jacking.
- .8 Ensure encasing pipe is not in tension.
- .9 Use mechanical type joints for encasing pipe.
- .10 Place concrete grout leveling pad in encasing pipe.
 - .1 Control level of grout during placing.
- .11 Provide shop drawings showing proposed method of installation for sanitary sewer in undercrossing.
- .12 Insert sanitary sewer pipe into encasement pipe, in end with largest opening after placement of leveling pad.
- .13 Use approved blocking method to guide sanitary sewer pipe in true alignment.
- .14 Clearance between blocks and encasement pipe: maximum 12 mm when sanitary sewer pipe is in position.
- .15 Join sanitary sewer pipe one length at time outside encasement pipe. Push sanitary sewer pipe into position.
- .16 Couplings of sanitary sewer pipe: not to rest on leveling pad when sanitary sewer pipe is in position.
- .17 Place 20 MPa concrete cradle around sanitary sewer pipe after it is positioned.
 - .1 Cradle to be minimum of 225 mm and maximum of 300 mm above leveling pad.
- .18 Pressure grout remaining void with grout consisting of one part Portland cement and two parts clean washed sand with only sufficient amount of water added to allow placement.
 - .1 Do not install pressure grout until sanitary sewer pipe is secure against flotation.
 - .2 Do not use additives.
- .19 Do field testing before placing concrete cradle and grouting.

3.7 SERVICE CONNECTIONS

- Install pipe to CSA B182.11 manufacturer's instructions and specifications. .1
- .2 Maintain grade for 100 and 125 mm diameter sewers at 1 vertical to 50 horizontal unless directed otherwise by Consultant.
- Service connections to main sewer: standard. .3
 - Do not use break-in and mortar patch-type joints. .1
- Service connection pipe: not to extend into interior of main sewer. .4
- Make up required horizontal and vertical bends from 45 degrees bends or less, separated by .5 straight section of pipe with minimum length of four pipe diameters. .1
 - Use long sweep bends where applicable.
- Plug service laterals with water tight caps or plugs as approved by Consultant. .6
- Place location marker at ends of plugged or capped unconnected sewer lines. .7
 - Each marker: 38 x 89 mm stake extending from pipe end at pipe level to 0.6 m above .1 grade.
 - .2 Paint exposed portion of stake red with designation SAN SWR LINE in black.

3.8 **FIELD TESTING**

- Repair or replace pipe, pipe joint or bedding found defective. .1
- When directed by Consultant, draw a tapered wooden plug with a diameter of 50mm less than .2 nominal pipe diameter through sewer to ensure that pipe is free of obstruction.
- .3 Remove foreign material from sewers and related appurtenances by flushing with water.
- Perform ex-filtration testing as soon as practicable after jointing and bedding are complete. .4
- .5 Do ex-filtration testing as directed. Perform tests in presence of Consultant. Notify Consultant twenty-four (24) hours in advance of proposed tests.
- Carry out tests on each section of sewer between successive manholes including service .6 connections.
- .7 Install watertight bulkheads in suitable manner to isolate test section from rest of pipeline.
- Ex-filtration test: .8
 - .1 Fill test section with water in such a manner as to allow displacement of air in line. Maintain under nominal head for twenty-four (24) hours to ensure absorption in pipe wall is complete before test measurements are commenced.
 - .2 Immediately prior to test period add water to pipeline until there is a head of 1020mm over interior crown of pipe measured at highest point of test solution.
 - .3 Duration of ex-filtration test to be two hours.
 - Water loss at end of test period not to exceed maximum allowable ex-filtration over .4 any section of pipe between manholes.
- Infiltration test: .9
 - .1 Conduct infiltration test in lieu of ex-filtration test where static ground water level is 750mm or more above top of pipe measured at highest point in line to be used.
 - .2 Do not interpolate a head greater than 750mm to obtain an increase in allowable infiltration rate.
 - .3 Install a watertight plug at upstream end of pipeline test section.
 - Discontinue any pumping operations for at least 3 days before test measurements .4 are to commence and during this time keep thoroughly wet at least one third of pipe invert perimeter.
 - Prevent damage to pipe and bedding material due to flotation and erosion. .5
 - Place a 90° V-notch weir, or other measuring device approved by Consultant in invert .6 of sewer at each manhole.
 - Measure rate of flow over a minimum of one (1) hour with recorded flows for each five .7 (5) minute interval.
- Infiltration and ex-filtration not to exceed following limits in L per hour per 100m of pipe, .10 including service connections.

Nominal Pipe Diameter (mm)	Plastic Pipe	Concrete Pipe
1	3.88	15.5

Nominal Pipe Diameter (mm)	Plastic Pipe	Concrete Pipe
2	4.62	30.0
3	5.51	34.0
4	7.45	41.5
5	9.39	49.5
6	11.33	56.5
7	13.27	63.5
8	14.91	70.0
9	16.84	76.0
10	18.78	81.5
11	20.72	87.0
12	22.80	92.5
13	26.53	102.0
14	30.11	110.5
15	33.69	118.0
16	37.56	124.5
17	41.29	130.0
18	45.01	135.0
*Values shown in Columns 2 & 3 a	re in liters per hour per	100m of pipe.

.11 Low pressure air testing:

.1

- Low pressure air testing may be employed as an alternate to ex-filtration test. The Contractor shall furnish all facilities and personnel for conducting the air-acceptance test under the observation of the Consultant. The equipment and personnel shall be subject to the approval of the Consultant. Air shall be slowly supplied to the plugged pipe installation until the internal air pressure reaches 0.2813 kg/cm2 (4 psi) greater than the average back pressure of any groundwater that may submerge the pipe. At least two minutes shall be considered acceptable, when tested at an average pressure of 0.211 kg/cm2 (3 psi) greater than the average back pressure of any groundwater that may submerge the pipe, if:
 - .1 The total rate of air loss from any section tested in its entirety between manhole and cleanout structure does not exceed 0.06 m3
 - .2 The section under test does not lose air at a greater rate than 0.000093 m3 per minute per square foot of internal pipe surface.
- .12 Deflection testing:
 - .1 Measure defection by pulling a deflection gauge through each pipe section from manhole to manhole after backfilling.
 - .1 Provide deflection gauges to measure a 5% and 7½% defection. Gauges to be a "Go-No-Go" device similar to Standard Detail 02702-4 (Detail attached).
 - .2 Within thirty days after installation, pull a deflection gauge measuring 5% deflection through the installed section of pipeline. If this test fails proceed with at 7½% deflection test. If 7½% deflection test fails, locate defect and repair. Retest.
 - .3 Thirty days prior to completion of Period of Maintenance, pull a deflection gauge measuring $7\frac{1}{2}$ % deflection through the installed section of pipeline. If $7\frac{1}{2}$ % deflection fails, locate defect and repair. Retest.
- .13 CCTV Inspection:
 - .1 Carry out closed circuit television inspection immediately after construction completion of the sanitary sewer main. Each road or block shall be tested before proceeding to the next road. Submit to Consultant two (2) copies of colour DVD of the inspection together with a written report of the inspection. Carry out repairs to rectify any deficiency in the pipe and to the satisfaction of the Consultant.

- Repair and retest sewer line as required, until test results are within limits specified. Repair visible leaks regardless of test results. .14
- .15

END OF SECTION

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1 General

1.1 RELATED SECTIONS

- .1 Section 26 05 00 Common Work Results Electrical.
- .2 Section 31 23 00 Excavation and Fill.

1.2 **REFERENCES**

- Canadian Standards Association (CSA).
 - .1 CSA C22.2 No. 211.1, Rigid Types EBI and DB2/ES2 PVC Conduit.

2 Products

.1

2.1 PVC DUCTS AND FITTINGS

- .1 Rigid PVC duct: to CSA C22.2 No. 211.1, type rigid PVC for direct burial with minimum wall thickness at any point of 1/10". Nominal length: 10' plus or minus 0.5". Type DB2 (thinwall) PVC conduits unacceptable.
- .2 Rigid PVC split ducts as required.
- .3 Rigid PVC bends, couplings, reducers, bell end fittings, plugs, caps, adaptors same product material as duct, to make complete installation.
- .4 Rigid PVC 90° and 45° bends as required.
- .5 Rigid PVC 5° angle couplings as required.
- .6 Expansion joints as required.
- .7 Preformed, interlocking intermediate duct spacers for duct size as indicated
- .8 Use epoxy coated galvanized steel conduit for sections extending above finished grade.

2.2 SOLVENT WELD COMPOUND

.1 Solvent cement for PVC duct joints.

2.3 CABLE PULLING EQUIPMENT

.1 Use 1/4" stranded nylon pull rope tensile strength 5 kN.

2.4 MARKERS

.1 6" wide, polyethylene marker tape in all trenches. Use red colored tape. Install at depth as per drawings.

3 Execution

3.1 INSTALLATION

- .1 Install duct in accordance with manufacturer's instructions.
- .2 Clean inside of ducts before laying.
- .3 Ensure full, even support every 1.5 m and smooth transitions throughout duct length.
- .4 Slope ducts with 1 to 400 minimum slope.
- .5 During and after construction, cap ends of ducts to prevent entrance of foreign materials.
- .6 Pull through each duct wooden mandrel not less than 300 mm long and of diameter 6 mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth and other foreign matter. Pull stiff bristle brush through each duct immediately before pulling-in cables.
- .7 In each duct install pull rope continuous throughout each duct run with 3 m spare rope at each end.
- .8 Install continuous strip of marker tape above duct before backfilling.

.9 Notify Departmental Representative upon completion of direct buried ducts and obtain acceptance prior to backfill.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 26 05 00 Common Work Results Electrical.
- .2 Section 26 05 34 Conduits, Conduit Fastenings and Conduit Fittings.
- .3 Section 33 65 76 Direct Buried Underground Cable Ducts.

2 Products

2.1 MATERIALS

- .1 Underground ducts: to Section 33 65 76 Direct Buried Underground Cable Ducts, rigid PVC type, size as indicated.
- .2 Backfill: clean and free from debris.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Coordinate incoming service with Utility on site.
- .2 Meter socket to Utility requirements. Connect PT & CT around service cables and coordinate location of remote meter with Utility on site.
- .3 Seal ducts and conduits at building entrance location after installation of cables.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 Common Work Results Electrical.
- .2 Perform additional tests as required by authority having jurisdiction.
- .3 Submit written test results for review and approval.

END OF SECTION