SPECIFICATIONS

Riverview Long Term Care Facility

Montague, PEI

TP1 Site Access and Building Pad Preparation

TP2 Foundation

Architect:
BGHJ ARCHITECTS
PO Box 1719, 63 Fitzroy Street, Charlottetown, PE, C1A 7N4, (902) 566-4449, Fax: (902) 566-1235

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PART 1 - GENERAL

1.1 Submission

.1 Sealed tenders will be received at the Department of Transportation, Infrastructure and Energy, 3rd Floor Jones Building, 11 Kent Street, Charlottetown, PEI until 2 p.m. local time on May 5th, 2016.
Phone:(902) 620-3884, Fax: (902) 569-0590
Attention: Raymonde Arsenault-MacKenzie, where they will be opened at the appointed time. Bidders are invited to be present at the opening.

1.2 Scope of Work

.1 TP1 - Site Access and Building Pad:
.1 Work to begin immediately upon award
.2 Building pad work to be completed enough to allow foundation start July 1st
.3 Remove topsoil and stockpile on site as directed
.4 Remove all materials noted and place material as required within site limits (i.e. cut & fill to appropriate grades)
.5 Place structural fill in building pad area and entrance road and parking area and as noted.
.6 Develop site access and parking up to underside granular elevation (granular and asphalt NIC)
.7 Place all environmental measures including storm water management pond as required (sediment may not leave site)
.8 This TP is responsible for dust control and keeping the street clean at all times.

.2 TP2 - Foundation:
.1 On site work to begin July 1st
.2 Include excavation and backfill
.3 Formwork
.4 Reinforcing Steel
.5 Concrete
.6 Insulation
.7 Waterproofing
.8 Foundation drainage
.9 Supply and install embedded metals / anchor bolts

1.3 Enquiries

.1 Direct all enquiries during the tender period to:

Brighton Construction
99 Pownal Street
Charlottetown,PE
Phone: 902-894-3876 Fax: 902-894-3568
Attention: Jamie Dickie

1.4 Tendering Procedure

.1 Trade Contractors:
.1 Trade Contractors will submit their tender for the entire work of the Contract as described, directly to the Owner in accordance with the requirements of the Invitation to Tender and this specification.
.2 Subcontractors:
.1 Subcontract bidders will submit their tenders directly to the Trade Contract bidders, for incorporation by the Trade Contractors into their tenders.

.2 Trade Contract bidders shall take particular care to ensure their tender is submitted on the proper tender form and is identified clearly as to the particular element.
.1 Subcontract bidders will submit their tenders to the Trade bidder, on, or in a form acceptable to the individual Trade bidders, to whom bids are submitted.

1.5 Specification Explantion

.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 "furnish", "provide" or similar words shall mean the work described shall be completely supplied, and erected or installed by the Contractor, unless otherwise noted.

1.6 Examination of Site

.1 All bidders submitting tenders for this work shall first examine the site and all conditions thereon and/or therein, including:
.1 Existing conditions visually evident at the time of tender upon which the Work of this Contract will be installed;
.2 Conditions attached to, abut 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.

1.7 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 Construction Manager shall be called immediately in writing to such conditions before they are disturbed.

1.8 Geotechnical, Investigation Reports

.1 A copy of a preliminary Geotechnical Investigation report identified as file: Preliminary Geotechnical Investigation - Riverview Manor, Montague, Kings County, PE, as detailed and prepared by Stantec Consulting Ltd. is available by request in PDF format through the office of the Project Manager.

.2 A copy of a supplemental Geotechnical Investigation report identified as file: Supplemental Geotechnical Investigation - Riverview Manor, Montague, Kings County, PE, as prepared by Stantec Consulting Ltd. is available by request in PDF format through the office of the Project Manager.

.3 These reports record properties of the soil recommendations for the design of the foundations, prepared primarily for the use of the consultant. The recommendations given shall not be construed as requirements of the contract unless contained in the contract documents.

3. The report, by its nature, cannot reveal all conditions that exist or can occur on site. Should subsurface conditions, in the opinion of the consultant, be found to vary substantially from the report, changes in the design and construction of foundations will be made with the resulting credits or expenditures to the contract price accruing to the owner.

4. Direct all questions to the Construction Manager.

1.9 Document Interpretation

.1 In the event of a dispute between the Contractor and the Construction Manager 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 Construction Manager 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, User Groups, Consultant and Construction Manager will not be responsible for verbal isntructions.

.5 Addenda will be distributed by fax and/or mail.

.6 Every effort will be made to issue addenda not less than three (3) days prior to the time for the closing of tenders, at the Consultant's discretion.

1.10 Preparation and Submission of Bids

.1 Contractors shall submit their bids on the Tender 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 Tender 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 Tender 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 tender form.
.3 Tender amount shall be stated both in writing and in figures.
.4 Signatures shall be without alteration or erasure.
.5 Receipt of addenda for the project shall be acknowledged by filling in the addendum number and date of issue for each addendum on the appropriate line on the Tender Form. These lines shall be initialed by the person signing the tender after they have been filled in.

.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, for that element of the work, regardless of any notations by Bidder that certain parts of the required Work are omitted from their bid.

.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 00, 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 The Construction Manager, Consultant and Owner will evaluate Tenders submitted for this project. The criteria to be considered by the Owner in awarding the Contract will include a combination of:
.1 Bid price;
.2 Scheduling;
.3 Compliance;
.4 Expertise;
.5 Qualifications of the Contractor and named Subcontractors / Suppliers and
.6 Any other such conditions as may be determined by the Owner to be in the best interests of the Owner. A decision on the acceptance of a Tender will be made by the Owner based on the results of the Owner's evaluation.

.11 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.

.12 Bidders are to complete any other Appendices forming part of the Tender Form as directed under Section 00 41 00 - Trade Contract Tender Forms.

.13 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.
.3 Identification of the trade package for which the tender.

.14 Envelope to be addressed to the recipient of tenders indicated in the Invitation to Tender and delivered by hand, registered mail or courier.

.15 Submit one (1) only signed copy of Tender Form.

.16 Accompanying the Tender 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.

1.11 Bid Guarantee

.1 Each tender submitted shall be accompanied by following Security:
.1 For a Total Trade Tender less than Three Million Dollars ($3,000,000.00), including all Subcontract values:
.2 A Bid Bond equal to at least ten percent (10%) of the tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond in the amount of fifty percent (50%) of the total contract amount. or
.3 A security Deposit equal to at least ten percent (10%) of the tender amount.

.2 Total Trade Contract Tender more than Three Million Dollars ($3,000,000.00), including all Subcontract values:
.1 A Bid Bond equal to at least ten percent (10%) of the trade tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond in the amount of fifty percent (50%) of the total contract amount and a Labour and Materials Payment Bond in the amount of fifty percent (50%) of the total contract amount.

.3 All Bonds and Letters of Surety supplied by Trade Contractors, made payable to the Owner.
.1 Bonds and Letters of Surety supplied by the Trade Contractor to the Owner shall be from a recognized surety company, satisfactory to, and approved by the Owner.
.2 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 criteria.
.3 Security Deposits, provided by Trade Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a credit Union, payable to the Owner. or

.4 Bonds of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:
.1 Payable to the bearer, or
.2 Accompanied by a duly executed instrument of transfer to The Owner, in the form prescribed by the Domestic Bonds of Canada Regulations, or
.3 Negotiated as to principle or as to principle and interest in the name of the Owner, pursuant to the Domestic Bonds of Canada Regulations.

.5 Security deposits submitted by subcontractors, to Trade Contractors, shall be in a form satisfactory to the Trade Contractor.

1.12 Contract Security

.1 Upon award of a contract the Trade Contractor is to provide the following contract security:
.1 Total Trade Contract Tender less than Three Million Dollars ($3,000,000.00), including all Subcontract values:
.2 A Performance Bond in the amount of fifty percent (50%) of the total contract amount. or
.3 A Security Deposit in an amount equal to at least ten percent (10%) of the total contract amount.

.2 Trade Contract Tender more than Three Million Dollars ($3,000,000.00), including all Subcontract values:
.1 A Performance Bond and a Labour and Materials Payment Bond, each in the amount of fifty percent (50%) of the total contract amount.

.3 All Bonds provided by Trade Contractors, made payable to the Owner.
.1 Bonds shall be from a recognized surety company, and approved by the Owner.
.2 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 criteria.

.4 Security Deposits, provided by Trade Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a Credit Union, payable to the Owner. Or

.5 Bonds of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:
.1 Payable to the bearer, or
.2 Accompanied by a duly executed instrument of transfer to The Owner, in the form prescribed by the Domestic Bonds of Canada Regulations, or
.3 Negotiated as to principle or as to principle and interest in the name of the Owner, pursuant to the Domestic Bonds of Canada Regulations, or
.4 Contract security shall be provided at the expense of the Trade Contractor, bonds shall be provided by an established surety company satisfactory to, and approved by the Owner. Certified Cheques or Bank Drafts shall be drawn on an account with a recognized financial institution.
.5 Contract security submitted by subcontractors, to Trade Contractors, shall be in a form satisfactory to the Trade Contractor.

.6 If in accordance with the Contract Security requirements the successful Trade Contractor has used a certified cheque as Contract Security, the cheque will be deposited in a safety deposit box in a bank to which the Canadian Bank Act applies and, subject to the progress of the work being acceptable to the Owner and Consultant, will be held with interest until the

date of Substantial Performance for the Contract, as defined under Definition 20 of CCA-17, 1996, at which time it will be returned to the Contractor, with interest.

.7 If the tender deposit is in the form of a certified cheque, the cheque will be retained or placed in a chartered bank, at the Contractor's option, until twelve (12) months after the issuance of the Total Performance Certificate or until it has been replaced with a Fifty Percent (50%) Performance Bond.

1.13 Receipt and Opening of Bids

.1 Bids will be opened publically at the time and place stated in the Invitation to Tender. 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 Telegraphed, telephoned, emailed or facsimile transmitted bids will not be considered.

.3 Any firm which has submitted a tender has the privilege of being present at the bid opening.

1.14 Adjustment and Withdrawal of Bids

.1 Bids may be withdrawn or adjusted in writing by mail, delivered in person or telegram or facsimile transmission delivered to the party to whom the bids were submitted, provided such withdrawal or adjustment is prior to the time fixed for the opening of the bids. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal or adjustment of the bid after the expiration of the time within which bids may be submitted.

.1 All withdrawals or adjustments to previously submitted tenders must be faxed to the Owner prior to the time fixed for the opening of bids. Fax number for the Owner is (902) 569-0590.

.2 Neither the Owner nor the Consultant, nor the Construction Manager accepts responsibility for the Contractors inability to submit faxed modifications within the allotted time for such circumstances, including but not limited to power and equipment failures, transmission failures, paper outages, busy fax line, etc.

.3 Adjustments must be signed by the same person who signed the original bid.

1.15 Award of Contract

.1 The Contract, if awarded, will be awarded 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 Tender 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 Construction Manager. 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, 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 Trade 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 Where identical bids are received, the low bidder will be selected on the basis of a coin toss by the Owner in the presence of the identical bidders. The low bid will then be evaluated in accordance with Section 00 21 13 item 1.9.10.

1.16 Rejection of Bids

.1 The Owner reserves the right to reject any & 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 Trade 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 or Construction Manager by reason of the Owner's rejection of their individual bids or all bids.

1.17 Subcontract Work

.1 Trade 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 Trade Contractors and their Subcontractors are advised to become familiar with all specifications and drawings.

1.18 Conditions of Work and Employement in PEI

.1 All Trade 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 enquire and determine the terms and conditions of work and employment in the Province of Prince Edward Island.

1.19 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 favoured by reason of sex, racial origin, religious views, or political affiliations.

.2 Trade Contractors, to the extent possible, are encouraged to maximize the employment of the local labour force for the Work of this Contract.

1.20 Taxes

.1 All applicable provincial sales taxes shall be included in the tender price, excluding the Goods and Service Tax. The Contractor, as per current Provincial Regulations, shall include on all invoices the Goods and Services Tax as an additional line item. This would be an addition to the tender amount which does not include GST.

.2 Effective September 1, 2000, vendors are required to change billing procedures to include GST on invoices to Province of PEI Departments, Agencies, Crown Corporations, and Regional Health Authorities. Vendors are to continue to charge PST where applicable. See article 26 of this Section.

1.21 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.

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 Tender Form, together with the price difference compared to the specified products, when such Appendix is identified under Section 00 41 00 - Tender Form.

1.22 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. The Consultant will not search catalogs or contact suppliers to get the necessary information for proper evaluation.

.2 Submission by Bidders for evaluation of products requested to be considered as equal must be submitted to Consultant no less than 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.

.3 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.

.4 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.

.5 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.

.6 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 Trade 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.

1.23 Alternatives

.1 Alternative products, when requested under Section 00 41 00 General Contract Tender Form, must be listed in Appendix "B" provided as part of the Tender 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 Trade Contractor to substitute an alternative product.

1.24 Unit Prices

.1 Unit Prices, when requested under Section 00 41 00 General Contract Tender Form, must be listed in Appendix "C", as part of the Tender 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.

1.25 Separate Prices

.1 Separate Prices, when requested under Section 00 41 00, must be listed in Appendix "D", as part of the Tender 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 taxes and markups.

1.26 Guarantees

.1 The Trade 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.

1.27 Payment of Workers

.1 The Trade Contractor shall, in addition to any fringe benefits, pay the workers employed by the Trade 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 Trade Contractor shall pay workers employed on the work at intervals of not less than twice per month.

.2 The Trade 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 Trade 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 Trade 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 Trade Contractor will be considered by the Owner concerning any change in the Minimum Wage Order which may occur during prosecution of the Contract.

1.28 Confidentiality and Freedom of Information

.1 By submitting your bid, you agree to disclosure of the information supplied, subject to the provisions of the Freedom of Information & Protection of Privacy (FOIPP) Act.

.2 Anything submitted in your bid that you consider to be "confidential information" because of its proprietary nature should be marked as "Confidential", and will be subjected to appropriate consideration under the freedom of Information and Protection Privacy Act.

.3 During the delivery and installation of goods and/or services, you may have access to confidential or personal information. Should this occur, you must ensure that such information is not released to any third party or unauthorized individual.

.4 Any information provided on this contract may be subjected to release under the freedom of Information and Protection Privacy Act. You will be consulted prior to the release of any information.

1.29 Timing Requirements

.1 The Construction Manager will provide schedule milestones specific to the work this Trade Contractor at the time of tender call.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END

PART 1 - GENERAL

1.1 TENDER

SUBMITTED BY:

_____
(Name)

_____
(Address)

DATE:

_____

FOR:
PROJECT NAME: Riverview Long Term Care Facility

TRADE CONTRACT:_____

LOCATION: Montague, PEI

TO: PROJECT OWNER: PEI Department of Transportation, Infrastructure and Energy

Having examined ALL the drawings and specifications for this project, as well as any addenda issued, as prepared by the Construction Manager and BGHJ Architects and/or/ their Consultants; WE HEREBY OFFER to furnish all materials and labour necessary for the full and proper completion of the Contract work for:

PROJECT NAME: Riverview Long Term Care Facility

TRADE CONTRACT:_____

LOCATION: Montague, PEI

including all prime cost allowances and Government sales or other taxes in force at this date, INCLUDING Harmonized Sales Tax (HST) and any other additional or deductible allowances or taxes which may be applicable subsequent to this date, and which 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.

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.

In the event of this Tender being accepted within forty five (45) days of the time stated for the closing of Tenders, 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.

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 the Owner.
.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 Complete the entire work on or before the dates stated.
.6 Provide and update as required a Construction Schedule which clearly shows the state of progress required to complete the work on the date specified.
.7 Enter into subcontract agreements where applicable.

COMPANY:_____

AUTHORIZED SIGNATURE:_____

Schedule of Work

We agree to start the work within three (3) days of Contract award and attain Substantial Performance of the work for TP1 by_____ and for TP2 by _____.

Project Personnel

The undersigned hereby agrees that the following are the Job Superintendent and project Manager directly involved with the Project for the duration of the Contract.

Schedule of Work

Name

Name

1.2 ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

Addendum No. _____ Issued: _____ _____ initial

1.3 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.

1.4 APPENDIX 'A'

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

_____

_____

_____

_____

_____

_____

1.5 APPENDIX 'B' 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.

SECTION ITEM BASE BID ALTERNATIVE	TENDER PRICE INCREASED BY	TENDER PRICE DECREASED BY
_____	$	$
_____	$	$
_____	$	$
_____	$	$

COMPANY: _____

AUTHORIZED SIGNATURE:_____

1.6 APPENDIX 'C' 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.

PRICE ONLY FOR UNIT OF WORK OR DELETION		ONE (1) UNIT EITHER ADDITION
.1 _____	$_____	
.2 _____	$_____	
.3 _____	$_____	
.4 _____	$_____	

COMPANY: _____

AUTHORIZED SIGNATURE:_____

1.7 APPENDIX 'D' SEPARATE PRICES

We submit herewith our Separate Price for the addition of 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.

PRICE ONLY FOR ONE (1) UNIT
DESCRIPTION OF SEPARATE PRICE WORK EITHER
ADDITION OR DELETION

.1 _____ $_____
.2 _____ $_____
.3 _____ $_____

COMPANY:_____

AUTHORIZED SIGNATURE:_____

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 FORM OF AGREEMENT

.1 The Form of Agreement between The Trade Contractor and Owner shall be Standard Construction Document CCA-17,1996, "Stipulated Price Contract for Trade Contractors on Construction Management Projects", including the Definitions and General Conditions thereto dated 1996 including items GC1.1 to GC12.3, and the modifications to items GC1.1 to GC12.3 incorporated into Section 00 73 00 Supplementary Conditions.

.2 Document CCA-17,1996 may be examined at the Construction Association office in Charlottetown, PEI.

END

PART 1 - GENERAL

1.1 GENERAL

.1 The Definitions and General Conditions governing the work shall be those specified the following amendments and supplements to those provisions, and shall apply to all Sections of this Specification.

.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.

.3 The General Conditions governing this work shall be those specified in Standard Construction Document CCA 17-1996 Stipulated Price Contract for Trade Contractors on Construction Management Projects, plus the following amendments and supplements to those provisions and shall apply in all sections of this specification.

.4 The General Conditions including modifications (Section 00 73 00 Supplementary Conditions) shall become part of the Contract and shall apply to all Trade Contractors and Trade Subcontractors.

1.2 DEFINITIONS

.1 The following amendments shall apply to the Definitions of CCA-17, 1996 Stipulated Price Contract for Trade Contractors on Construction Management Projects.

.2 Paragraph 3 Owner, add the following: The
.1 Owner shall be PEI Department of Transportation, Infrastructure and Energy.

.3 Paragraph 5 Subcontractor, add the following:
.1 All dealings with the Subcontractor shall be through the medium of the Trade Contractor, who will be responsible for the proper coordination and execution of the Sub-contractor's work.
.2 The word Subcontractor shall have the same definition as Trade Subcontractor.
.3 Paragraph 4 Trade Contractor, add the following:
.1 The word Contractor shall have the same definition as Trade Contractor.

.4 Paragraph 8 Consultant, add the following:
.1 The Consultant shall be the Owner's Prime Consultant, BGHJ Architects, Charlottetown, PEI.

.5 Paragraph 7 Construction Manager
.1 The Construction Manager shall be Brighton Construction Inc.

.6 Engineer
.1 This shall mean the designated representative of the Consultant.

1.3 ARTICLE GC1.1 CONTRACT DOCUMENTS

.1 Paragraph 1.1.10 - Delete as written and substitute: 1.1.10 The Contractor shall receive up to 15 sets of drawings and specifications from the Construction Manager. Additional sets of drawings will be supplied at cost of reproduction. The above covers the requirements of all trades.

.2 Paragraph 1.1.1 - Add new Sub-Clause .2 as follows: Electronic documents are and shall remain the Consultant's property. Copies of electronic documents may be made available for the preparations of shop drawings at the Consultant's discretion.

.3 Paragraph 1.1.1 - Add new Sub-Clause .2 as follows: Electronic documents are and shall remain the Consultant's property. Copies of electronic documents may be made available for the preparations of shop drawings at the Consultant's discretion.

1.4 ARTICLE GC3.1 CONTROL OF THE WORK

.1 Paragraph 3.1.1 - add new Sub-Clause 1 as follows:
.1 The Trade Contractor shall co-ordinate his own work and the work of his Trade Subcontractors so as to facilitate and expedite the progress of the work.

.2 Paragraph 3.1.1 Add new Sub-Clause 2 as follows:
.1 It is the responsibility of the Trade Contractor to immediately notify the Construction Manager 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.

.3 Add new paragraph 3.1.3 as follows:
.1 Before ordering any materials or doing any work, Trade Contractor shall verify all compensation will be 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 Construction Manager for consideration before proceeding with the work.

.4 Add new paragraph 3.1.4 as follows:
.1 The Trade Contractor will be responsible for effecting the removal from the site of any sub- contractor, firm, group or person who is delaying the work, or whose work is unsatisfactory. The Trade Contractor will arrange for other

competent trades people to complete the work at no expense to the Owner.

.5 Add new paragraph 3.1.5 as follows:
.1 Notwithstanding any other provision in the Contract Documents, the Work shall be under and subject to the direction and control of the Construction Manager acting for the Owner in respect to Work of this Trade Contractor and Work of other Trade Contractors having separate contracts with the Owner. All reasonable notices, directions, and instructions given to the Trade Contractor by the Construction Manager shall be complied with by the Trade Contractor. All notices, requests, claims, or other communication by the Trade Contractor shall be to the Construction Manager.

1.5 ARTICLE GC 3.5 CONSTRUCTION SCHEDULE

.1 Article 3.5.1.3 shall read: Update the construction schedule and report to the Construction Manager on a bi-weekly basis or as stipulated in the Contract Documents or as requested by the Construction Manager.

1.6 ARTICLE GC3.7 SUPERVISOR

.1 Add new paragraph 3.7.4 as follows:
.1 At time of tender, the Construction Manager will require the Trade Contractor to inform him, in writing, of the name and experience of the supervisory personnel he intends to use on the project.

1.7 ARTICLE GC3.9 LABOUR AND PRODUCTS

.1 Add new paragraph 3.9.4 as follows:
.1 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.

1.8 ARTICLE GC4.1 CASH ALLOWANCES

.1 Article GC4.1 - Delete this article.

1.9 ARTICLE GC4.2 CONTINGENCY ALLOWANCE

.1 Article GC4.2 - Delete this article.

1.10 ARTICLE GC5.2 APPLICATIONS FOR PROGRESS PAYMENT

.1 Paragraph 5.2.2 - add new sentences as follows:
.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 Trade Contractor shall be a payment to the Trade Contractor in trust for the specific Trade Subcontractor in respect of whose work the release is made.
.2 Applications for payment shall be directed to the Construction Manager and received no later than the 25th of every Month.

.2 Payments shall be less 15% Lien Holdback amount claimed against each progress .3 Paragraph 5.2.6 - Add new sentences as follows:
.1 Payment for materials will be considered only if such materials are properly stored on site in an enclosure acceptable to the Construction Manager. Security of materials so stored is the responsibility of the Trade Contractor claim.

.3 Add new paragraph 5.2.7 as follows:
.1 Authorized Change Orders shall be listed on the application for payment indicating the amount claimed against each to date of claim.

.4 Add new paragraph 5.2.8 as follows:
.1 With the second and all subsequent applications for payment the Trade Contractor shall include a statutory declaration form CCDC 9B, or other similar form acceptable to the Construction Manager, declaring that all labour and materials entering into the work, including Trade Subcontractors, covered by the previous application, have been paid. With application for release of lien holdback, the Trade Contractor shall include a statutory declaration form CCDC 9A, or other similar form acceptable to the Construction Manager.

1.11 ARTICLE GC5.3 PROGRESS PAYMENT

.1 Paragraph 5.3.1 - Add new sentence as follows:
.1 When any claim for payment during the course of construction includes for completed or partially completed work, which in the opinion of the Construction Manager is defective or otherwise unacceptable, a sum of monies determined by the Construction Manager to be five times the value of the defective or unacceptable work, or five 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.

.2 Paragraph 5.3.2 - Delete as written and substitute:
.1 The Owner shall make payment to the Trade Contractor on account as provided in Article A-5 of the Agreement - PAYMENT

no later than thirty (30) days after the date of issuance of a Progress Claim Certificate by the Consultant to the Owner.

.3 Paragraph 5.3.2 - Add 3 new sentences as follows:
.1 Deficiency monies may be held back at any time during the course of the project for work deemed incomplete or unacceptable.
.2 It remains the Trade Contractor's responsibility to undertake his own deficiency reviews and ensure the entire work conforms to the Contract including quality, completeness and commissioning.
.3 One final deficiency review will be conducted on site. This review with the Owner, Construction Manager and Contractor will be conducted to confirm that all deficiency 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 Trade Contractor's progress payment.

1.12 ARTICLE GC5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Paragraph 5.5.1, Clause 2 - Add new sub-clause 1 and 2 as follows:
.1 Submit with application for payment letter of clearance from the Department of the Provincial Treasury to the Owner that all Revenue Tax remittances payable to the Department for work of this Contract appear to be in order.
.2 Submit with application for payment letter of clearance from The Workers Compensation Board to the Owner starting that the Contractor is in good standing with the board.
.3 Submit with all applications for payment a Letter of Clearance from the Department of Provincial Treasury to the Owner that all Revenue Tax Remittances Payable to the Department for the Work of this Contract are in order.

1.13 ARTICLE GC5.7 FINAL PAYMENT

.1 Paragraph 5.7.2 - Add new sentence as follows:
.1 Any delay in delivering the required Project Record "As-builts" Drawings as described in Section 01 78 00 and Maintenance Information as described in Section 01 78 40 will have the effect of delaying the final payment to the Trade Contractor until the Consultant has received them complete and in good condition.

1.14 ARTICLE GC6.2 CHANGE ORDER

.1 Add new Paragraph 6.2.3 as follows:
.1 The method of adjustment or an amount of adjustment for the Contract Price and of adjustment in the Contract Time for a Change Order shall be the same as for a Change Directive as described under GC6.3 Change Directive.

1.15 ARTICLE GC 6.3 CHANGE DIRECTIVE

.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 except that any claim for extension or reduction of time caused thereby shall be adjusted at the time of ordering such change. Except in Emergency, no change shall be made unless in pursuance of a written order from the Consultant and no claim for an addition to or deduction from the contract sum shall be valid unless so ordered and at the same time valued, or agreed to be valued, as provided below.

.2 Change Orders call for normal changes or additions to the Work will be priced in details giving actual material trade prices (not list prices) and actual labour costs (including Employment Insurance, Worker's Compensation, Holiday Pay) and actual equipment rental. To these prices, the Trade Contractor will add:
.1 For Work less than $2,500, involving the Trade Contractor only, the Trade Contractor adds twenty per cent (20%) to his costs.
.2 For Work over $2,500, involving the Trade Contractor only, the Trade Contractor adds fifteen per cent (15%) to his costs.
.3 For Work less than $2,500, involving a Subcontractor only, the Trade Subcontractor adds twenty per cent (20%) to his costs, submits this price to the Trade Contractor who adds ten per cent (10%).
.4 For Work over $2,500, involving a Trade Subcontractor only, the Trade Subcontractor adds fifteen per cent (15%) to his costs, submits this price to the Trade Contractor who adds five per cent (5%).
.5 For Work less than $2,500, involving the Trade Contractor and a Trade Subcontractor, the Trade Subcontractor adds twenty per cent (20%) to his costs, submits his price to the Trade Contractor who adds ten per cent (10%); to this amount the Trade Contractor adds the cost of his own Work plus twenty per cent (20%) of the cost of his own Work only. The Trade Contractor does NOT add a further ten per cent (10%) to the cost of his own Work.
.6 For Work over $2,500, involving the Trade Contractor and a Trade Subcontractor, the Trade Subcontractor adds fifteen per cent (15%) to his cost, submits this price to the Trade Contractor who adds five per cent (5%); to this amount the

Trade Contractor adds the cost of his own Work plus fifteen per cent (15%) of the cost of his own Work only. The Trade Contractor does NOT add a further five per cent (5%) to the cost of his own Work.

.7 Deletions to Contract: A mark-up shall not be charged nor credited on credit portion of a Change Order.

.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.

1.16 ARTICLE GC9.1 PROTECTION OF WORK AND PROPERTY

.1 Add new paragraph 9.1.4 as follows:

.1 The Trade 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.

1.17 ARTICLE GC11.1 INSURANCE

.1 Paragraph 11.1.1

.1 Delete "if required" on the sixth line. (A certified true copy as described, MUST be promptly within 3 days of contract award).

.2 Change article 11.1.2 to read: This insurance shall be purchased covering the Owner, the Trade Contractor, the Construction Manager, and the Consultant with limits of not less than Five Million Dollars ($5,000,000.00) per occurrence and with a deductible not exceeding Ten Thousand Dollars ($10,000.00).

.3 Change article 11.1.3.1 to read ". with a deductible not exceeding Ten Thousand Dollars ($10,000.00.')

1.18 ARTICLE GC12.3 WARRANTY

.1 Add new Paragraph 12.3.6 as follows:

.1 When a part of the work is occupied by the Owner, for the use intended, prior to Substantial Performance the warranty for the work directly related to the construction and normal operation of that part of the work, shall start on the date of occupancy.

.2 Add new paragraph 12.3.7 as follows:

.1 The Trade Contractor shall ensure that his Trade Subcontractors are bound to the requirements of GC12.3 insofar as their work is concerned.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 SCOPE OF WORK

.1 The Trade Contractor is to provide each item, and properly execute all work as specified herein, indicated by drawings, addenda, or change orders issued with respect to this project.

.2 The Trade Contractor shall coordinate, administer, and supervise all work, material acquisition and labour.

.3 Trade Contractor shall coordinate with Owner and facilitate installation of Owner provided equipment.

1.2 WORK BY OTHERS

.1 Co-operate and coordinate with other Trade Contractors in carrying out the respective works and carry out instructions from Consultant. Coordinate work with Construction Manager and project schedule developed by Construction Manager.

1.3 EXECUTION

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

1.4 DOCUMENTS

.1 The Contract Documents are complementary and what is called for by any one shall be as 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.

.6 A copy of completed contract documents is available for review at the office of the Construction Manager.

.7 PDF digital copies of the complete Set of Drawings, specifications and addenda are available for downloading at:

.8 Ownership.

1.5 COMMUNICATION

.1 All submissions and inquiries shall be directed to the Construction Manager for submission as a Request For Information (RFI) to the Consultant for review.

.2 All direction will be transmitted to the Trade Contractor by the Construction Manager.

.3 Prior to commencement of Work at the Site, the Construction Manager shall issue to the Trade Contractor detailed instruction of the administrative process and forms to be followed throughout progress of the Contract.

.4 From time to time the Consultant may issue Site Instructions (SI) to be transmitted to the Trade Contractor by the Construction Manager.

1.6 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy 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 Copy of Approved Work Schedule.
- .11 Health and Safety Plan and Other Safety Related Documents.
- .12 Other documents as specified.

1.7 CODES AND REGULATIONS

.1 Perform work in accordance with National Building Code of Canada (NBC) 2010 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 and/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.

1.8 WORK SCHEDULE AND PROGRESS REPORTS

.1 Provide updated schedule information from time to time as the progress of the work or Construction Manager may require.

1.9 TRADE CONTRACTOR'S USE OF SITE

.1 Do not unreasonably encumber site with materials or equipment, follow direction received from Construction Manager related to site organization and storage.

.2 Move stored products or equipment, which interfere with operations of Construction Manager or other Trade Contractors.

.3 Obtain and pay for use of additional off site storage or work areas needed for operations.

1.10 PROJECT MEETINGS

.1 Attend bi-monthly project meetings at the site, and at a time approved by Construction Manager.

.2 The Construction Manager will record minutes of meetings and distribute to all parties within three (3) days of meeting.

.3 A representative of the Trade Contractor qualified and authorized to make decisions on site shall attend job meetings when requested by the Construction Manager.

1.11 OWNER'S SITE MEETING

.1 Bi-weekly meetings will be held at the site at a time convenient to the owner, consultant and Construction Manager.

.2 The Construction Manager will record minutes of meetings and distribute to all parties within three (3) days of meeting.

.3 A representative of the Trade Contractor qualified and authorized to make decisions on site may be required to attend Owner's Site Meetings when requested by the Construction Manager.

1.12 SITE INSPECTOR

.1 No work is to be covered without having received approval from the Construction Manager. The Construction Manager 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 Construction Manager and approval granted to resume when a satisfactory solution has been found out.

.3 The Construction Manager 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 Construction Manager or Consultant does not reject any work shall not remove the responsibility for completing all work as specified from the Trade Contractor.

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 Construction Manager's inspection of work.

1.14 CONCEALMENT

.1 Relics and antiquities and items of aboriginal, historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found on site, shall remain property of the Department. Stop work, protect such articles and request directives from Construction Manager.

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 Construction Manager 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 Construction Manager.

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 Trade Contractors are responsible for their Own cutting and patching unless noted otherwise.

.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 Construction Manager of findings if in conflict with information or intent shown.

.2 Where unknown services are encountered, immediately advise Construction Manager and confirm findings in writing.

.3 Trade Contractor shall pay for any or all repairs to existing services that have been damaged due to the Trade Contractor's negligence in the course of his work.

.4 Notify Construction Manager and utilities of intended interruption of services and obtain permission.

.5 Where Work involves breaking into or connecting to existing services, give Construction Manager 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 Construction Manager to maintain critical building and tenant systems.

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

.8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by Authorities Having Jurisdiction.

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

1.19 ADDITIONAL DRAWINGS

.1 The Consultant at his discretion 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 Connecting to existing services.

.2 Special scheduling requirements.

1.2 Existing Services

.1 Before commencing work, establish location and extent of service lines in area of work and notify Consultant of findings.

.2 Notify Owner and utility companies of intended interruption of services and obtain required permission.

.3 Where Work involves breaking into or connecting to existing services, give Owner forty-eight (48) hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.4 Provide for personnel, pedestrian and vehicular traffic.

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

PART 2 - PRODUCTS

2.1 Products

.1 Not Used.

PART 3 - EXECUTION

3.1 Execution

.1 Not Used.

END

PART 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 CCA-17,1996, Stipulated Price Contract.
  .2 Section 00 73 00 Supplementary Conditions.

1.3 APPLICATIONS FOR PROGRESS PAYMENT

.1 Make applications for payment on account as provided in Agreement as Work progresses.

.2 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.

.3 Submit to Construction Manager, at least 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 Owner may reasonably direct and when accepted by Construction Manager, 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 Trade 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 Sales taxes.
.4 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 Construction Manager will issue to Owner, no later than 15 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Construction Manager determines to be properly due. If Construction Manager amends application, Construction Manager will give notification in writing giving reasons for amendment.

1.7 SUBSTANTIAL PERFORMANCE OF WORK

.1 Refer to Section 00 73 00, Article 1.10.2.3.

.2 Prepare and submit to Construction Manager comprehensive list of items to be completed or corrected and apply for a review by Construction Manager 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 10 days after receipt of recommended list and application from Construction Manager, Consultant will review Work to verify validity of application. No later than 7 days

after completing review, will notify Trade Contractor if Work or designated portion of Work is substantially performed.

.4 Construction Manager 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 Construction Manager, establish reasonable date for finishing Work.

.6 Two (2) weeks prior to substantial performance of the work, submit required record drawings and operations / maintenance manuals. These submissions must be received two (2) weeks prior to Construction Manager issuing a Substantial Performance certificate. This requirement will be rigidly enforced.

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, Construction Manager will issue certificate for payment of holdback amount.

.3 Where holdback amount has not been placed in a separate holdback account, Owner shall, 10 days prior to expiry of holdback period stipulated in lien legislation applicable to Place of Work, place holdback amount in bank account in joint names of Owner and Trade Contractor.

.4 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 FINAL PAYMENT

.1 Refer to CCA-17,1996, GC 5.7.

.2 Submit an application for final payment when Work is completed.

.3 Consultant will, no later than 10 days after receipt of recommended application for final payment from Construction Manager, review Work to verify validity of application. Construction Manager will give notification that application is valid or give reasons why it is not valid, no later than 7 days after reviewing Work.

.4 Construction Manager will issue final certificate for payment when application for final payment is found valid.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 APPOINTMENT AND PAYMENT

.1 The Trade 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 Trade Contractor's convenience.
.3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and other systems.
.4 Mill tests and certificates of compliance.
.5 Tests specified to be carried out by Trade Contractor under the supervision of Consultant.
.6 Additional tests specified in Article 1.4 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 TRADE 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 Construction Manager 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 Construction Manager.

.5 Provide Construction Manager with three (3) sets of fully documented test reports, submitted immediately following the testing operations.

1.3 FINAL REPORT

.1 Submit to the Owner at completion of job, four (4) 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.

1.4 APPOINTMENT AND PAYMENT

.1 The Owner will appoint and pay for services of testing laboratory for the following:
.1 Concrete
.2 Geotechnical

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 ADMINISTRATIVE

.1 Attend bi-monthly meetings throughout the progress of the work.

.2 Review agenda in advance of meeting and come to meetings prepared to discuss action pionts requested by Construction Manager.

.3 At the Construction Manager's request Trade Contractor shall attend meetings with sub contractors and suppliers a authorized to act on behalf of party each represents.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 TIME AND ORDER OF COMPLETION

.1 The Construction Manager may direct the Trade 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 Trade Contractor shall commence work within three (3) days after the execution of the Contract, unless specifically indicated or directed otherwise by the Construction Manager, 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 Construction Manager in the event of the work being delayed beyond the prescribed time for completion as a result of causes beyond the Trade Contractor's control. Such extensions shall be for such time as the Construction Manager may prescribe, and the Construction Manager shall fix the terms on which the said extension may be granted. An application by the Trade Contractor for an extension of time shall be made to the Owner in writing as 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 Trade Contractor shall be amended where necessary at the expense of the Trade Contractor to provide coverage beyond the date of any extension of time granted, and the Trade 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 Trade 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 Construction Manager or any person to take any action consequent upon the act, default, breach, neglect, delay, non-observance or non-performance by the Trade 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 Trade Contractor being permitted to proceed with the execution of the work under an extension of time granted by the Construction Manager.

1.5 SUSPENSION OF WORK

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

1.6 LABOUR DISPUTE

.1 Except to the extent that relief is granted under Section 01 32 00, paragraph 1.4, the Trade 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 Trade Contractor shall employ only orderly, competent and skillful workers to do the work and shall give preference to available residents in the area of the Contract. Whenever the Construction Manager shall inform the Trade Contractor in writing that any person or persons on the work are, in the opinion of the Construction Manager, 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 Construction Manager.

1.8 LIMITATIONS OF OPERATIONS

.1 The Construction Manager may, in writing, require the Trade 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 Trade 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 Construction Manager reserves the right to alter the method of operations on this Contract to avoid interference with other work.

.3 The Trade 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

PART 1 - GENERAL

1.1 GENERAL

.1 Make submittals specified to the Construction Manager unless otherwise identified.

.2 At Commencement of Contract (and no later than 10 days after award)
- .1 Contract Security
- .2 List of Subtrades and Suppliers
- .3 Cost Breakdown
- .4 Permits as required
- .5 Construction schedule for Trade Package activity
- .6 Name of Project Superintendent
- .7 Proof of Insurance
- .8 Labour and Equipment rates
- .9 Corporate Safety Plan
- .10 Site specific safety plan
- .11 Shop drawing schedule
- .12 Workers compensation clearance letter

.3 During Construction
- .1 Updated trade construction schedule
- .2 Shop drawings as required (c/w Construction Manager provided shop drawing submittal form)
- .3 Inspection and test reports
- .4 Request for Information (on Construction Manager provided form)
- .5 Submissions required for payment purposes

.4 Completion of Work
- .1 Submissions at completion of work as specified in Project Closeout, Commissioning, and Operations and Maintenance Data sections.

1.2 ADMINISTRATIVE

.1 Submit to the Construction Manager for submission to the Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Include the attached Document and Shop Drawing Submittal Form for all submissions to the Construction Manager. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

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

.4 Review submittals prior to submission. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.5 Notify Construction Manager, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.6 Verify field measurements and affected adjacent Work are co-ordinated.

.7 Trade Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.8 Trade Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 This project will utilize RForm web based contract management software. Information regarding this software may be found at www.rform.ca, there is no software cost to the contractor.

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

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 10 days for Consultant's review of each submission.

.5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify

Construction Manager in writing of revisions other than those requested

.7 Submissions include:
.1 Date and revision dates.
.2 Project title and number.
.3 Name and address of:
.1 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Trade Contractor's stamp, signed by Trade Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
.5 Details of appropriate portions of Work as applicable:
.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

.8 After Consultant's review, distribute copies.

.9 Submit electronic copies of shop drawings for each requirement requested in specification Sections and as Construction Manager may reasonably request.

.10 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.11 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
.2 Testing must have been within 3 years of date of contract award for project.

.12 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
.1 Scanned statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Scanned certificates must be dated after award of project contract complete with project name.

.13 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
.1 Submit electronic material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.14 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.15 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Construction Manager.

.16 Delete information not applicable to project.

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

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

1.4 SAMPLES

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

.2 Deliver samples prepaid to Construction Manager's business address.

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

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

.5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work,

state such in writing to Consultant prior to proceeding with Work.

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

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

1.5 CERTIFICATES AND TRANSCRIPTS

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

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

1.6 SUBMIT REQUESTS FOR INFORMATION (RFIs)

.1 Submit Requests for Information (RFIs) of Contract Documents on Request for Information form attached to the end of this section to the Construction Manager.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 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.

1.2 MEETINGS

.1 Arrange Health and Safety meetings as directed by Construction Manager.

1.3 COMPLIANCE REQUIREMENTS

.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 Construction Manager with Material Safety Data Sheets (MSDS).

1.4 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 Construction Manager in accordance with Section 01 33 00 Submittal Procedures.

.3 Maintain WHMIS information station and ensure designated personnel are trained in its use.

1.5 UNFORSEEN 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 Construction Manager verbally and in writing.

1.6 CONSTRUCTION SAFETY MEASURES

.1 Observe and enforce construction safety measures required by National Building Code, 2005 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.

1.7 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.

1.8 OVERLOADING

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

1.9 SCAFFOLDING

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

1.10 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.

1.11 TESTING AND MONITORING

.1 Test and monitor for hazardous conditions, as required to demonstrate compliance with 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.

1.12 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.

1.13 FIRE SAFETY

.1 The Trade Contractors are to participate on the Fire Safety Committee under the direction of the Construction Manager. The Fire Safety Committee under the direction of the Construction Manager is responsible for implementation and maintenance of the Construction Fire Safety Plan.

1.14 CORRECTION OF NON-COMPLIANCE

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

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

.3 Construction Manager may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING

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

1.16 POWER ACTUATED DEVICES

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

1.17 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 02 00 00 - Preliminary Geotechnical Investigation

.2 Section 02 00 01 - Supplemental Geotechnical Investigation

1.2 ENVIRONMENTAL PROTECTION ACT

.1 Under Section 59 of the Environmental Protection Act Waste Resource Managmenet Regulations: The following types of C and D debris may be disposed of in an excavation pit operated under a permit pursuant to the Environmental Protection Act Excavation Pits Regulations (EC753/90) if the placement of the material is in accordance with the pit restoration plan approved by the Minister under those regulations: (a) bricks; (b) mortar; (c) concrete masonry; (d) asphalt pavement (EC691/00; 484/14).

1.3 FIRES

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

1.4 DISPOSAL OF WASTES

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

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

1.5 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.

1.6 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside, or within 4.6m of the building at any time or at any stage of construction.

1.7 ENVIRONMENTAL PERMIT APPROVAL

.1 Comply with requirements contained in the Transportation and Infrastructure Renewal Management Division environmental approval permit for the project.

1.8 SILT CONTROL

.1 The contractor is required to provide the silt control measures prior to commencing site work and to maintain the measures during construction.

.2 Supply, install and maintain a sediment control fence, as detailed and indicated on site plan.

.3 Areas outside the silt fence, that are regarded, are to be protected with a layer of hay mulch.

.4 The contractor is to apply hay mulch in areas where excessive run-off causes significant soil erosion.

.5 Drainage swales are to be landscaped with nursery sod where there is potential for localized erosion.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including all amendments up to tender closing date 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

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 Trade 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 may 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 Construction Manager at no cost to Owner. Pay costs for retesting and re inspection.

1.4 PROCEDURES

.1 Notify appropriate agency and Construction Manager 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.

.4 Provide the services of a licensed professional surveyor to layout foundation and to record as built dimensions and finish levels of foundation.
.1 Survey to be completed within 5 days of foundation completion. Substantial completion will not be approved without receipt of survey.

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 Trade 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 STORAGE SHEDS

.1 Provide adequate weather tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

.2 Provide heat when materials being stored are subject to frost damage.

.3 Under no circumstances will Consultant accept materials damaged due to exposure to weather elements, for incorporation into construction. Consultant will determine what constitutes damaged material.

.4 All storage sheds or trailers must be located within the property limits of the temporary construction fence provided for the Project, follow directions provided by the Construction Manager.

.5 Any temporary security provided by the Construction Manager will not relieve the Trade Contractor of protection of Own property and materials.

.6 Construction offices and storage sheds shall meet all fire and safety requirements.

1.2 PARKING

.1 Parking space for workers' vehicles will be available on site under the Construction Manager's control.

.2 Parking for delivery and service vehicles for the supply and removal of construction materials and debris will be restricted to within the property limits and as directed by the Construction Manager.

1.3 TEMPORARY TELEPHONES

.1 Provide and pay for temporary telephones required for own use.

1.4 SANITARY FACILITIES

.1 Sanitary facilities will be provided by the Construction Manager. Designated construction facilities only to be used.

1.5 WASTE REMOVAL

.1 The Construction Manager will provide bins as required. Trade Contractors are responsible for placement and sorting of waste within the collection bins.

1.6 TEMPORARY LIGHT

.1 Lighting of a general nature shall be provided by the Construction Manager. Task lighting beyond this shall be by the Trade Contractor.

1.7 TEMPORARY POWER

.1 Temporary power is provided by the Owner.

1.8 TEMPORARY BARRICADES

.1 Trade Contractors to provide and maintain secure, rigid guard rails and barricades around deep excavations as a result of their own work.

.2 Site perimeter barrier provided and maintained by Construction Manager.

1.9 TEMPORARY WATER

.1 Trade Contractors are responsible for their own temporary water for construction purposes.

.2 Trade Contractor to provide potable drinking water for own employees.

1.10 LAYOUT

.1 The Construction Manager will provide a bench mark and control grid.

.2 Trade Contractor shall be responsible for detailed setting out of his work.

1.11 FIRE EXTINGUISHERS

.1 The Construction Manager will provide and maintain fire extinguishers, as required by jurisdictional authorities. Contractor will provide and maintain fire extinguishers as may be required for his own work, as may be required for any hot

work and will abide by all rules, regulations and good practice concerning fire safety as it relates to his operations.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used

END

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CGSB 1-GP-189M-84, Primer, Alkyd, Wood, Exterior.
.2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)
.1 CAN3-A23.1-/A23.2-94, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete.
.2 CSA-0121-M1978, Douglas Fir Plywood.
.3 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.

1.2 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.3 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.

1.4 SITE STORAGE/LOADING

.1 Confine work and operations of employees as directed by Construction Manager. 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.

1.5 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 weathertight, heat and ventilation appropriate for the use and storage of equipment, tools and materials.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within 7 days of written request by Construction Manager, 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 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify Construction Manager in writing of any conflict between these specifications and manufacturer's instructions. Consultant will designate which document is to be followed.

1.3 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, colour 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 Z166-1975, and observe restrictions in Section 01 35 30 - Health and Safety Requirements.

1.4 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.

1.5 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.

1.6 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, or
.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.

1.7 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.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 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.

1.2 QUALITY

.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.

1.3 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 Construction Manager 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 Construction Manager 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.

1.4 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 cemetitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber and 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.

1.5 TRANSPORTATION

.1 Pay costs of transportation and handling of products required in performance of Work.

.2 Transportation and unloading cost of products supplied by Owner will be paid for by Owner.

1.6 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 Construction Manager 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.

1.7 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 Construction Manager if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. The Construction Manager and 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.

1.8 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.

1.9 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Construction Manager if there is interference. Install as directed by Consultant.

1.10 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.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Construction Manager of conflicting installation. Install as directed.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

1.2 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 approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.3 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

1.4 SUBSURFACE CONDITIONS

.1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Architect determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.

1.2 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects:
- .1 Structural integrity of any element of Project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.2 Include in request:
- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 Beginning of cutting or patching means acceptance of existing conditions.

.3 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.4 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.3 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.4 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.5 Restore work with new products in accordance with requirements of Contract Documents.

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

.7 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.8 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 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 daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.

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

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

.5 Provide and use marked separate bins for recycling.

.6 Dispose of waste materials and debris off site.

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

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

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

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

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

1.2 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

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

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

.4 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.

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

.6 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.

.7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

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

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

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

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

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

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

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 WASTE MANAGEMENT GOALS

.1 Accomplish maximum control of solid construction waste.

.2 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Inert Fill: inert waste - exclusively asphalt and concrete.

.3 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

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

.7 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
.2 Returning reusable items including pallets or unused products to vendors.

.8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.9 Separate Condition: refers to waste sorted into individual types.

.10 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 DOCUMENTS

.1 Maintain at job site, one copy of following documents:
.1 Material Source Separation Plan.

1.4 SUBMITTALS

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

.2 Prepare and submit following prior to project start-up:
.1 Submit 2 copies of Materials Source Separation Program (MSSP) description.

1.5 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers to deposit reusable and recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
.1 Transport to approved and authorized recycling facility.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
.1 Materials must be immediately separated into required categories for reuse or recycling.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.

.2 Unless specified otherwise, materials for removal become Contractor's property.

1.7 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

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

1.8 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

1.9 SCHEDULING

.1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 APPLICATION

.1 Do Work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
   .1 Mark containers or stockpile areas.
   .2 Provide instruction on disposal practices.

.2 On-site sale of materials is not permitted.

3.4 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E - Government Chief Responsibility for the Environment:

Province	Address	General Inquires	Fax
Prince Edward Island	Department of Environmental Resources 11 Kent Street, 4th Floor, PO Box 2000 Charlottetown PE C1A 7N8	902-368-5000	902-368-5830

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 00 73 00 Supplementary Conditions.

.2 Section 01 78 00 - Closeout Submittals.

.3 Section 01 91 31 - General Commissioning.

1.2 INSPECTION AND DECLARATION

.1 Trade Contractor's Inspection: Trade Contractor and all Trade Subcontractors shall conduct a detailed inspection of Work, identify deficiencies and defects, prepare a deficiency list and repair as required to conform to Contract Documents.
.1 Notify Construction Manager in writing of satisfactory completion of each item of Trade Contractor's Inspection and that corrections have been made.
.2 Prepare a list of any outstanding deficiencies that remain and provide to the Construction Manager.
.3 Request Substantial Performance Inspection.
.4 Project Manager will inspect the work and if in his opinion the work is Substantially complete, request a Substantial Performance Inspection by the consultant.

.2 Substantial Performance Inspection: Consultant, Owner, Construction Manager and Trade Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly prior to requesting a Final Inspection for Total Performance of the Work Certificate.

.3 Trade Contractor shall pay the cost of subsequent Substantial Performance Inspections if in the opinion of the consultant the Trade Contractor has failed to have sufficiently complete deficiencies.

.4 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 CCA-17,1996 General Conditions Article for specifics to application.

.5 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.

.6 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.

.7 Final Inspection for Total Performance Certificate: when items noted above are completed, request final inspection of Work by Owner, Construction Manager and Consultant. If Work is deemed incomplete by Consultant, complete outstanding items and request re-inspection. This re-inspection 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 Trade Contractor's progress payment. Refer to Section 00 73 00 Article 1.11.3.3.

.8 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 CCA-17, 1996. Cost of re-inspection will be deducted from final payment.

.9 Payment of Holdback: Sixty (60) days after issuance of Certificate of Substantial Performance of Work, submit an application of payment of holdback amount in accordance with CCA-17, 1996.

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 Trade Contractor. This Certificate will take the form shown in Section 01 77 01.

.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, Trade Contractor shall continue to complete the work.

.4 The Trade 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 Trade 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 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 Trade Contractor.

.3 The Owner will on the date of this Certificate ensure 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 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 Trade Contractor's Insurance related to the Contract before the 60-day period is terminated to ensure that all parties are adequately covered.

1.6 CERTIFICATE of TOTAL PERFORMANCE

.1 The Trade 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 Contractor shall correct final deficiencies before a date agreed upon by the Contractor and Consultant.

.3 When the Trade Contractor has satisfied himself that these corrections have been completed in a satisfactory manner by his inspection, he shall schedule an inspection by the Consultant, and the Owner's representatives if required, within five working days of the Trade Contractor's request.

.4 When the Consultant is satisfied that all deficiencies have been rectified and the work is complete, the Trade Contractor shall submit an application for the final progress payment.

.5 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 CCA-17,1996 - GC 5.8.

1.7 WARRANTY PERIOD

.1 The Owner will advise the Construction Manager and Consultant of defects observed during Warranty periods.

.2 The Construction Manager will notify the Trade 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, the Construction Manager and the Trade Contractor will review the work as arranged by the Trade Contractor noting defects of products and workmanship.

.4 The Trade Contractor shall immediately remedy such noted defects.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 CERTIFICATE

TRADE CONTRACTOR:_____

PROJECT:_____

DATE OF SUBSTANTIAL PERFORMANCE:_____

.1 Substantial Performance Inspection for above described work was carried out _____(date) by:

.2 For Construction Manager
- .1 For Owner_____
- .2 For Consultant_____
- .3 For Trade Contractors_____
- .4 Construction Manager_____

for the purpose of determining items not in accordance with Plans and Specifications.

.3 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.

Trade 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.

_____

Trade 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

Trade Contractor's Certification

Construction Manager's Declaration

Based on full time representation at the jobsite 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 general compliance with the plans and specifications, as amended during the course of the work by Change Orders, with the exception of the deficiencies listed herewith.

_____

Construction Manager Date

Consultant's Declaration

Based on periodic visits to the jobsite 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

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

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 77 00 - Closeout Procedures.

.3 Section 01 91 13 - Commissioning.

.4 Section 01 79 00 - Demonstration and Training.

1.2 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 weeks prior to Substantial Performance of the Work, submit to the Construction Manager, three final copies of operating and maintenance manuals in English. This requirement will be rigidly enforced see Section 01 29 00 Clause 1.7.6.

.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.

1.3 FORMAT

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

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

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

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

.7 Text: Manufacturer's printed data, or typewritten data.

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

1.4 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 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.

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

1.5 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on 2 sets of blue line opaque drawings, and in copy of Project Manual.

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

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

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
.1 Measured depths of elements of foundation in relation to finish first floor datum.
.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.
.5 Changes made by change orders.
.6 Details not on original Contract Drawings.
.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:
.1 Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Addenda and change orders.

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

1.6 EQUIPMENT AND SYSTEMS

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

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

.3 Include installed colour coded wiring diagrams.

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

regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

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

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

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

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

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

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

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

1.7 MATERIALS AND FINISHES

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

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

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

1.8 SPARE PARTS

.1 Provide spare parts, in quantities specified in individual specification sections.

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

.3 Deliver to site; place as directed by Construction Manager and store.

.4 Receive and catalog all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

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

1.9 MAINTENANCE MATERIALS

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

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

.3 Deliver to site; place and store.

.4 Receive and catalog all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

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

1.10 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

.4 Receive and catalog all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

1.11 STORAGE, HANDLING AND PROTECTION

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

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

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

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

.5 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.12 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, 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.

TOTAL PERFORMANCE FORM

CONTRACTOR: _____

DATE OF TOTAL PERFORMANCE: _____

Consultant's Certification

I have reviewed the Work and have determined that the Work has been done in general conformance to the Contract Documents.

TOTAL PERFORMANCE FORM

Consultant Date

Contractor's Certification

I hereby certify that the Work has been executed in accordance with the Contract Documents and in accordance with good construction practice. The undersigned hereby agrees that, notwithstanding the generality of the foregoing, the acceptance of the Work shall not prejudice any rights of the Owner or affect any liabilities of the undersigned Trade Contractor pursuant to the provisions of the Contract.

Contractor Date

Construction Manager's Certification

I hereby certify that the Work has been executed in accordance with the Contract Documents and in accordance with good construction practice. The undersigned hereby agrees that, notwithstanding the generality of the foregoing, the acceptance of the Work shall not prejudice any rights of the Owner or affect any liabilities of the undersigned Trade Contractor pursuant to the provisions of the Contract.

Construction Manager Date

Owner's Acceptance

I hereby accept the Work on behalf of the Owner. This acceptance is not to be construed as relieving the Contractor from the responsibility to correct other defects in the Works, 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

END

PART 1 - GENERAL

1.1 GENERAL

.1 Specific requirements for maintenance materials, special tools and spare parts are specified in individual sections.

.2 Deliver keep, special tools and spare parts to Owner and store as directed by Construction Manager.

.3 Prepare lists of keep materials, special tools and spare parts as specified in Section 01 78 00 - Closeout Submittals.

.4 Failure to deliver maintenance materials, special tools and spare parts at Substantial Performance WILL Delay Progress Payments.

1.2 MAINTENANCE MATERIALS

.1 Deliver specified items packaged to prevent damage.

.2 Identify, on carton or package, colour, room no., system or area as applicable where item is used.

1.3 SPECIAL TOOLS

.1 When specified in individual Sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

1.4 SUBMITTALS

.1 Assemble special tools as specified.

.2 Include the following:
.1 Identification tag references.
.2 Identification of equipment or system for which tools are applicable.
.3 Instruction on intended use of tool.

.3 Identify special tools to indicate equipment or system for which tools are intended.

1.5 SPARE PARTS

.1 Assemble spare parts as specified.

.2 Include the following:
.1 Part number.
.2 Identification of equipment or system for which spare parts are applicable.
.3 Installation instructions as applicable.
.4 Name and address of nearest supplier.

.3 Identify spare parts to indicate equipment or system for which parts are applicable.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 91 31 - Commissioning.

1.2 DESCRIPTION

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection.

.2 Owner will provide list of personnel to receive instructions, and will co-ordinate their attendance at agreed-upon times.

1.3 QUALITY CONTROL

.1 When specified in individual Sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

1.4 SUBMITTALS

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

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Consultant's approval.

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

.4 Record signatures of all attendees.

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

.6 The Trade Contractor is to videotape all demonstrations in DVD format and submit (2)two copies to the Owner with the application for Substantial Completion.

1.5 CONDITIONS FOR DEMONSTRATIONS

.1 Equipment has been inspected and put into operation in accordance with respective applicable Sections.

.2 Testing, adjusting, and balancing has been performed in accordance with Section 01 91 31 - Commissioning (Cx) Requirements and equipment and systems are fully operational.

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

1.6 PREPARATION

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

1.7 DEMONSTRATION AND INSTRUCTIONS

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, sequencing, winter/summer operating, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.

.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

.3 Review contents of manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Operations and Maintenance Manuals: Section 01 78 00.

.2 Demonstration and Training: Section 01 79 00.

1.2 COMMISSIONING OBJECTIVE

.1 Perform commissioning activities in order to achieve the following objectives:
.1 Collect data on equipment and systems supplied; and to document their installation;
.2 Conduct checks and tests on fully installed building component, equipment, systems and integrated systems to:
.1 Verify whether they operate in accordance with requirements of Contract Documents;
.2 Verify performance against design criteria and user requirements and measure peak capacities;
.3 Prepare a Building Management Manual (BMM) which contains operations and maintenance data, as-built record documents, commissioning reports, training data and other critical information for future use by Facility operational staff;
.4 Ensure transfer of knowledge on the operations, maintenance and management of the Facility to Tenant and Operational personnel by means of appropriate training.

.2 Commissioning activities conducted by Owner and/or Consultant does not replace checks, tests, adjustments, balancing and other performance verification responsibilities to be performed by Trade Contractor as part of the work and as specified in other sections of the Specifications.

1.3 DEFINITIONS

.1 For the purpose of this contract, the following terms, used in this section, as they relate directly or indirectly to the commissioning process, shall be deemed to have the meaning as defined hereafter.

.2 Commissioning Process: a planned program of tasks, activities and procedures carried out systematically during the Construction and Occupancy Stages in accordance with the commissioning objectives, specified in clause 1.2 above, to:
.1 Verify whether the fully installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and;
.2 Ensure that appropriate documentation is compiled to effectively train Operation and Maintenance staff and prepare a comprehensive Building Management Manual (BMM).

.3 Commission (ie: to commission a building component or system): tests and checks conducted on all systems and integrated systems of Facility; carried out only after they are fully installed, functional and Trade Contractor's Performance Verification responsibilities have been completed and approved.
.1 Trade Contractor provides assistance during this process by operating equipment and systems, by troubleshooting and making adjustments as may be required.
.2 Systems are run under their full operation and under various modes to determine if they function correctly, consistently, at peak efficiency and interactively with each other as intended in accordance with Contract Documents and design criteria.
.3 During these checks, adjustments may be made enhancing performance to meet environmental or user requirements.

.4 Trade Contractor: means the Trade Contractor, however it also refers to any personnel from Trade Subcontractors, including the controls subcontractors, suppliers and manufacturer representatives with whom the Trade Contractor contracts or obtains services for the performance of work and designated commissioning duties.

.5 Consultant: persons from the civil, architectural, mechanical and electrical design disciplines of the consultant firm(s) engaged by Owner to prepare the final design and contract documents.

.6 Design Criteria: All those factors included in the design of a Facility prescribed by the tenant needs or as determined by Consultant as necessary in order to meet all Facility functional and user operational requirements

.7 Installation/Start-up Checks:(sometimes referred to as pre-functional checks). Checks and inspections to be performed by Trade Contractor during the pre-start-up and start-up of a particular equipment or system component.
.1 Checklist sheets are produced which include the following data:
.1 Product manufacturer's installation instructions and recommended checks and;
.2 Special procedures as specified in relevant sections of Specifications;
.3 Other items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
.2 Standard Installation/Start-up Checklist sheets prepared by equipment manufacturer are acceptable for use. Supplement with additional data representative of specific project conditions as deemed required by Consultant.
.3 Use Checklist sheets for all equipment installation. Document in writing on checklist the various checks made, deficiencies noted and corrective action taken.

.4 Installing Trade Sub-Contractor to sign Checklist sheets upon completion, certifying that stated checks and inspections have been performed.

.8 Performance Verification: (sometimes referred to Functional Testing) checks, running dynamic tests and adjustments carried out by Trade Contractor on equipment and systems, upon their installation, to ensure they operate correctly, efficiently and function independently and interactively with other systems as intended in accordance with contract documents and manufacturer's recommendations.
.1 Performance Verification shall not be considered part of the commissioning process. It is however considered an essential and integral part of Trade Contractor's responsibilities in the equipment installation process which must be stringently conducted, successfully completed and approved by Owner before a piece of equipment or system is considered fully installed and functional.
.2 Facility components and systems will not be commissioned until performance verification has been completed and approved.

.9 Product Information (PI Data): a compilation of data gathered on a particular piece of equipment, typically produced by manufacturer, which includes nameplate information, installation/startup instructions, parts list, operating instructions, maintenance guidelines and other pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of such equipment. This documentation is included in the Building Management Manual(BMM) at completion of work.

1.4 TRADE CONTRACTOR'S COMMISSIONING RESPONSIBILITIES

.1 General:
.1 Coordinate the participation of the various subcontractors, their specialists and manufacturer's representatives in providing the commissioning activities described below.
.2 Ensure that workers and manufacturer's personnel are knowledgeable and qualified to interpret system functions and intended design criteria.
.3 Develop a commissioning schedule.
.4 Notify Construction Manager in writing when Facility is ready for be commissioned. Give 14 calendar day notice.
.5 Commissioning of Facility and designated systems will only commence once that required documentation has been received and all installed equipment and systems have undergone successful performance verification.
.6 Be aware that inspection certificate will only be issued by Consultant when:
.1 All commissioning documentation has been received, reviewed for suitability and approved by Consultant;

.2 Designated facility components and systems have been commissioned and;
.3 Training has been completed.

.7 Non-Conformance of Performance Verification Requirements

:

.1 Should incorrectly installed or malfunctioning equipment, system components or associated controls be found while Facility is being commissioned, Trade Contractor shall be required to re-verify 100% of all equipment and components within the non functional system, including other related system as deemed required by Consultant, to correct deficiencies and ensure effective performance.
.2 Costs to correct work and any additional tests or inspections, as deemed required by Consultant, to determine acceptability and proper performance of such items to be paid for by Trade Contractor.
.1 Above costs held against Trade Contractor will be as financial penalties in the form of progress payment reductions or holdback assessments.

.2 Prior to Facility being Commissioned:
.1 Submit commissioning documentation as specified in clause 1.8 for use during commissioning.
.2 Carryout pre-start-up and start-up of equipment.
.3 Conduct performance verification on all installed equipment and systems. Ensure they are fully functional.
.4 Address deficiencies in Work identified during performance verification of equipment and systems. Conduct additional performance verification checks and tests to ensure acceptability of Work.
.5 Arrange for special tools and devices, identified at commissioning meeting(s), as deemed required to assist with commissioning.
.6 Provide access ladders, two way radios and other equipment required by Team when facility will be commissioned.

.3 When Facility is being Commissioned:
.1 Provide qualified tradespersons to be present at site to assist commissioning activity.
.2 Assist in commissioning architectural and structural building component, and mechanical, electrical and civil systems specified and as follows:
.1 Operate designated building component, mechanical/electrical equipment and system under all modes of operation and conduct checks and tests as directed by Consultant.
.2 Check and verify that building component, equipment, systems and integrated systems, including their controls, are functioning and responding correctly and interactively with each other.
.3 Test systems independently and then in unison with other related systems.

.4 Conduct all Commissioning checks and tests in presence of and witnessed by Consultant.

.3 Specific procedures used to commission Facility may be provided by Consultant which includes:

.1 Sequential order of building component and system to be tested.

.2 Running systems under various anticipated modes and demands (example: high and low cooling or heating loads, duplicating outside temperature conditions, fire alarm and power failure conditions etc...).

.3 Running building controls through all sequences of operation to verify and confirm that equipment and systems are responding as designed and intended.

.4 Operating designated equipment at peak capacities, recording output data against design criteria.

.4 Run component or systems as long as necessary to effectively commission all items as deemed required by Consultant.

.5 Monitor equipment and system responses.

.6 Record test results, measurements and other data.

.7 Assist in analyzing results. Identify system deficiencies and components not responding as intended.

.8 Correct deficiencies and system non-conformance issues. Adjust, calibrate or fine tune system components as required. Debug system software as may be required.

.9 Retest systems when directed to confirm compliance.

.4 Upon completion of Facility Commissioning:

.1 Provide training to Maintenance & Operational personnel as specified in clause 1.7 below.

.2 Turn over any filled-in checks sheets or reports resulting from commissioning.

.5 During Warranty period at Occupancy Stage:

.1 Fine tune components, systems and integrated systems and continue system debugging to optimize Facility performance.

.2 Rectify warranty issues.

.3 Submit written report to Construction Manager.

.1 Indicate results noted and corrective action taken.

.2 Note improvements made to operating parameters and control settings.

.3 Recommend modifications deemed advisable to improve performance, environmental conditions, energy consumptions and other issues.

.4 Consultant to be present during such work.

1.5 COMMISSIONING MEETINGS

.1 Convene commissioning meetings following project meetings: as required through the project to coordinate commissioning requirements.

.2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to commissioning.

.3 Continue commissioning meetings on regular basis until commissioning deliverables have been addressed.

.4 At 60% construction completion stage, the Trade Contractor is to call a separate commissioning scope meeting to review progress including consultant, discuss schedule of equipment start-up activities and prepare for commissioning . Issues at meeting to include:
.1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
.2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.

.5 Thereafter commissioning meetings to be held until project completion and as required during equipment start-up and functional testing period.

.6 Meeting will be chaired by Trade Contractor, who will record and distribute minutes within 3 business days.

.7 Ensure Trade Sub-Contractors and relevant manufacturer representatives are present at subsequent commissioning meetings and as required.

1.6 COMMISSIONING SCHEDULE

.1 Address commissioning activities within the construction work schedule. Clearly identify allocated time period for commissioning and training activities.

.2 Provide a commissioning schedule at the 60% construction stage in order that specific issues and individual details of commissioning can be reviewed, discussed and dealt with from that period onward to project completion. Submit updates thereafter,

.3 Indicate allocated time period and anticipated dates for:
.1 Submission of commissioning documentation, including O&M Manuals.
.2 Equipment and system start-up and performance verification, making them ready to be commissioned.
.3 Allocated period to commission designated building components and systems.
.4 Training period.
.5 Work during Warranty period.

.4 Submit schedule to Construction Manager for review.

1.7 TRAINING

.1 Commence process of familiarizing O&M personnel in the early stages of work on purpose and operation of various equipment and systems. Continue process throughout the entire construction duration.
.1 Provide informal briefings during occasional site visits, at planned commissioning meetings and during the final commissioning site activities.

.2 Conduct formal demonstration and training sessions only after all identified systems have been commissioned and Consultant has given approval to proceed with the training process.

.3 Provide training and demonstration on equipment, sub-systems, systems and integrated systems.

.4 Carryout training in accordance with requirements of section 01 79 00 - Demonstration and Training.

.5 Submit written agenda of training session(s) 4 weeks before hand for review by Consultant.

.6 Submit training manuals for review 2 weeks prior to actual training.

.7 Ensure required tools and O&M Manuals are on site for training and system demonstration.

.8 As a minimum, the training sessions to cover the following information:
.1 Introduction.
.2 Description of the system with factory personnel being involved at appropriate times.
.3 Instructions on start-up procedures including seasonal procedures, system check-lists and emergency procedures.
.4 Operational procedures, including occupancy considerations, seasonal change-over, manual and automatic operations and emergency modes.
.5 Instruction on system shutdowns, including checklists.
.6 Instructions on all aspects of system maintenance, including routine servicing, lubrication, overhaul and factory servicing.
.7 Information concerning the scope of warranties and their use.
.8 A description of spare parts in stock and their service.
.9 A description of normal tools required for servicing the systems/equipment.

.9 Submit typewritten record of training sessions given and list of attendees. Use forms of format approved by Consultant.

1.8 COMMISSIONING DOCUMENTATION

.1 Submit the following documentation for use during commissioning and for incorporation thereafter into a Building Management Manual (BMM):
.1 Operations and Maintenance Manuals, Project Record Documents and other data as specified in Section 01 78 00 - Closeout Submittals. Data to include:
.1 Equipment Product Information (PI Data) complete with:
.1 Nameplate info,
.2 Installation instructions,
.3 Operating procedures and
.4 Maintenance guidelines.
.2 Reviewed shop drawings,
.3 As-built record drawings and Specifications.
.2 Completed Installation/Start-up Checklist sheets used.
.3 Copy of any static and dynamic test and reports conducted.
.4 Reports as specified in various trade sections.

.2 Documentation to include detailed information and number of copies as specified for maintenance manuals of section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Commissioning forms to be completed for equipment, system and integrated system.

.2 Related Sections:
.1 Section 01 91 31 - General Commissioning (CX) Requirements.

1.2 INSTALLATION/START- UP CHECK LISTS

.1 Include the following data:
.1 Product manufacturer's installation instructions and recommended checks.
.2 Special procedures as specified in relevant technical sections.
.3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Consultant supplemental additional data lists will be required for specific project conditions.

.3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.

.4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.

.5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

.1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.

.2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

.1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.

.2 PV report forms include those developed by Trade Contractor records measured data and readings taken during functional testing and Performance Verification procedures.

.3 Prior to PV of integrated system, complete PV forms of related systems.

1.5 COMMISSIONING FORMS

.1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.

.2 Strategy for Use:
.1 Trade Contractor will provide specific Commissioning forms with Specification data included.
.2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
.3 Confirm operation as per design criteria and intent.
.4 Identify variances between design and operation and reasons for variances.
.5 Verify operation in specified normal and emergency modes and under specified load conditions.
.6 Record analytical and substantiating data.
.7 Verify reported results.
.8 Form to bear signatures of recording technician.
.9 Submit immediately after tests are performed.
.10 Reported results in true measured SI unit values.
.11 Maintain copy on site during start-up, testing and commissioning period.
.12 Forms to be both hard copy and electronic format with typed written results in Building Management Manual.

1.6 LANGUAGE

.1 To suit the language profile of the awarded contract.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 This Section specifies roles and responsibilities of Commissioning Training.

1.2 TRAINEES

.1 Trainees: personnel selected for operating and maintaining this facility. Includes Owner's Property Manager, building operators, maintenance staff, security staff, and technical specialists as required.

.2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.3 INSTRUCTORS

.1 Trade Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
.1 Start-Up, operation, shut-down of equipment, components and systems.
.2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
.3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.

.2 Trade Contractor and equipment manufacturer to provide instruction on:
.1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.4 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:
.1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
.2 Effective on-going inspection, measurements of system performance.
.3 Proper preventive maintenance, diagnosis and trouble-shooting.
.4 Ability to update documentation.
.5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.5 TRAINING MATERIALS

.1 Contractors to be responsible for content and quality.

.2 Training materials to include:
- .1 "As-Built" Contract Documents.
- .2 Operating Manual.
- .3 Maintenance Manual.
- .4 Management Manual.
- .5 Testing, Adjusting and Balancing and Performance Verification Reports.

.3 Training materials to be in a format that permits future training procedures to same degree of detail.

.4 Supplement training materials:
- .1 Transparencies for overhead projectors.
- .2 Multimedia presentations.
- .3 Manufacturer's training videos.
- .4 Equipment models.

1.6 SCHEDULING

.1 Include in Commissioning Schedule time for training.

.2 Deliver training during regular working hours, training sessions to be maximum 3 hours in length.

.3 Training to be completed prior to acceptance of facility.

1.7 RESPONSIBILITIES

.1 Be responsible for:
- .1 Implementation of training activities,
- .2 Coordination among instructors,
- .3 Quality of training, training materials,

.2 Consultant will evaluate training and materials.

.3 Upon completion of training, provide written report, signed by Instructors, witnessed by Consultant.
- .1 Report to include a list of all attendees.

1.8 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.

.2 Content includes:
- .1 Review of facility and occupancy profile.
- .2 Functional requirements.

.3 System philosophy, limitations of systems and emergency procedures.
.4 Review of system layout, equipment, components and controls.
.5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
.6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
.7 Maintenance and servicing.
.8 Trouble-shooting diagnosis.
.9 Inter-Action among systems during integrated operation.
.10 Review of O&M documentation.

.3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.9 VIDEO-BASED TRAINING

.1 Manufacturer's videotapes to be used as training tool with Consultant's review and written approval 3 months prior to commencement of scheduled training.

.2 On-Site training videos:
.1 Videotape training sessions for use during future training.
.2 To be performed after systems are fully commissioned.
.3 Organize into several short modules to permit incorporation of changes.

.3 Production methods to be professional quality.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 This section is limited to portions of the Building Management Manual (BMM) provided to Consultant by Contractor.

.2 Acronyms:
.1 BMM - Building Management Manual.
.2 Cx - Commissioning.
.3 HVAC - Heating, Ventilation and Air Conditioning.
.4 PI - Product Information.
.5 PV - Performance Verification.
.6 TAB - Testing, Adjusting and Balancing.
.7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

.1 Standard letter size paper 216 mm x 279 mm.

.2 Methodology used to facilitate updating.

.3 Drawings, diagrams and schematics to be professionally developed.

.4 Electronic copy of data to be in a format accepted and approved by Consultant.

1.3 APPROVALS

.1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Consultant.

1.4 GENERAL INFORMATION

.1 On completion of the project submit to Construction Manager three (3) copies of Building Management Manual including:
.1 Complete list of names, addresses, telephone and fax numbers of Trade Contractor, Trade Sub-Contractors that participated in delivery of project.
.2 Summary of architectural, structural, fire protection, mechanical and electrical systems installed and commissioned.
.1 Including sequence of operation as finalized after commissioning is complete.
.3 Description of building operation under conditions of heightened security and emergencies.
.4 System, equipment and components Maintenance Management System (MMS) identification.
.5 Information on operation and maintenance of architectural systems and equipment installed and commissioned.

.6 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned.
.7 Information on operation and maintenance of mechanical systems and equipment installed and commissioned.
.8 Operating and maintenance manual.
.9 Final commissioning plan as actually implemented.
.10 Completed commissioning checklists.
.11 Commissioning test procedures employed.
.12 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Consultant.
.13 Commissioning reports.

1.5 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

.1 For detailed requirements refer to Section 01 78 00 - Closeout Submittals.

.2 Consultant to review and approve format and organization within 12 weeks of award of contract.

.3 Include original manufactures brochures and written information on products and equipment installed on this project.

.4 Record and organize for easy access and retrieval of information contained in BMM.

.5 Include completed PI report forms, data and information from other sources as required.

.6 Inventory directory relating to information on installed systems, equipment and components.

.7 Approved project shop-drawings, product and maintenance data.

.8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O&M, shutdown and training materials.

.9 Inventory and location of spare parts, special tools and maintenance materials.

.10 Warranty information.

.11 Sample Warranty Form as indicated in Section 01 33 00.

.12 Inspection certificates with expiration dates, which require on-going re-certification inspections.

.13 Maintenance program supporting information including:
.1 Recommended maintenance procedures and schedule.

.2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.

1.6 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

.1 Prepare supporting documentation relating to installed equipment and system, including:

- .1 General:
  - .1 Finalized commissioning plan.
  - .2 WHMIS information manual.
  - .3 Approved "as-built" drawings and specifications.
  - .4 Procedures used during commissioning.
  - .5 Cross-Reference to specification sections.
- .2 Architectural and structural:
  - .1 Inspection certificates, construction permits.
  - .2 Roof anchor log books.
  - .3 PV reports.
- .3 Fire prevention, suppression and protection:
  - .1 Test reports.
  - .2 Smoke test reports.
  - .3 PV reports.
- .4 Mechanical:
  - .1 Installation permits, inspection certificates.
  - .2 Piping pressure test certificates.
  - .3 Ducting leakage test reports.
  - .4 TAB and PV reports.
  - .5 Medical Gas test certificates
  - .6 Charts of valves and steam traps.
  - .7 Copies of posted instructions.
- .5 Electrical:
  - .1 Installation permits, inspection certificates.
  - .2 TAB and PV reports.
  - .3 Electrical work log book.
  - .4 Charts and schedules.
  - .5 Locations of cables and components.
  - .6 Copies of posted instructions.

1.7 LANGUAGE

.1 English.

1.8 USE OF CURRENT TECHNOLOGY

.1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.

.2 Obtain Consultant's approval before starting Work.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END

Preliminary Geotechnical Investigation – Riverview Manor, Montague, Kings County, PE

Job No. 121618785 – File No. 3726

Stantec

Prepared for:

Prince Edward Island Department of Transportation, Infrastructure and Energy (PEITIE)
Public Works and Planning
3rd Floor Jones Building, 11 Kent St.
Charlottetown PE C1A 7N8

Prepared by:

Stantec Consulting Ltd.
165 Maple Hills Avenue
Charlottetown PE C1C 1N9

October 30, 2015

Stantec Consulting Ltd.
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October 30, 2015
Job No. 121618785 – File No. 3726

Attention: Ms. Raymonde Arsenault-MacKenzie, MAAPEI, M.Arch., B.E.D.S.
PEI Department of Transportation, Infrastructure and Energy (PEITIE)
Public Works and Planning
3rd Floor Jones Building, 11 Kent St.
Charlottetown PE C1A 7N8

Dear Ms. Arsenault-MacKenzie,

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

This report presents the results of the preliminary geotechnical investigation carried out for the above-noted project, in accordance with your request. The purpose of the investigation was to establish the overall subsurface conditions on the site and, based on the conditions encountered, to provide geotechnical engineering recommendations pertaining to site preparation and foundation design.

The site was the location of a former school. The building was demolished and the site was reinstated to existing grade under the supervision of Prince Edward Island Department of Transportation, Infrastructure and Energy (PEITIE) staff. We understand that during the demolition of the former building, construction debris consisting mostly of concrete with traces of insulation, wood and wire, was placed in an area of the site, as shown on the appended Drawing No.1, Test Pit Locations. A footing was also left in place in this area. It is assumed that the subsurface conditions within the footprint of the former building will consist of fill with various thicknesses.

PROCEDURE

The field work for the present investigation was carried out on August 26, 2015, and consisted of excavating ten (10) test pits with a rubber tired backhoe, designated TP-01 to TP-10. The test pits were located so as to determine overall subsurface conditions on the site, and were advanced to depths of approximately 2.74 to 3.05 m below present grade at the locations shown on the appended Drawing No. 1. The relative density of the soils encountered were estimated from the performance of the backhoe.

Representative samples of the overburden soils encountered were recovered, placed in moisture-proof containers and were delivered to our Charlottetown laboratory for classification and testing.

Detailed logs of the strata encountered at the site, and of the sampling and testing carried out are shown on the appended Test Pit Records.

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

The locations of the test pits were established in the field by our personnel. The test pit locations were established by tape referencing to existing site features and ground surface elevations were interpolated from available topographic information obtained from PEITIE. Elevations are referenced to Geodetic Datum.

SUBSURFACE CONDITIONS

The subsurface conditions encountered at the test pits are shown in detail on the appended Test Pit Records and are described below.

Fill

Fill, consisting generally of a loose reddish brown silty sand with trace gravel, was encountered at the ground surface at TP-03 through TP-10, and found to extend to depths ranging from 0.30 m to 2.01 m below grade. The fill was found to contain occasional pieces of brick, concrete, asphalt, wire and wood.

The moisture content of two selected samples of the fill was found to be 7.8 and 7.9 percent.

Topsoil

A naturally occurring layer of topsoil was encountered at the ground surface at TP-01 and TP-02, and below the fill layer at TP-08 and TP-10, at depths of 1.37 and 2.01 m, respectively. The thickness of the topsoil layer ranged from 0.40 to 0.46 m. The topsoil was found to consist of a compact brown silty sand containing organics.

Glacial Till

A reddish brown glacial till stratum was encountered directly below the fill and/or topsoil layer. The till was found to consist of a silty sand (SM), with trace gravel and is of a compact compactness.

Four (4) grain size analyses (curves appended) performed on representative samples of the till show it to contain 7 to 14 percent gravel, 51 to 74 percent sand, and 19 to 38 percent fines. The natural moisture content of selected samples of the till was found to range from 9.0 to 16.9 percent.

Bedrock

Bedrock was not encountered within the depths excavated during our investigation.

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

Groundwater

Groundwater was not encountered within the depths excavated during our investigation. The test pits were backfilled shortly after excavation. Fluctuations of the groundwater table can occur as a result of seasonal variations and/or in response to significant weather events.

DISCUSSION AND RECOMMENDATIONS

Overview

Site Preparation

Site preparation to permit the use of conventional spread footing foundations and slab-on-grade construction requires the removal of the fill and topsoil layer from within the proposed building area. All surface runoff should be directed away from excavated areas to prevent disturbance of the native till which is susceptible to water-softening.

Upon removal of all unsuitable soils and other deleterious material from within the building area, any low areas should be brought up to the required subgrade level using structural fill. Structural fill should consist of an approved soil (preferably granular), which is free of organics and deleterious material, such as a pit run sandstone or other approved inorganic soil. Fill material meeting the current PEITIE Select Borrow specification (ie. maximum of 30 percent fines based on the minus 4.75 mm sieve fraction) would be acceptable for use.

Existing site fills may be considered for reuse as structural fill providing it is free of deleterious material, construction debris, and is within two percent of optimum moisture content.

Excavated site till that has a moisture content within two percent of optimum would also be acceptable for reuse as structural fill. The results of the moisture content tests indicate that the present moisture levels of the till are either within, or above, the required range to achieve proper compaction. Site till that has a moisture content above the optimum range, either naturally or as a result of precipitation, would have to be permitted to dry or be used for non-structural applications such as landscaping.

All structural fill within the building area should be placed and compacted in lifts to 100 percent of Standard Proctor maximum dry density. Lift thicknesses must be compatible with the compaction equipment used, and the fill material selected, in order to achieve the required density throughout.

Site preparation activities should be undertaken during dry weather. It is recommended that operation of equipment and construction traffic (particularly tandem trucks) over the native till be carefully planned to prevent disturbance of this soil.

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

If construction is carried out during the winter, it should be noted that all earthworks performed during freezing conditions are suspect, and special measures are required. Structural fill should not be placed over frozen material; any soil that becomes frozen after placement must be removed, or allowed to thaw prior to the placement of subsequent lifts.

It is recommended that site preparation be monitored by experienced geotechnical personnel to ensure that all unsuitable materials are removed, that only suitable replacement fills are used, and that the required degree of compaction is attained.

Foundations

An allowable bearing pressure of up to 150 kPa may be used for design of footings placed on the undisturbed native till or on structural fill (prepared as outlined above). Associated total and differential settlements would be within tolerable limits for a conventional structure. All footings subjected to freezing conditions should have a minimum soil cover of 1.5 m (or equivalent insulation) for frost protection.

Structural fill used as a bearing stratum must extend outward beyond the exterior footing base perimeter a distance at least equal to the depth of fill placed below the footing to include the full stress zone of influence.

Groundwater, if encountered, should be kept to a minimum in the footing excavations to prevent disturbance of the till which is susceptible to water softening. Control of groundwater inflow may require pumping from a temporary sump(s) installed below founding level.

It is recommended that final excavation for footings be carried out with a ditching type bucket (i.e. no teeth) so as to minimize disturbance of the bearing surface. Any soil that becomes disturbed as result of construction activity and/or water should be removed from the bearing surface prior to footing placement. If softening persists, consideration could be given to the over-excavation of the bearing surface (e.g. by 300 mm) to allow the placement/compaction of a clean gravel layer. The gravel would stabilize the bearing surface and facilitate dewatering of the footing excavation. Alternatively, the use of a lean concrete layer (i.e. mud slab) could be considered to stabilize the bearing surface.

All bearing surfaces should be inspected by qualified geotechnical personnel prior to placing footings.

If winter construction is anticipated, all bearing surfaces, footings, foundation walls and floor slabs must be protected against freezing.

Slab-on-Grade/Foundation Drainage

A slab-on-grade may be cast over the native till or structural fill. A layer of compacted, free-draining granular material should be used under the floor slab area. Depending on the founding

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

level selected, the basement floor may extend below the groundwater table. Furthermore, seasonal variations of the groundwater table could result in higher levels than those recorded during the present investigation. The following design elements should therefore be provided as a minimum:

- perimeter footing drains with a positive discharge for all areas where the floor level is located below final exterior grade;
- a heavy duty under-slab vapour barrier; and,
- damp-proofing of basement walls to final exterior grade.

CLOSING COMMENTS

Use of this report is subject to the Statement of General Conditions provided in the Appendix. It is the responsibility of PEITIE, which is identified as "the Client" within the Statement of General Conditions, and its agents to review the conditions and to notify Stantec Consulting Ltd. should any of these not be satisfied. The Statement of General Conditions addresses the following:

- Use of the report
- Basis of the report
- Standard of care
- Interpretation of site conditions
- Varying or unexpected site conditions
- Planning, design or construction

We trust that this report it contains all of the information required at this time. This report was written by Mark Macdonald, P.Eng., and reviewed by Chris McQueen, P.Eng. Should you have any questions or if we can be of further service, please contact us at your convenience.

Regards,

STANTEC CONSULTING LTD.

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Chris McQueen, P.Eng.
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October 30, 2015
Ms. Raymonde Arsenault-MacKenzie, MAAPEI, M.Arch., B.E.D.S.

Reference: Preliminary Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

APPENDIX

STATEMENT OF GENERAL CONDITIONS

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and the Client. Any use which a third party makes of this report is the responsibility of such third party.

BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Stantec Consulting Ltd.'s present understanding of the site specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec Consulting Ltd. is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state or province of execution for the specific professional service provided to the Client. No other warranty is made.

INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec Consulting Ltd. at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock and groundwater conditions as influenced by geological processes, construction activity, and site use.

VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec Consulting Ltd. must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec Consulting Ltd. will not be responsible to any party for damages incurred as a result of failing to notify Stantec Consulting Ltd. that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec Consulting Ltd. , sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Stantec Consulting Ltd. cannot be responsible for site work carried out without being present.

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis:

Rootmat	- vegetation, roots and moss with organic matter and topsoil typically forming a mattress at the ground surface
Topsoil	- mixture of soil and humus capable of supporting vegetative growth
Peat	- mixture of visible and invisible fragments of decayed organic matter
Till	- unstratified glacial deposit which may range from clay to boulders
Fill	- material below the surface identified as placed by humans (excluding buried services)

Terminology describing soil structure:

Desiccated	- having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	- having cracks, and hence a blocky structure
Varved	- composed of regular alternating layers of silt and clay
Stratified	- composed of alternating successions of different soil types, e.g. silt and sand
Layer	- > 75 mm in thickness
Seam	- 2 mm to 75 mm in thickness
Parting	- < 2 mm in thickness

Terminology describing soil types:
The classification of soil types are made on the basis of grain size and plasticity in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 or D 2488) which excludes particles larger than 75 mm. For particles larger than 75 mm, and for defining percent clay fraction in hydrometer results, definitions proposed by Canadian Foundation Engineering Manual, 4th Edition are used. The USCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris):
Terminology describing materials outside the USCS, (e.g. particles larger than 75 mm, visible organic matter, and construction debris) is based upon the proportion of these materials present:

Trace, or occasional	Less than 10%
Some	10-20%
Frequent	> 20%

Terminology describing compactness of cohesionless soils:
The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test (SPT) N-Value - also known as N-Index. The SPT N-Value is described further on page 3. A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value
Very Loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very Dense	>50

Terminology describing consistency of cohesive soils:
The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests. Consistency may be crudely estimated from SPT N-Value based on the correlation shown in the following table (Terzaghi and Peck, 1967). The correlation to SPT N-Value is used with caution as it is only very approximate.

Consistency	Undrained Shear Strength		Approximate SPT N-Value
	kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25 - 0.5	12.5 - 25	2-4
Firm	0.5 - 1.0	25 - 50	4-8
Stiff	1.0 - 2.0	50 – 100	8-15
Very Stiff	2.0 - 4.0	100 - 200	15-30
Hard	>4.0	>200	>30

ROCK DESCRIPTION

Except where specified below, terminology for describing rock is as defined by the International Society for Rock Mechanics (ISRM) 2007 publication "The Complete ISRM Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006"

Terminology describing rock quality:

RQD	Rock Mass Quality
0-25	*Very Poor Quality*
25-50	*Poor Quality*
50-75	*Fair Quality*
75-90	*Good Quality*
90-100	*Excellent Quality*

Alternate (Colloquial) Rock Mass Quality	
Very Severely Fractured	*Crushed*
Severely Fractured	*Shattered or Very Blocky*
Fractured	*Blocky*
Moderately Jointed	*Sound*
Intact	*Very Sound*

RQD (Rock Quality Designation) denotes the percentage of intact and sound rock retrieved from a borehole of any orientation. All pieces of intact and sound rock core equal to or greater than 100 mm (4 in.) long are summed and divided by the total length of the core run. RQD is determined in accordance with ASTM D6032.

SCR (Solid Core Recovery) denotes the percentage of solid core (cylindrical) retrieved from a borehole of any orientation. All pieces of solid (cylindrical) core are summed and divided by the total length of the core run (It excludes all portions of core pieces that are not fully cylindrical as well as crushed or rubble zones).

Fracture Index (FI) is defined as the number of naturally occurring fractures within a given length of core. The Fracture Index is reported as a simple count of natural occurring fractures.

Terminology describing rock with respect to discontinuity and bedding spacing:

Spacing (mm)	Discontinuities	Bedding
>6000	*Extremely Wide*	-
2000-6000	*Very Wide*	*Very Thick*
600-2000	*Wide*	*Thick*
200-600	*Moderate*	*Medium*
60-200	*Close*	*Thin*
20-60	*Very Close*	*Very Thin*
<20	*Extremely Close*	*Laminated*
<6	-	*Thinly Laminated*

Terminology describing rock strength:

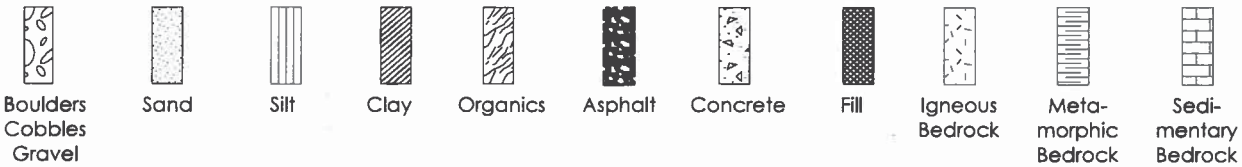
Strength Classification	Grade	Unconfined Compressive Strength (MPa)
Extremely Weak	R0	<1
Very Weak	R1	1 – 5
Weak	R2	5 – 25
Medium Strong	R3	25 – 50
Strong	R4	50 – 100
Very Strong	R5	100 – 250
Extremely Strong	R6	>250

Terminology describing rock weathering:

Term	Symbol	Description
Fresh	W1	No visible signs of rock weathering. Slight discoloration along major discontinuities
Slightly	W2	Discoloration indicates weathering of rock on discontinuity surfaces. All the rock material may be discolored.
Moderately	W3	Less than half the rock is decomposed and/or disintegrated into soil.
Highly	W4	More than half the rock is decomposed and/or disintegrated into soil.
Completely	W5	All the rock material is decomposed and/or disintegrated into soil. The original mass structure is still largely intact.
Residual Soil	W6	All the rock converted to soil. Structure and fabric destroyed.

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc.



SAMPLE TYPE

SS	Split spoon sample (obtained by performing the Standard Penetration Test)
ST	Shelby tube or thin wall tube
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS	Piston sample
BS	Bulk sample
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.

WATER LEVEL MEASUREMENT

measured in standpipe, piezometer, or well

inferred

RECOVERY

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

N-VALUE

Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals the sum of the number of blows (N) required to drive the sampler over the interval of 6 to 18 in. (150 to 450 mm). However, when a 24 in. (610 mm) sampler is used, the number of blows (N) required to drive the sampler over the interval of 12 to 24 in. (300 to 610 mm) may be reported if this value is lower. For split spoon samples where insufficient penetration was achieved and N-Values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50/75). Some design methods make use of N-values corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests are performed using a standard 60 degree apex cone connected to 'A' size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (300 mm) into the soil. The DCPT is used as a probe to assess soil variability.

OTHER TESTS

S	Sieve analysis
H	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
G_s	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
C	Consolidation
Q_u	Unconfined compression
I_p	Point Load Index (I_p on Borehole Record equals $I_p(50)$ in which the index is corrected to a reference diameter of 50 mm)

	Single packer permeability test; test interval from depth shown to bottom of borehole
	Double packer permeability test; test interval as indicated
	Falling head permeability test using casing
	Falling head permeability test using well point or piezometer

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TEST PIT RECORD

TP-01

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-01**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	38.40						
0		Compact brown silty sand with organics: TOPSOIL					
	38.0	Compact to dense reddish brown silty sand (SM), trace gravel: TILL					
1					GS	01	M.C. = 11.6%
2							
3	35.4						
		End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-02

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-02**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
0	38.00						
	37.6	Compact brown silty sand with organics: TOPSOIL					
1		Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	01	M.C. = 16.9%
2							
3	35.0						
		End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-03

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-03**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.80						
0		FILL: loose reddish brown silty sand, trace gravel -occasional pieces of asphalt and wood					
	36.5				GS	01	
		Compact to dense reddish brown silty sand (SM), trace gravel: TILL					
1					GS	02	M.C. = 9.0%
2							
	34.1						
		End of test pit at a depth of 2.74 meters below existing grade. No seepage observed					
3							
4							

Stantec

TEST PIT RECORD

TP-04

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-04**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.50						
0		FILL: loose reddish brown silty sand, some gravel -occasional pieces of plastic, brick, concrete, asphalt, wire, wood			GS	01	MC = 7.9%
1							
	34.8	Compact to dense reddish brown silty sand (SM), trace gravel: TILL					
2					GS	02	
3	33.5	End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-05

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-05**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	38.40						
0		FILL: loose reddish brown silty sand, some gravel -occasional pieces of asphalt, organics					
	38.1	Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	01	MC = 9.9%
1							
2							
3	35.4	End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-06

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-06**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	38.00						
0		FILL: loose reddish brown silty sand, some gravel			GS	01	
	37.6	Compact to dense reddish brown silty sand (SM), trace gravel: TILL					
1					GS	02	
2							
3	35.0	End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-07

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-07**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.80						
0		FILL: loose reddish brown silty sand, some gravel -occasional pieces of insulation, glass, roots			GS	01	MC = 7.8%
1	35.3	Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	02	MC = 13.2%
2							
3	33.8	End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-08

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-08**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.50						
0		FILL: loose reddish brown silty sand, some gravel -occasional pieces of asphalt, wire, insulation and wood					
	35.9						
		FILL: loose reddish brown silty sand, some gravel -occasional roots			GS	01	
1							
	35.1						
		Compact brown silty sand with organics: TOPSOIL					
	34.7						
		Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	02	
2							
3	33.5						
		End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-09

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-09**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.80						
0		FILL: loose reddish brown silt and sand, some gravel					
	36.2	Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	01	MC = 9.2%
1							
2							
3	33.8	End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-10

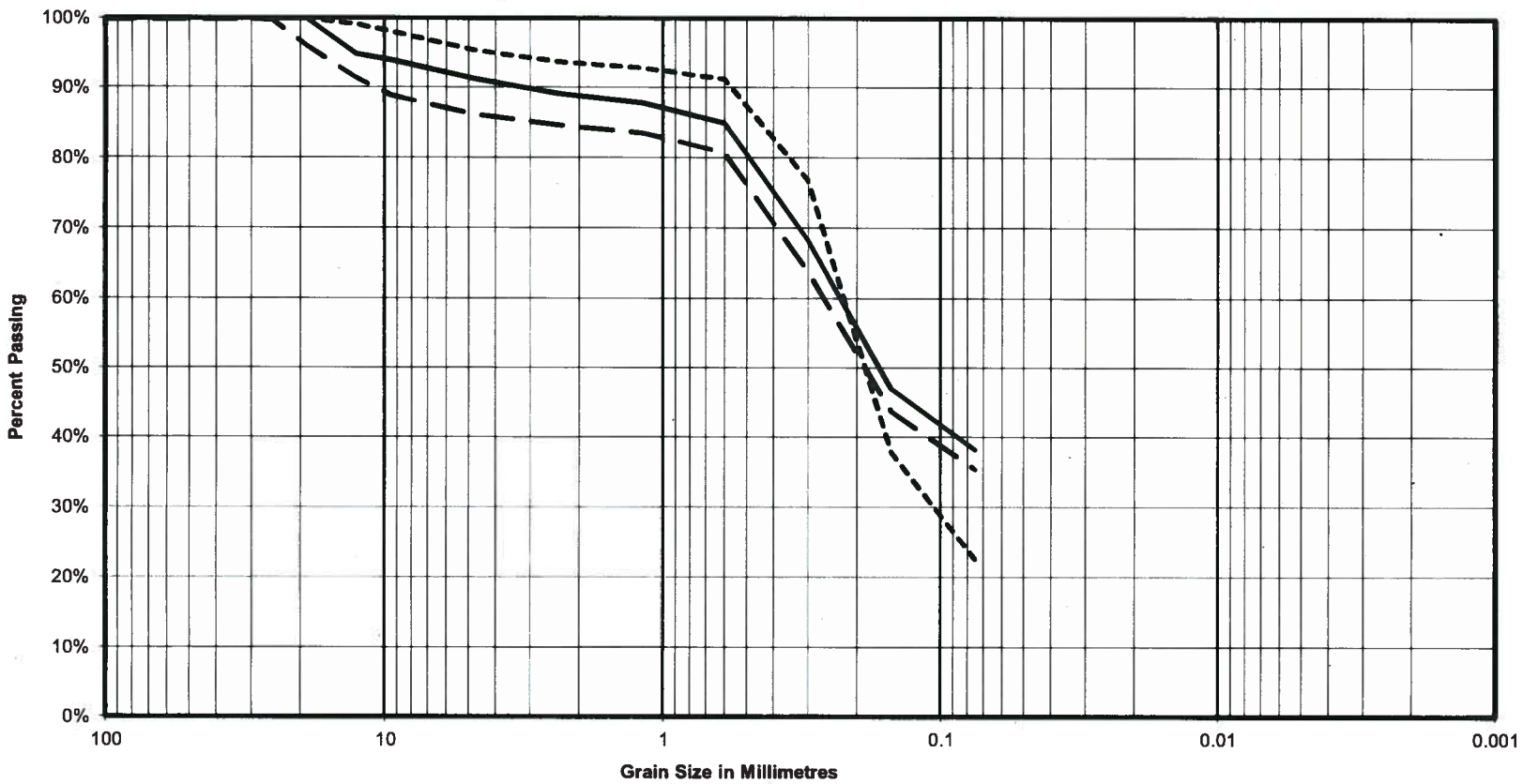
CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-10**

DATES: DUG **2015-08-26** WATER LEVEL **not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	36.50						
0		FILL: loose reddish brown silt and sand, some gravel -occasional pieces of concrete and asphalt			GS	01	
1							
	34.5						
2		Compact brown silty sand with organics: TOPSOIL					
	34.1						
		Compact to dense reddish brown silty sand (SM), trace gravel: TILL			GS	02	
3	33.5						
		End of test pit at a depth of 3.05 meters below existing grade. No seepage observed					
4							

Approved:



	Gravel		Sand			Silt and Clay
	Coarse	Fine	Coarse	Medium	Fine	

Unified Soil Classification System ASTM D 2487/2488

Curve	BOREHOLE/TESTPIT	SAMPLE	DEPTH (m)	Soil Fractions			Soil Description
				Gravel	Sand	Silt/Clay	
———	TP-01	GS-01	1.5	9%	53%	38%	Silty Sand (SM), trace Gravel: TILL
— — ·	TP-03	GS-02	0.9	14%	51%	35%	Silty Sand (SM), trace Gravel: TILL
- - - -	TP-04	GS-01	0.8	5%	73%	23%	FILL: Silty Sand (SM), trace Gravel

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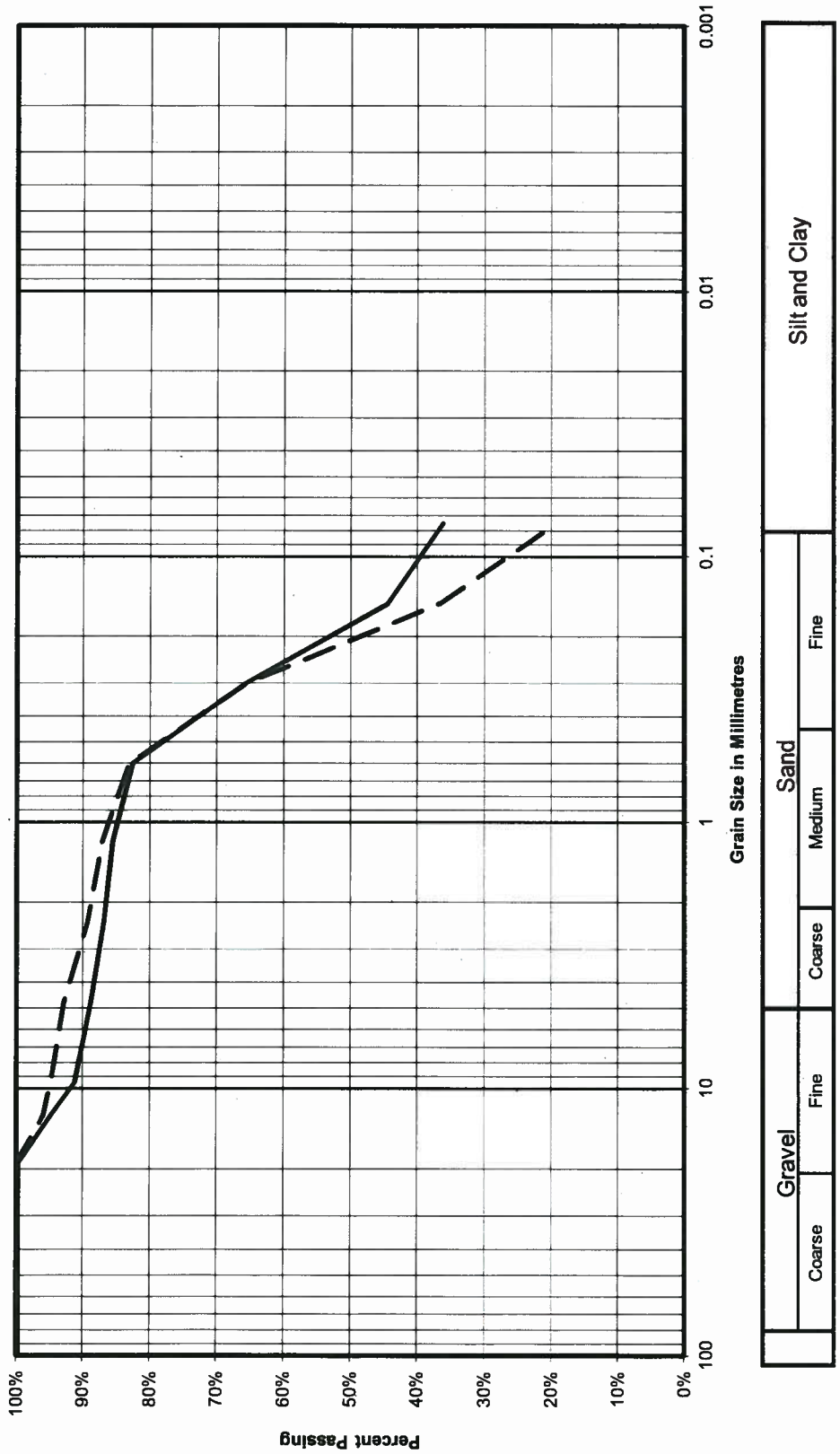

Unified Soil Classification System ASTM D 2487/2488

Curve	BOREHOLE/TESTPIT	SAMPLE	DEPTH (m)	Soil Fractions			Soil Description
				Gravel	Sand	Silt/Clay	
———	TP-05	GS-01	1.2	11%	53%	36%	Silty Sand (SM), trace Gravel: TILL
— — ·	TP-09	GS-01	0.9	7%	74%	19%	Silty Sand (SM), trace Gravel: TILL

Approved:

PROJECT: Riverview Manor, Montague, PE

Job No.: 121618785

THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

TEST PIT LOCATIONS PRELIMINARY GEOTECHNICAL INVESTIGATION RIVERVIEW MANOR, MONTAGUE, KINGS COUNTY, PEI	Job No.:	121618785	Dwg. No.: 1
	Scale:	1:2000	
	Date:	15.10.27	Stantec
	Dwn. By:	MO	
Client: PEITIE	App'd By:	MM	

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END

Supplemental Geotechnical Investigation – Riverview Manor, Montague, Kings County, PE

Job No. 121618785 – File No. 3726

Stantec

Prepared for:

Prince Edward Island Department of Transportation, Infrastructure and Energy (PEITIE)
Public Works and Planning
3rd Floor Jones Building
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February 24, 2016

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February 24, 2016
Job No. 121618785 – File No. 3726

Attention: Ms. Raymonde Arsenault-MacKenzie, MAAPEI, M.Arch., B.E.D.S.
PEI Department of Transportation, Infrastructure and Energy (PEITIE)
Public Works and Planning
3rd Floor Jones Building
11 Kent Street
Charlottetown PE C1A 7N8

Dear Ms. Arsenault-MacKenzie,

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

This report presents the results of the Supplemental geotechnical investigation carried out for the above-noted project, in accordance with your request. The purpose of the investigation was to obtain subsurface information at the site to supplement the preliminary investigation program and, based on the conditions encountered, to provide geotechnical engineering recommendations pertaining to site preparation and foundation design.

The site is the location of a former school. The building was demolished and the site was reinstated to existing grade under the supervision of Prince Edward Island Department of Transportation, Infrastructure and Energy (PEITIE) staff. We understand that during the demolition of the former building, construction debris consisting mostly of concrete with traces of insulation, wood and wire was placed in an area of the site, as shown on the appended Drawing No.1, Test Pit Locations. A footing was also left in place in this area. It is assumed that the subsurface conditions within the footprint of the former building will consist of fill with various thicknesses.

PROCEDURE

The field work for the supplemental investigation program was completed on February 10, 2016 and consisted of five (5) test pits designated TP-11 to TP-15. The test pits were excavated to depths of approximately 2.6 to 3.3 meters below existing grade with a rubber tired backhoe provided by Kings County Construction Limited, of Montague, Prince Edward Island. The test pits were located as shown on a drawing provided by Bergmark Guimond Hammarlund Jones Architects (refer to appended Drawing No. 1).

The locations of the test pits were established in the field by our personnel. The test pit locations were established by tape referencing to existing site features and ground surface elevations were interpolated from available topographic information obtained from PEITIE. Elevations are referenced to Geodetic Datum. Please note, the elevations provided in the preliminary

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

geotechnical investigation report were revised to be consistent with the latest available topographic information.

The exploration program was supervised by geotechnical personnel. The relative density of the soils encountered were estimated from the performance of the backhoe. Representative samples of the overburden soils encountered were recovered, placed in moisture-proof containers and were delivered to our Charlottetown laboratory for classification and testing. Detailed logs of the strata encountered at the site, and of the sampling and testing carried out are shown on the appended Test Pit Records.

The preliminary investigation program was completed on August 26, 2015, and consisted of excavating ten (10) test pits with a rubber tired backhoe, designated TP-01 to TP-10. The test pits were advanced to depths of approximately 2.7 to 3.1 meters below grade. The results of the preliminary investigation program are included for discussion in this report.

SUBSURFACE CONDITIONS

The soil strata encountered at the site during the subsurface investigation program are described in detail on the attached Test Pit Records and are summarized herein. The attached *Symbols and Terms used on Borehole and Test Pit Records* provide a brief explanation of the terminology and graphics used by Stantec Consulting Ltd.

Soil classification was based on the procedures described in ASTM D2487 *(Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System))* and ASTM D2488 *(Standard Practice for Description and Identification of Soils, Visual-Manual Procedure)*. A summary of the subsurface conditions encountered within the test pits is provided in Table 3 of the appendix and in the following subsections.

Fill

Fill, consisting generally of a reddish brown silty sand with trace to some gravel, was encountered at the ground surface at TP-03 through TP-15, and found to extend to depths ranging from 0.30 to 2.80 meters below grade. The fill was found to contain trace to frequent construction debris including pieces of brick, concrete, reinforcing steel, asphalt, pvc pipes, insulation, plastic, wire, glass, styrofoam and wood.

Four samples of the fill were selected for moisture content and/or grain size analysis. The results are presented in Table 1 and appended.

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

Table 1: FILL - Laboratory Testing Results

Sample ID, Depth (m)	Moisture Content (%)	Gravel (%)	Sand (%)	Silt/Clay (%)
TP-04, GS01, 0.7	7.9	5	7	23
TP-07, GS01, 0.9	7.8	-	-	-
TP-11, GS01, 0.9	15.5	7	54	39
TP-14, GS01, 0.9	17.9	-	-	-

Topsoil

A naturally occurring layer of topsoil was encountered at the ground surface at TP-01 and TP-02, and below the fill layer at TP-08 and TP-10, at depths of 1.50 and 2.00 meters, respectively. The thickness of the topsoil layer ranged from 0.40 to 0.45 m. The topsoil was found to consist of a compact brown silty sand containing organics.

Glacial Till

A reddish brown glacial till stratum was encountered directly below the fill and/or topsoil layer. The till was found to consist of a silty sand (SM), with trace gravel and is of a compact to dense compactness.

Eight (8) samples were submitted for moisture content and/or grain size analyses. The results are presented in Table 2 and appended.

Table 2: TILL - Laboratory Testing Results

Sample ID, Depth (m)	Moisture Content (%)	Gravel (%)	Sand (%)	Silt/Clay (%)
TP-01, GS01, 1.5	11.6	9	53	38
TP-02, GS01, 0.9	16.9	-	-	-
TP-03, GS01, 1.2	9.0	14	51	35
TP-05, GS01, 1.2	9.9	11	53	36
TP-07, GS02, 2.4	13.2	-	-	-
TP-09, GS01, 0.9	9.2	7	74	19
TP-12, GS02, 1.8	13.8	-	-	-
TP-13, GS02, 2.1	17.1	-	-	-
TP-15, GS02, 3.0	13.8	9	52	39

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

Bedrock

Bedrock was not encountered within the depths excavated during our investigation.

Groundwater

Groundwater seepage was observed in TP-12 and TP-14 at depths of 1.5 and 2.8 meters, respectively, from perched water within the fill layer. Groundwater was not encountered within the depths of the remaining test pits at the time of our investigation. The test pits were backfilled shortly after excavation. Fluctuations of the groundwater table can occur as a result of seasonal variations and/or in response to significant weather events.

DISCUSSION AND RECOMMENDATIONS

Site Preparation

Site preparation to permit the use of conventional spread footing foundations and slab-on-grade construction requires the removal of the fill and topsoil layer from within the proposed building area. Surface runoff should be directed away from excavated areas to prevent disturbance of the native till which is susceptible to water-softening.

Upon removal of unsuitable soils and other deleterious material from within the building area, any low areas should be brought up to the required subgrade level using structural fill. Structural fill should consist of an approved soil (preferably granular), which is free of organics and deleterious material, such as a pit run sandstone or other approved inorganic soil. Fill material meeting the current PEITIE Select Borrow specification (ie. maximum of 30 percent fines based on the minus 4.75 mm sieve fraction) would be acceptable for use.

Existing site fills may be considered for reuse as structural fill providing it is free of deleterious material, construction debris, and is within two percent of optimum moisture content.

Excavated site till that has a moisture content within two percent of optimum would also be acceptable for reuse as structural fill. The results of the moisture content tests indicate that the present moisture levels of the till are either within, or above, the required range to achieve proper compaction. Site till that has a moisture content above the optimum range, either naturally or as a result of precipitation, would have to be permitted to dry or be used for non-structural applications such as landscaping. Excavated site till will only dry readily during warm and dry weather. We recommend the reuse of excavated site till as structural fill be limited to late spring to early fall construction.

Structural fill within the building area should be placed and compacted in lifts compacted to 100 percent of the Standard Proctor maximum dry density. Lift thicknesses must be compatible with the compaction equipment used, and the fill material selected, in order to achieve the required density throughout.

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

Site preparation activities should be undertaken during dry weather. It is recommended that operation of equipment and construction traffic (particularly tandem trucks) over the native till be carefully planned to prevent disturbance of this soil.

If construction is carried out during the winter, it should be noted that earthworks performed during freezing conditions are suspect, and special measures are required. Structural fill should not be placed over frozen material; any soil that becomes frozen after placement must be removed, or allowed to thaw prior to the placement of subsequent lifts.

It is recommended that site preparation be monitored by experienced geotechnical personnel to confirm that unsuitable materials are removed, that only suitable replacement fills are used, and that the required degree of compaction is attained.

Foundations

An allowable bearing pressure of up to 150 kPa may be used for design of footings placed on the undisturbed native till or on structural fill (prepared as outlined above). Associated total and differential settlements would be within tolerable limits for a conventional structure. Footings subjected to freezing conditions should have a minimum soil cover of 1.5 meters (or equivalent insulation) for frost protection.

Structural fill used as a bearing stratum must extend outward beyond the exterior footing base perimeter a distance at least equal to the depth of fill placed below the footing to include the full stress zone of influence.

Groundwater, if encountered, should be kept to a minimum in the footing excavations to prevent disturbance of the till which is susceptible to water softening. Control of groundwater inflow may require pumping from a temporary sump(s) installed below founding level.

It is recommended that final excavation for footings be carried out with a ditching type bucket (i.e. no teeth) so as to minimize disturbance of the bearing surface. Any soil that becomes disturbed as result of construction activity and/or water should be removed from the bearing surface prior to footing placement. If softening persists, consideration could be given to the over-excavation of the bearing surface (e.g. by 300 millimeters) to allow the placement/compaction of a clean gravel layer. The gravel would stabilize the bearing surface and facilitate dewatering of the footing excavation. Alternatively, the use of a lean concrete layer (i.e. mud slab) could be considered to stabilize the bearing surface.

Bearing surfaces should be inspected by qualified geotechnical personnel prior to placing footings. If winter construction is anticipated, bearing surfaces, footings, foundation walls and floor slabs must be protected against freezing.

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

Slab-on-Grade/Foundation Drainage

A slab-on-grade may be cast over the native till or structural fill. A layer of compacted, free-draining granular material should be used under the floor slab area. Depending on the founding level selected, the slab-on-grade may extend below the groundwater table. Furthermore, seasonal variations of the groundwater table could result in higher levels than those recorded during the exploration programs. The following design elements should therefore be provided as a minimum:

- perimeter footing drains with a positive discharge for all areas where the floor level is located below final exterior grade; and,
- a heavy duty under-slab vapour barrier.

CLOSING COMMENTS

Use of this report is subject to the Statement of General Conditions provided in the Appendix. It is the responsibility of PEITIE, which is identified as "the Client" within the Statement of General Conditions, and its agents to review the conditions and to notify Stantec Consulting Ltd. should any of these not be satisfied. The Statement of General Conditions addresses the following:

- Use of the report
- Basis of the report
- Standard of care
- Interpretation of site conditions
- Varying or unexpected site conditions
- Planning, design or construction

We trust that this report it contains all of the information required at this time. This report was written by Corey MacPhee, E.I.T., and reviewed by Mark MacDonald, P.Eng. Should you have any questions or if we can be of further service, please contact us at your convenience.

Regards,

STANTEC CONSULTING LTD.

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February 24, 2016
Ms. Raymonde Arsenault-MacKenzie, MAAPEI, M.Arch., B.E.D.S.

Reference: Supplemental Geotechnical Investigation – Riverview Manor Montague, Kings County, PE

APPENDIX

STATEMENT OF GENERAL CONDITIONS

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Stantec Consulting Ltd. and the Client. Any use which a third party makes of this report is the responsibility of such third party.

BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Stantec Consulting Ltd.'s present understanding of the site specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec Consulting Ltd. is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state or province of execution for the specific professional service provided to the Client. No other warranty is made.

INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec Consulting Ltd. at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock and groundwater conditions as influenced by geological processes, construction activity, and site use.

VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec Consulting Ltd. must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec Consulting Ltd. will not be responsible to any party for damages incurred as a result of failing to notify Stantec Consulting Ltd. that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec Consulting Ltd. , sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Stantec Consulting Ltd. cannot be responsible for site work carried out without being present.

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis:

Rootmat	- vegetation, roots and moss with organic matter and topsoil typically forming a mattress at the ground surface
Topsoil	- mixture of soil and humus capable of supporting vegetative growth
Peat	- mixture of visible and invisible fragments of decayed organic matter
Till	- unstratified glacial deposit which may range from clay to boulders
Fill	- material below the surface identified as placed by humans (excluding buried services)

Terminology describing soil structure:

Desiccated	- having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	- having cracks, and hence a blocky structure
Varved	- composed of regular alternating layers of silt and clay
Stratified	- composed of alternating successions of different soil types, e.g. silt and sand
Layer	- > 75 mm in thickness
Seam	- 2 mm to 75 mm in thickness
Parting	- < 2 mm in thickness

Terminology describing soil types:
The classification of soil types are made on the basis of grain size and plasticity in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 or D 2488) which excludes particles larger than 75 mm. For particles larger than 75 mm, and for defining percent clay fraction in hydrometer results, definitions proposed by Canadian Foundation Engineering Manual, 4th Edition are used. The USCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris):
Terminology describing materials outside the USCS, (e.g. particles larger than 75 mm, visible organic matter, and construction debris) is based upon the proportion of these materials present:

Trace, or occasional	Less than 10%
Some	10-20%
Frequent	> 20%

Terminology describing compactness of cohesionless soils:
The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test (SPT) N-Value - also known as N-Index. The SPT N-Value is described further on page 3. A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value
Very Loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very Dense	>50

Terminology describing consistency of cohesive soils:
The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests. Consistency may be crudely estimated from SPT N-Value based on the correlation shown in the following table (Terzaghi and Peck, 1967). The correlation to SPT N-Value is used with caution as it is only very approximate.

Consistency	Undrained Shear Strength		Approximate SPT N-Value
	kips/sq.ft.	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25 - 0.5	12.5 - 25	2-4
Firm	0.5 - 1.0	25 - 50	4-8
Stiff	1.0 - 2.0	50 – 100	8-15
Very Stiff	2.0 - 4.0	100 - 200	15-30
Hard	>4.0	>200	>30

ROCK DESCRIPTION

Except where specified below, terminology for describing rock is as defined by the International Society for Rock Mechanics (ISRM) 2007 publication "The Complete ISRM Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006"

Terminology describing rock quality:

RQD	Rock Mass Quality
0-25	*Very Poor Quality*
25-50	*Poor Quality*
50-75	*Fair Quality*
75-90	*Good Quality*
90-100	*Excellent Quality*

Alternate (Colloquial) Rock Mass Quality	
Very Severely Fractured	*Crushed*
Severely Fractured	*Shattered or Very Blocky*
Fractured	*Blocky*
Moderately Jointed	*Sound*
Intact	*Very Sound*

RQD (Rock Quality Designation) denotes the percentage of intact and sound rock retrieved from a borehole of any orientation. All pieces of intact and sound rock core equal to or greater than 100 mm (4 in.) long are summed and divided by the total length of the core run. RQD is determined in accordance with ASTM D6032.

SCR (Solid Core Recovery) denotes the percentage of solid core (cylindrical) retrieved from a borehole of any orientation. All pieces of solid (cylindrical) core are summed and divided by the total length of the core run (It excludes all portions of core pieces that are not fully cylindrical as well as crushed or rubble zones).

Fracture Index (FI) is defined as the number of naturally occurring fractures within a given length of core. The Fracture Index is reported as a simple count of natural occurring fractures.

Terminology describing rock with respect to discontinuity and bedding spacing:

Spacing (mm)	Discontinuities	Bedding
>6000	*Extremely Wide*	-
2000-6000	*Very Wide*	*Very Thick*
600-2000	*Wide*	*Thick*
200-600	*Moderate*	*Medium*
60-200	*Close*	*Thin*
20-60	*Very Close*	*Very Thin*
<20	*Extremely Close*	*Laminated*
<6	-	*Thinly Laminated*

Terminology describing rock strength:

Strength Classification	Grade	Unconfined Compressive Strength (MPa)
Extremely Weak	R0	<1
Very Weak	R1	1 – 5
Weak	R2	5 – 25
Medium Strong	R3	25 – 50
Strong	R4	50 – 100
Very Strong	R5	100 – 250
Extremely Strong	R6	>250

Terminology describing rock weathering:

Term	Symbol	Description
Fresh	W1	No visible signs of rock weathering. Slight discoloration along major discontinuities
Slightly	W2	Discoloration indicates weathering of rock on discontinuity surfaces. All the rock material may be discolored.
Moderately	W3	Less than half the rock is decomposed and/or disintegrated into soil.
Highly	W4	More than half the rock is decomposed and/or disintegrated into soil.
Completely	W5	All the rock material is decomposed and/or disintegrated into soil. The original mass structure is still largely intact.
Residual Soil	W6	All the rock converted to soil. Structure and fabric destroyed.

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc.

Boulders Cobbles Gravel | Sand | Silt | Clay | Organics | Asphalt | Concrete | Fill | Igneous Bedrock | Meta-morphic Bedrock | Sedi-mentary Bedrock

SAMPLE TYPE

SS	Split spoon sample (obtained by performing the Standard Penetration Test)
ST	Shelby tube or thin wall tube
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS	Piston sample
BS	Bulk sample
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.

WATER LEVEL MEASUREMENT

measured in standpipe, piezometer, or well

inferred

RECOVERY

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

N-VALUE

Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals the sum of the number of blows (N) required to drive the sampler over the interval of 6 to 18 in. (150 to 450 mm). However, when a 24 in. (610 mm) sampler is used, the number of blows (N) required to drive the sampler over the interval of 12 to 24 in. (300 to 610 mm) may be reported if this value is lower. For split spoon samples where insufficient penetration was achieved and N-Values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50/75). Some design methods make use of N-values corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests are performed using a standard 60 degree apex cone connected to 'A' size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (300 mm) into the soil. The DCPT is used as a probe to assess soil variability.

OTHER TESTS

S	Sieve analysis
H	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
G_s	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
C	Consolidation
Q_u	Unconfined compression
I_p	Point Load Index (I_p on Borehole Record equals $I_p(50)$ in which the index is corrected to a reference diameter of 50 mm)

	Single packer permeability test; test interval from depth shown to bottom of borehole
	Double packer permeability test; test interval as indicated
	Falling head permeability test using casing
	Falling head permeability test using well point or piezometer

Table 3: Subsurface Conditions Summary

Exploration ID	Ground Surface Elevation (m)	Exploration Depth (m)	TOPSOIL Thickness (m)	FILL Thickness (m)	Depth to GLACIAL TILL (m)	Depth to Groundwater (m)
TP-01	19.50	3.10	0.45	NE	0.45	NE
TP-02	20.00	3.10	0.45	NE	0.45	NE
TP-03	16.60	2.70	NE	0.30	0.30	NE
TP-04	16.50	3.10	NE	1.70	1.70	NE
TP-05	16.40	3.10	NE	0.35	0.35	NE
TP-06	16.20	3.10	NE	0.45	0.45	NE
TP-07	15.80	3.10	NE	1.50	1.50	NE
TP-08	15.80	3.10	0.40	1.40	1.80	NE
TP-09	14.30	3.10	NE	0.60	0.60	NE
TP-10	14.40	3.10	0.45	2.00	2.45	NE
TP-11	16.20	3.00	NE	1.60	1.60	NE
TP-12	15.80	2.60	NE	1.80	1.80	NE*
TP-13	15.40	3.00	NE	1.80	1.80	NE
TP-14	15.10	3.10	NE	2.80	2.80	NE*
TP-15	15.80	3.30	NE	2.70	2.70	NE

NE – Not Encountered

* - Seepage observed in TP-12 and TP-14 due to perched water within the fill layer, and is not indicative of the groundwater levels at the site.

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TEST PIT RECORD

TP-01

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-01**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	19.50						
0		Compact brown silty sand (SM) with organics: TOPSOIL					
	19.1	Compact to dense reddish brown silty sand (SM): TILL					
1							
					GS	01	M.C. = 11.6%
2							
3	16.4						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-02

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-02**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	20.00						
0		Compact brown silty sand (SM) with organics: TOPSOIL					
	19.6	Compact to dense reddish brown silty sand (SM): TILL			GS	01	M.C. = 16.9%
1							
2							
3	16.9						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-03

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-03**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	16.60						
0		FILL: Reddish brown silty sand containing occasional pieces of asphalt and wood					
	16.3				GS	01	
		Compact to dense reddish brown silty sand (SM): TILL					
1					GS	02	M.C. = 9.0%
2							
	13.9						
		End of test pit at a depth of 2.7 meters below existing grade. No seepage observed					
3							
4							

Stantec

TEST PIT RECORD

TP-04

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-04**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	16.50						
0		FILL: Reddish brown silty sand with gravel containing occasional pieces of plastic, brick, concrete, asphalt, wire, wood			GS	01	MC = 7.9%
1							
	14.8						
		Compact to dense reddish brown silty sand (SM): TILL					
2					GS	02	
3	13.4						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-05

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-05**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	16.40						
0		FILL: Reddish brown silty sand with gravel containing occasional pieces of asphalt, organics					
	16.1	Compact to dense reddish brown silty sand (SM): TILL					
1					GS	01	MC = 9.9%
2							
3	13.3						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-06

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-06**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	16.20						
0		FILL: Reddish brown silty sand with gravel			GS	01	
	15.8	Compact to dense reddish brown silty sand (SM): TILL					
1							
					GS	02	
2							
3	13.1						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-07

CLIENT Prince Edward Island Department of Transportation, Infrastructure and Energy

PROJECT No. 121618785

LOCATION Riverview Manor, Montague, Kings County, PE

TEST PIT No. TP-07

DATES: DUG 2015-08-26 WATER LEVEL Not encountered

DATUM Geodetic

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.80						
0		FILL: Reddish brown silty sand with gravel containing occasional pieces of insulation, glass, roots					
1					GS	01	MC = 7.8%
	14.3						
		Compact to dense reddish brown silty sand (SM): TILL					
2					GS	02	MC = 13.2%
3	12.7						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-08

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-08**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.80						
0		FILL: Reddish brown silty sand with gravel containing occasional pieces of asphalt, wire, insulation and wood					
	15.2						
		FILL: Reddish brown silty sand with gravel containing occasional roots			GS	01	
1							
	14.4						
		Compact brown silty sand (SM) with organics: TOPSOIL					
	14.0						
		Compact to dense reddish brown silty sand (SM): TILL			GS	02	
2							
3	12.7						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-09

CLIENT Prince Edward Island Department of Transportation, Infrastructure and Energy

PROJECT No. 121618785

LOCATION Riverview Manor, Montague, Kings County, PE

TEST PIT No. TP-09

DATES: DUG 2015-08-26 WATER LEVEL Not encountered

DATUM Geodetic

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	14.30						
0		FILL: Reddish brown silty sand with gravel					
	13.7						
		Compact to dense reddish brown silty sand (SM): TILL			GS	01	MC = 9.2%
1							
2							
3	11.2						
		End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-10

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-10**

DATES: DUG **2015-08-26** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
0	14.40						
		FILL: loose reddish brown silty sand with gravel containing occasional pieces of concrete and asphalt			GS	01	
1							
2	12.4	Compact brown silty sand (SM) with organics: TOPSOIL					
	12.0	Compact to dense reddish brown silty sand (SM): TILL			GS	02	
3	11.3	End of test pit at a depth of 3.1 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-11

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-11**

DATES: DUG **2016-02-11** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	16.20						
0		FILL: Reddish brown silty sand with gravel -PVC pipe noted at 0.7m -asphalt pieces notes at 0.9m			GS	01	M.C. = 15.5%
1							
	14.6	Compact to dense reddish brown silty sand (SM): TILL					
2					GS	02	
3	13.2	End of test pit at a depth of 3.0 meters below existing grade. No seepage observed					
4							

Stantec

TEST PIT RECORD

TP-12

CLIENT: Prince Edward Island Department of Transportation, Infrastructure and Energy

PROJECT No. 121618785

LOCATION: Riverview Manor, Montague, Kings County, PE

TEST PIT No. TP-12

DATES: DUG 2016-02-11 WATER LEVEL 1.5 m (seepage)

DATUM Geodetic

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.80						
0		FILL: Reddish brown silty sand containing construction debris including concrete and asphalt					
1					GS	01	
				▼			
	14.0						
		Compact to dense reddish brown silty sand (SM): TILL			GS	02	M.C. = 13.8%
2							
	13.2						
		End of test pit at a depth of 2.6 meters below existing grade. Seepage observed at 1.5 meters below existing grade from perched water					
3							
4							

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TEST PIT RECORD

TP-13

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-13**

DATES: DUG **2016-02-11** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.40						
0		FILL: Reddish brown silty sand containing construction debris including asphalt and bricks					
1					GS	01	-300 millimeter outside diameter concrete pipe encountered at a depth of approximaterly 1.5 meters below existing grade and appeared to be an abandoned storm line.
	13.6	Compact to dense reddish brown silty sand (SM): TILL					
2					GS	02	M.C. = 17.1%
3	12.4	End of test pit at a depth of 3.0 meters below existing grade. No seepage observed					
4							

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TEST PIT RECORD

TP-14

CLIENT: Prince Edward Island Department of Transportation, Infrastructure and Energy

PROJECT No. 121618785

LOCATION: Riverview Manor, Montague, Kings County, PE

TEST PIT No. TP-14

DATES: DUG 2016-02-11 WATER LEVEL 2.8 m (seepage)

DATUM Geodetic

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.10						
0		FILL: Reddish brown silty sand with gravel containing construction debris including styrofoam, concrete, pvc pipe, concrete and reinforcing steel			GS	01	M.C. = 17.9
1	14.1	FILL: Light brown silty sand					
	13.8	FILL: Reddish brown silty sand with gravel containing construction debris including styrofoam, concrete, pvc pipe, concrete and reinforcing steel					
2							
	12.3	Compact to dense reddish brown silty sand (SM): TILL		▼			
3	12.0				GS	02	
		End of test pit at a depth of 3.1 meters below existing grade. Water seepage observed at 2.8 metersbelow existing grade from perched water					
4							

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TEST PIT RECORD

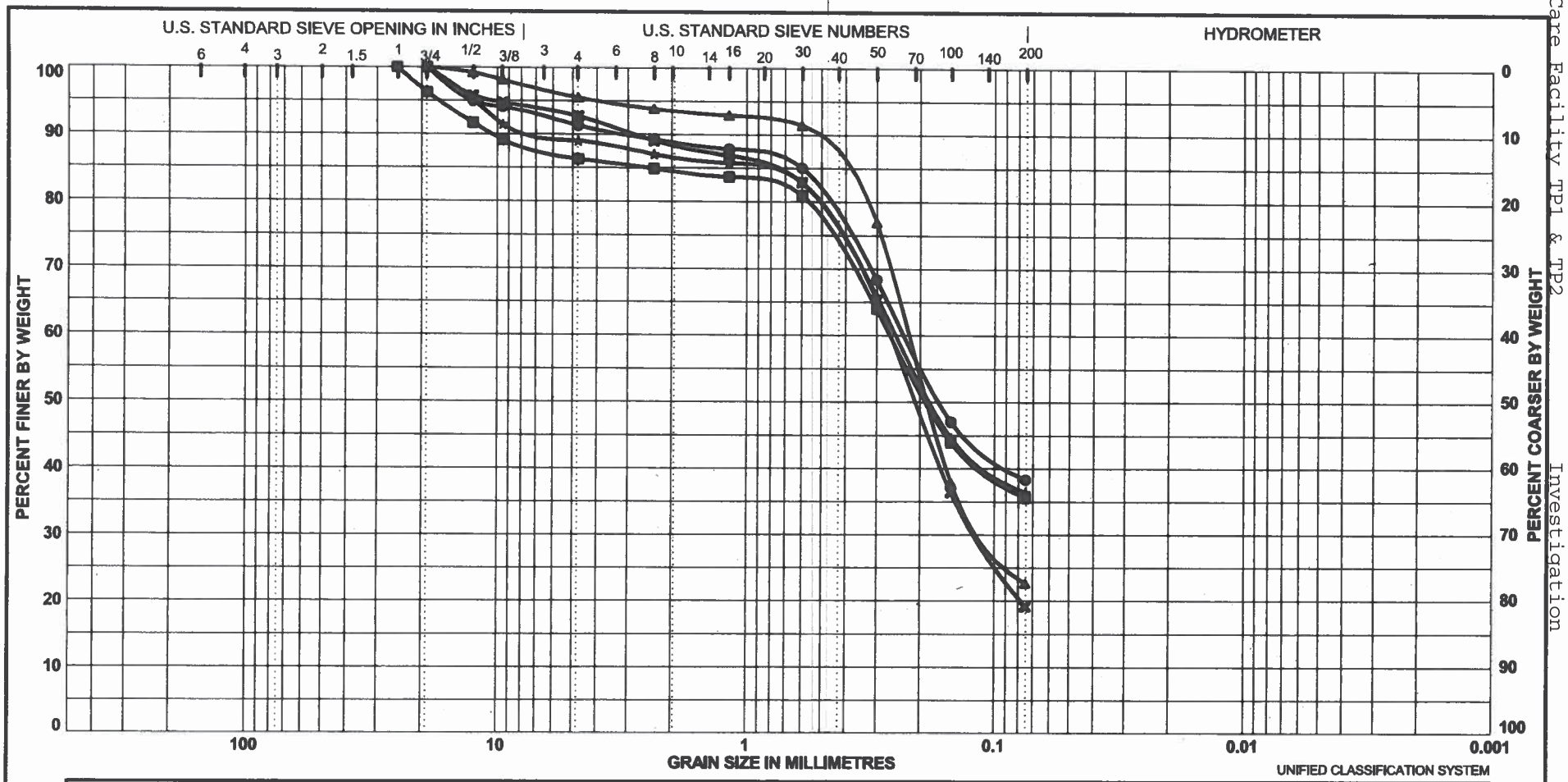
TP-15

CLIENT **Prince Edward Island Department of Transportation, Infrastructure and Energy** PROJECT No. **121618785**

LOCATION **Riverview Manor, Montague, Kings County, PE** TEST PIT No. **TP-15**

DATES: DUG **2016-02-11** WATER LEVEL **Not encountered** DATUM **Geodetic**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION	STRATA PLOT	WATER LEVEL	TYPE	NUMBER	REMARKS
	15.80						
0		FILL: Reddish brown silty sand containing construction debris including wood, asphalt, concrete, reinforcing steel, pvc pipe, plastic, styrofoam, and metal					
1					GS	01	
2							
	13.1	Compact to dense reddish brown silty sand (SM): TILL					
3					GS	02	M.C. = 13.8%
	12.5	End of test pit at a depth of 3.3 meters below existing grade. No seepage observed					
4							



UNIFIED CLASSIFICATION SYSTEM

COBBLES	GRAVEL		SAND			SILT and CLAY	
	coarse	fine	coarse	medium	fine	SILT	CLAY

	Source	Depth	Description	W%	W_L	W_P	I_P	%Gravel	%Sand	%Silt	%Clay
●	TP-01	1.5	Silty sand (SM): TILL	11.6				8.7	53.0	38.3	
■	TP-03	0.9	Silty sand (SM): TILL	9.0				13.7	50.7	35.6	
▲	TP-04	0.8	FILL: Silty sand	7.9				4.5	72.8	22.7	
★	TP-05	1.2	Silty sand (SM): TILL	9.9				11.0	52.6	36.4	
✖	TP-09	0.9	Silty sand (SM): TILL	9.2				7.3	73.6	19.1	

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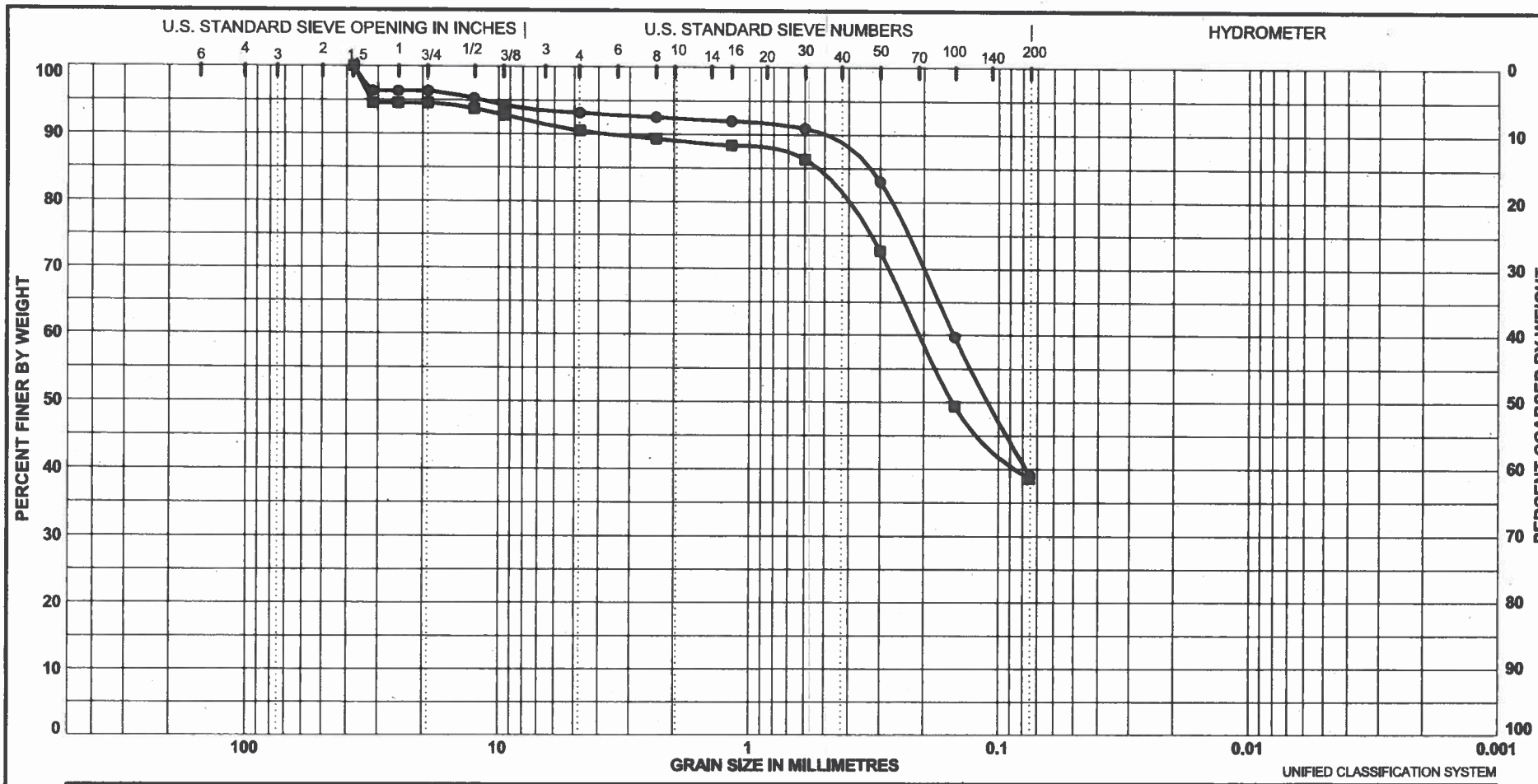
Project:	**Proposed Riverview Manor**	Location:	**Montague, Kings County, PE**
Job No.:	**121618785**	Notes:	
Date:	**February, 2016**	**GRADATION CURVES**	



COBBLES	GRAVEL		SAND			SILT and CLAY	
	coarse	fine	coarse	medium	fine	SILT	CLAY

Source	Depth	Description	W%	W_L	W_P	I_P	%Gravel	%Sand	%Silt	%Clay
● TP-11	0.9	FILL: Silty sand	15.5				6.9	54.0	39.1	
■ TP-12	1.8	Silty sand (SM): TILL	13.8				9.5	51.9	38.6	

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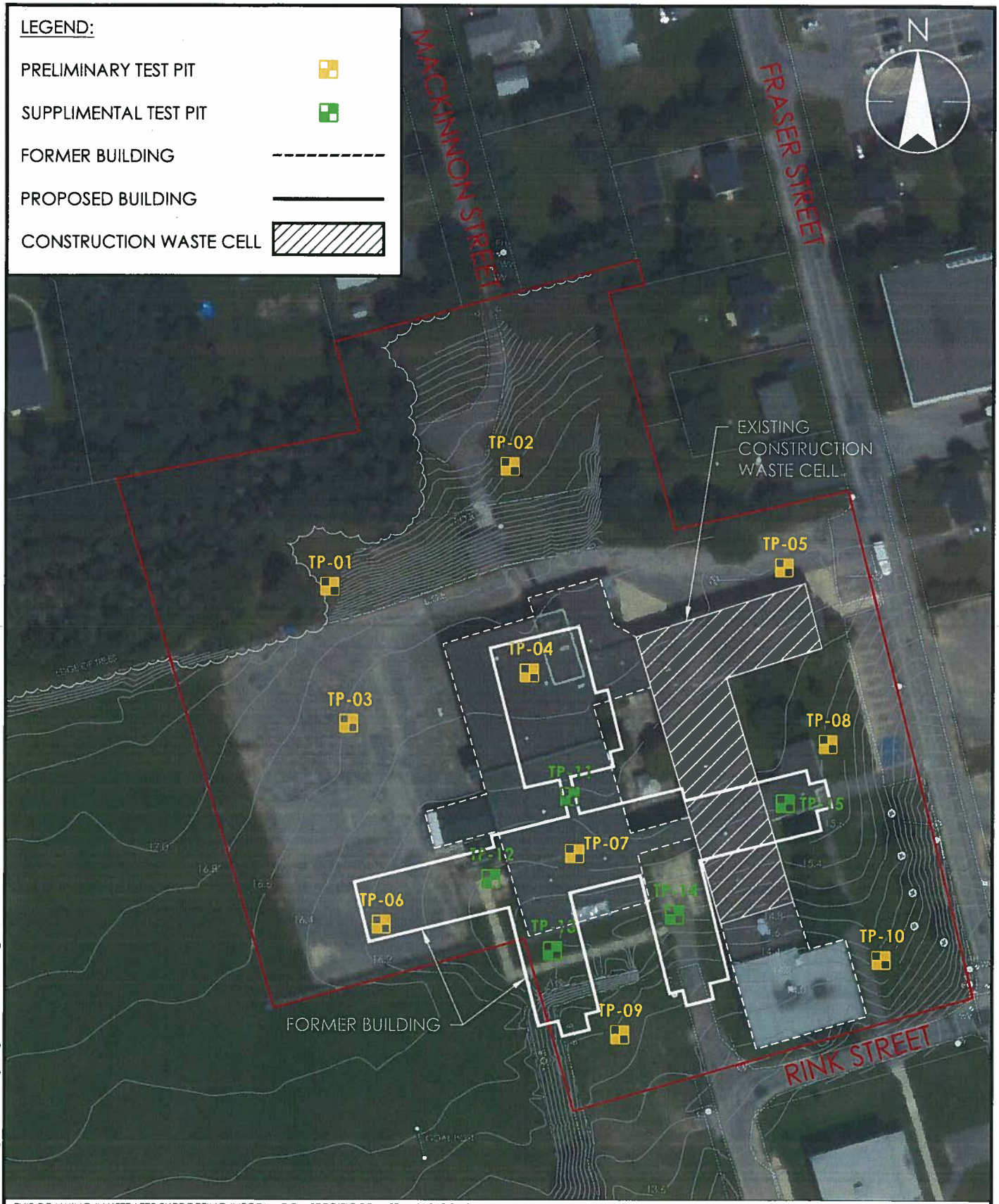
Project: **Proposed Riverview Manor**	Location: **Montague, Kings County, PE**
Job No.: **121618785**	Notes:
Date: **February, 2016**	**GRADATION CURVES**



THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

TEST PIT LOCATIONS SUPPLIMENTAL GEOTECHNICAL INVESTIGATION RIVERVIEW MANOR, MONTAGUE, KINGS COUNTY, PEI	Job No.:	121618785	Dwg. No.: 1
	Scale:	1:1250	
	Date:	16.02.19	Stantec
	Dwn. By:	MO	
Client: PEITIE	App'd By:	MM	

V:\01216\active\3726-121618785\figures_drawings_logs\18785b-102.dwg

END

PART 1 - GENERAL

1.1 References

.1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92-637.

.2 National Fire Code of Canada 1995.

.3 Transportation of Dangerous Goods Act (TDG Act) 1992, (T-19.01).

.4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).

1.2 Definitions

.1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.4 Workplace Hazardous Materials Information System (WHMIS): A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace. Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by a combination of federal and provincial laws.

1.3 Storage and Handling

.1 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.2 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.3 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.4 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and

5
litres for liquids:
.1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
.2 Label containers of hazardous materials and wastes in accordance with WHMIS.
.3 Store hazardous materials and wastes in containers compatible with that material or waste.
.4 Segregate incompatible materials and wastes.
.5 Ensure that different hazardous materials or hazardous wastes are not mixed.
.6 Store hazardous materials and wastes in a secure storage area with controlled access.
.7 Maintain a clear egress from storage area.
.8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
.9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
.10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.5 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.6 Report spills or accidents immediately.

1.4 Transportation

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 If hazardous waste is generated on site:
.1 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.
.2 Use only a licensed carrier authorized by provincial authorities to accept subject material.
.3 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
.4 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
.5 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.6 Track receipt of completed manifest from consignee after shipping dangerous goods.
.7 Report any discharge, emission, or escape of hazardous materials immediately to provincial authority. Take reasonable measures to control release.

PART 2 - PRODUCTS

2.1 Materials

.1 Only bring on site the quantity of hazardous materials required to perform work.

.2 Maintain MSDS in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

PART 3 - EXECUTION

3.1 Disposal

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

END

PART 1 - GENERAL

1.1 Reference Standards

.1 Canadian Standards Association (CSA International)
.1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CSA-086S1-05, Supplement No. 1 to CAN/CSA-086-01, Engineering Design in wood.
.3 CSA 0121-M1978 (R2003), Douglas Fir Plywood.
.4 CSA 0151-04, Canadian Softwood Plywood.
.5 CSA 0153-M1980 (R2003), Poplar Plywood.
.6 CSA S269.1-1975 (R2003), Falsework or Construction Purposes.
.7 CAN/CSA-S269.3-M92 (R2003), Concrete Formwork, National Standard of Canada.

.2 All reference standards shall be of latest edition.

1.2 Submittals

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

.2 Submit shop drawings for formwork and falsework, if requested.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.

.4 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 Comply with CAN/CSA-S269.3 for formwork drawings.

1.3 Delivery, Storage and Handling

.1 Store and manage hazardous materials in accordance with. Section 02 81 01 - Hazardous Materials.

.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Municipal and Provincial Bylaws.
.2 Place materials defined as hazardous or toxic in designated containers.
.3 Divert wood materials from landfill to a recycling reuse composting facility as approved by the Construction Manager.
.4 Divert plastic materials from landfill to a recycling reuse composting facility as approved by Construction Manager.

.5 Divert unused form release material from landfill to an official hazardous material collections site as approved by the. Construction Manager.

PART 2 - PRODUCTS

2.1 Materials

.1 Materials and resources in accordance with Section 01 60 00 - Material and Equipment.

.2 Formwork materials:
.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121, CAN/CSA-O86 CSA-O153.
.2 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.

.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 diameter in concrete surface.
.2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.

.4 Form liner:
.1 Plywood: Douglas Fir to CSA O121 or Canadian Softwood Plywood to CSA O151.

.5 Form release agent: non-toxic, biodegradable and low VOC.

.6 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 70 and 110s Saybolt Universal 15 to 24 mm^2 /s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.

.7 Falsework materials: to CSA-S269.1.

.8 Form release agent:
.1 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.
.2 Non-toxic, Biodegradable, Low VOC.

PART 3 - EXECUTION

3.1 Fabrications and Erection

.1 Verify lines, levels and column centres before proceeding with formwork and ensure dimensions agree with drawings.

.2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.

.3 Construct falsework in accordance with CSA S269.1.

.4 Obtain Consultant's approval for use of earth forms framing openings not indicated on drawings.

.5 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.6 Obtain Consultant's permission before framing openings not indicated in concrete members.

.7 Align form joints and make watertight. Keep form joints to minimum.

.8 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.9 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.

.10 Re-use of formwork and falsework subject to requirements of CAN/CSA-A23.1.

.11 Refer to architectural drawings for concrete members requiring architectural exposed finishes.

.12 Do not place shores and mud sills on frozen ground.

.13 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.14 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 CSA-A23.1/A23.2.

.15 Use 12mm chamfer strips on external corners, unless specified otherwise.

.16 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.17 Build in anchors, sleeves, and other inserts required to
(Cont'd accommodate Work specified in other sections.

.1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.18 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

END

PART 1 - GENERAL

1.1 Measurement Procedures

.1 No measurement will be made under this Section.
.1 Include reinforcement costs in items of concrete work in Section 03 30 00 - Cast-In-Place Concrete.

.2 All reference standards shall be of latest edition.

1.2 Source Quality Control

.1 Provide Consultant with a certified copy of mill test of steel supplied showing physical and chemical analysis, when requested by the Engineer minimum 2 weeks prior to commencing reinforcing work.

1.3 Shop Drawings

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

.2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and ACI 315.

.3 Submit shop drawings including placing of reinforcement and indicate:
.1 Bar bending details.
.2 Lists.
.3 Quantities of reinforcement.
.4 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.

.4 Regardless of approval of shop drawings by engineer, be responsible for fit, conformity or performance in accordance with drawings and specifications.

.5 Detail lap lengths and bar development lengths to CSA A23.3 unless otherwise indicated.

.6 Each drawing submitted shall bear signature and stamp of qualified professional Engineer in the province of Prince Edward Island.

.7 Shop drawings submitted by fax will not be reviewed.

.8 Quality Assurance: in accordance with Section 01 45 00 - Quality Control and as described in PART 2 -Source Quality Control.
.1 Mill Test Report: upon request, provide Consultant with certified copy of mill test report of reinforcing steel, minimum 2 weeks prior to beginning reinforcing work.
.2 Upon request submit in writing to Consultant proposed source of reinforcement material to be supplied.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Store and manage hazardous materials in accordance with. Division 1.

.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Municipal and Provincial by-laws.
.2 Place materials defined as hazardous or toxic in designated containers.

1.5 Substitutes

.1 Substitution of different size bars permitted only upon written approval of Consultant.

PART 2 - PRODUCTS

2.1 Materials

.1 Materials and resources in accordance with Section 01 60 00 - Material and Equipment.

.2 Substitute different size bars only if permitted in writing by Consultant.

.3 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

.4 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-G30.18.

.5 Cold-drawn annealed steel wire ties: to ASTM A 497/A 497M.

.6 Welded steel wire fabric: to ASTM A 185/A 185M.
.1 Provide in flat sheets only.

.7 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

.8 Mechanical splices: subject to approval of Consultant.

.9 Plain round bars: to CSA-G40.20/G40.21.

.10 Provide chairs to support wire mesh on vapour barrier and insulation:
.1 Refer to drawings for location of WWF for in-floor heat anchorage.
.2 Refer to drawings for location of WWF for structural requirements.

.11 Supports: To CSA A23.1, Supply approved supports and chairs of strong, durable, non-corrodible materials which fasten or tie securely to reinforcing steel. Galvanized metal or plastic chairs, or other devices may be used provided they satisfy requirements of this section and are approved by Engineer.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

.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.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Consultant with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 2 weeks prior to beginning reinforcing work.

.2 Upon request inform Consultant of proposed source of material to be supplied.

PART 3 - EXECUTION

3.1 Field Bending

.1 Do not field bend reinforcement except where indicated or authorized by Engineer.

.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 Accurately place reinforcing steel in positions indicated and hold firmly during placing, compacting and setting of concrete, in accordance with CSA-A23.1/A23.2, and drawings.

.2 Tie reinforcement where spacing in each direction is:
.1 Less than 300mm: tie at alternate intersections.
.2 300mm or more: tie at each intersection.

.3 Wire mesh in the slab on grade shall be placed at the middle of the slab. Mesh shall be placed on chairs or other suitable supports to keep in place and provide proper cover.
.1 Install WWF on chairs and coordinate with mechanical contractor for installation of in-floor heating pipe.
.2 Install structural WWF at the middle of the slab.

.4 Use plain round bars as slip dowels in concrete.
.1 Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint.
.2 When paint is dry, apply thick even film of mineral lubricating grease.

.5 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.

.6 Ensure cover to reinforcement is maintained during concrete pour.

3.3 Splicing

.1 Make no splices of reinforcement other than those indicated or authorized by Consultant.

.2 Splice reinforcing bars and mesh to CSA A23.3.

3.4 Welding

.1 Do not weld reinforcing steel unless authorized in writing by Engineer.

.2 When authorized, weld to CSA W186. Use only welders qualified under provision of CSA W47.1.

3.5 Inspection

.1 Do not place concrete until Consultant has inspected and approved reinforcement work in place.

END

PART 1 - GENERAL

1.1 MEASUREMENT PROCEDURES

.1 Measurement Procedures: in accordance with Section 01 29 00 - Payment Procedures.

.2 Cast-in-place concrete will not be measured but will be paid for as part of contract.

.3 Supply and installation of anchor bolts, nuts and washers and bolt grouting will not be measured but considered incidental to work.

1.2 Samples

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

.2 At least 2 weeks prior to commencing work, inform Consultant of proposed source of aggregates and provide access for sampling.

1.3 Certificates

.1 Minimum 2 weeks prior to starting concrete work submit to Consultant manufacturer's test data and certification by qualified independent inspection and testing laboratory that the following materials will meet specified requirements:
- .1 Portland cement.
- .2 Blended hydraulic cement.
- .3 Supplementary cementing materials.
- .4 Grout.
- .5 Admixtures.
- .6 Aggregates.
- .7 Water.
- .8 Waterstops.
- .9 Waterstop joints.
- .10 Joint filler.
- .11 Bonding agents.

.2 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.

.3 Provide certification that mix proportions selected will produce concrete of specified quality and yield and that strength will comply with CAN3-A23.1 and that mix design is adjusted to prevent alkali aggregate reactivity problems.

1.4 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM C 260-01, Standard Specification for Air-Entraining Admixtures for Concrete.
.2 ASTM C 309-03, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
.3 ASTM C 494/C 494M-05, Standard Specification for Chemical Admixtures for Concrete.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-37.2-M88, Emulsified Asphalt, Mineral Colloid-Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
.2 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 Canadian Standards Association (CSA International)
.1 CSA-A23.1/A23.2-1994, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CSA A283-00(R2003), Qualification Code for Concrete Testing Laboratories.
.3 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
.1 CSA-A3001-03, Cementitious Materials for Use in Concrete.

1.5 ACRONYMS AND TYPES

.1 Cement: hydraulic cement or blended hydraulic cement (XXb - where b denotes blended).
.1 Type GU or GUb - General use cement.
.2 Type MS or MSb - Moderate sulphate-resistant cement.
.3 Type MH or MHb - Moderate heat of hydration cement.
.4 Type HE or Heb - High early-strength cement.
.5 Type LH or LHb - Low heat of hydration cement.
.6 Type HS or HSb - High sulphate-resistant cement.

.2 Fly ash:
.1 Type F - with CaO content less than 8%.
.2 Type CI - with CaO content ranging from 8 to 20%.
.3 Type CH - with CaO greater than 20%.

.3 GGBFS - Ground, granulated blast-furnace slag.

1.6 DESIGN REQUIREMENTS

.1 Alternative 1 - Performance: in accordance with CSA-A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.

1.7 SUBMITTALS

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

.2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.

.3 Concrete pours: submit accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.

.4 Concrete hauling time: upon request submit for review by Consultant deviations exceeding maximum allowable time of 120 min for concrete to be delivered to site of Work and discharged after batching.

1.8 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Site Meetings: in accordance with Section 01 32 00 - Prosecution and Progress.
.1 Ensure key personnel, site supervisor, Departmental Representative, Engineer, Consultant, specialty contractor - finishing, forming concrete producer, testing laboratories attend.
.2 Verify project requirements.

.3 Submit upon request to Consultant, minimum 2 weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.
.1 When plant does not hold valid certification, provide confirmation that materials used in concrete mixture will meet specified requirements.

.4 Minimum 2 weeks prior to starting concrete work, submit upon request 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.

.5 Quality Control Plan: submit written report, as described in PART 3 - VERIFICATION, to Consultant verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

1.9 Construction Quality Control

.1 Submit proposed quality control procedures for Consultant'a approval.

1.10 DELIVERY, STORAGE AND HANDLING

.1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.
.1 Modifications to maximum time limit must be agreed to Consultant and laboratory representative and concrete producer as described in CSA A23.1/A23.2.
.2 Deviations to be submitted for review by Consultant.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

.3 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Municipal and Provincial by-laws.
.2 Divert unused concrete materials from landfill to local facility approved by Consultant.
.3 Provide an appropriate area on the job site where concrete trucks can be safely washed.
.4 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved by the Consultant.
.5 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.
.6 Prevent admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial and National regulations.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Portland cement: to CAN/CSA-A5.

.2 Cement: to CAN/CSA-A3001, Type GU.

.3 Blended hydraulic cement: Type GUb to CAN/CSA-A3001.

.4 Supplementary cementing materials: with minimum 20% Type F fly ash replacement N, by mass of total cementitious materials to CAN/CSA-A3001.

.5 Water: to CSA-A23.1.

.6 Aggregates: to CAN/CSA-A23.1/A23.2.

.7 Admixtures:
.1 Air entraining admixture: to ASTM C 260.
.2 Chemical admixture: to ASTM C 494. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.

.8 Colour Additives for integrally coloured Concrete: Davis Colors manufactured by Davis Colors 800-356-4848, www.daviscolors.com, info@daviscolors.com
.1 Colour to be chosen by consultant from manufacturer's full range of colours.
.2 Coloring to be provided at exterior concrete courtyard patios. Colouring is not required at the exterior front entrance patio.

.9 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA-A23.1/A23.2.
.1 Compressive strength: 40 MPa at 28 days.
.2 Net shrinkage at 28 days: maximum 5%.

.10 Non premixed dry pack grout: composition of non metallic aggregate Portland cement with sufficient water for mixture to retain its shape when made into ball by hand and capable of developing compressive strength of 50 MPa at 28 days.

.11 Curing compound: to CSA-A23.1/A23.2 white and ASTM C 309, Type 1-chlorinated rubber.

.12 Premoulded joint fillers:
.1 Bituminous impregnated fiber board: to ASTM D 1751.

.13 Weep hole tubes: galvanized steel or plastic.

.14 Dampproofing:
.1 Emulsified asphalt, mineral colloid type, unfilled: to CAN/CGSB-37.2.

.15 Polyethylene film: 0.4mm thickness to CAN/CGSB-51.34.

.16 Bonding agent: Two part epoxy type to be approved by Engineer.

.17 Control joint sealant: PRC Rubber Caulk 210 or equivalent, with a Shore A hardness less than 40.

2.2 MIXES

.1 Alternative 1 - Performance Method for specifying concrete: to meet Consultant performance criteria in accordance with CAN/CSA-A23.1/A23.2.
.1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as described in PART 3 - VERIFICATION.
.2 Provide concrete mix to meet following hard state requirements:
.1 Durability and class of exposure: See drawing.
.2 Minimum compressive strength at 28 days age: See drawings.
.3 Intended application:Foundation walls, footings and pier.
.4 Surface texture: steel trowel finish.
.5 Minimum cement content: 320 g/m^3.
.6 Nominal size of coarse aggregate: 14-20mm.
.7 Slump at time and point of discharge: 80mm.
.8 Air content: as per Class of Exposure.
.3 Provide quality management plan to ensure verification of concrete quality to specified performance.
.4 Colour additives: Mix in accordance with manufacturer's instructions. Mix until colour additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.

.2 Do not change concrete mix without prior approval of Consultant Should change in material source be proposed, new mix design will be provided to be approved by Engineer.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Provide technical and installation data with request for approval for all chemical admixtures, curing, sealing, coloring agents, control joint sealant, and hardener compounds proposed for the work, a minimum of 15 days prior to the work.

.2 Obtain Consultant's approval before placing concrete. Provide 24 h notice prior to placing of concrete.

.3 Pumping of concrete is permitted only after approval of equipment and mix.

.4 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.5 During concreting operations:
.1 Development of cold joints not allowed.
.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.6 Pumping of concrete is permitted only after approval of equipment and mix.

.7 Ensure reinforcement and inserts are not disturbed during concrete placement.

.8 Prior to placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing.

.9 Protect previous Work from staining.

.10 Clean and remove stains prior to application for concrete finishes.

.11 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.12 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.
.1 Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.

.13 Do not place load upon new concrete until authorized by Consultant.

.14 Provide winter concrete protection as per CAN/CSA-A23.1 and A23.2, clause 21.2.3. Also protect footing trenches from cold

weather. Provide required protection to prevent frost penetration before trenches are filled.

.15 Coordinate with mechanical contractor for location, installation and testing of in-floor heating system. This contractor is to ensure all requirements of installation are met.
.1 Location of chairs and WWF to support pipe. Ensure no sharp ends.
.2 Installation of structural WWF is to be above the pipe in the middle of the slab. Provide proper support and ensure no sharp ends.
.3 During placement of concrete, ensure piping and WWF remain in intended location.

3.2 CONSTRUCTION

.1 Do cast-in-place concrete work in accordance with CSA-A23.1/A23.2.

.2 Sleeves and inserts:
.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to 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.
.3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Consultant.
.4 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.
.5 Check locations and sizes of sleeves and openings shown on drawings.

.3 Set special inserts for strength testing as indicated and as required by Non-Destructive Method of Testing Concrete.

.4 Anchor bolts:
.1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
.2 With approval of Consultant, grout anchor bolts in preformed holes or holes drilled after concrete has set. Formed holes to be minimum 100 mm diameter.
.3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
.4 Set bolts and fill holes with epoxy grout.

.5 Drainage holes and weep holes:
.1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.
.2 Install weep hole tubes and drains as indicated.

.6 Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

.7 Finishing and curing:
.1 Finish concrete in accordance with CSA-A23.1/A23.2.
.2 Use procedures as reviewed by Consultant or those noted in CSA-A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.
.3 Use curing compounds compatible with applied finish on concrete surfaces. Applied finish on concrete:. Provide written declaration that compounds used are compatible.
.4 Finish concrete floor to meet requirements of CSA-A23.1/A23.2. Class A.
.5 Provide swirl-trowelled finish unless otherwise indicated.
.6 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.
.7 Provide 5mm x 5mm chamfer for all exposed surfaces except as detailed.
.8 Pavements, walks, curbs: screed to plane surfaces and float using magnesium, aluminum or wood floats. trowel smooth or as indicated.

.8 Provide 5mm x 5mm chamfer for all exposed surfaces except as detailed.

.9 Pavements, walks, curbs: screed to plane surfaces and float using magnesium, aluminum or wood floats. trowel smooth or as indicated.

.10 Waterstops:
.1 Install where indicated, waterstops to provide continuous water seal.
.2 Do not distort or pierce waterstop in way as to hamper performance.
.3 Do not displace reinforcement when installing waterstops.
.4 Use equipment to manufacturer's requirements to field splice waterstops.
.5 Tie waterstops rigidly in place.
.6 Use only straight heat sealed butt joints in field.
.7 Use factory welded corners and intersections unless otherwise approved by Consultant.

.11 Joint fillers:
.1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Consultant.
.2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
.3 Locate and form isolation, construction and expansion joints as indicated and as required.
.4 Install joint filler.

.5 Use 12mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 12mm of finished slab surface unless indicated otherwise.

.12 Dampproof membrane:
.1 Install dampproof membrane under concrete slabs-on-grade inside building.
.2 Lap dampproof membrane minimum 150mm at joints and seal.
.3 Seal punctures in dampproof membrane before placing concrete.
.4 Use patching material at least 150mm larger than puncture and seal.

3.3 SURFACE TOLERANCE

.1 Concrete tolerance in accordance with CSA-A23.1/A23.2 straightedge method FF =20: FL = 15.

3.4 FIELD QUALITY CONTROL

.1 Site tests: conduct following test in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - SUBMITTALS.
.1 Concrete pours.
.2 Slump tests.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Consultant for review in accordance with CSA-A23.1/A23.2.
.1 Ensure testing laboratory is certified in accordance with CSA A283.

.3 Owner will pay for costs of tests.

.4 If tests do not meet requirements of Consultant, take measures as indicated in CAN/CSA A23.1. Arrange and pay for inspections and tests to meet requirements.

.5 Consultant will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.6 Non-Destructive Methods for Testing Concrete: in accordance with CSA-A23.1/A23.2.

.7 Inspection or testing by Consultant will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

.8 All concrete tolerances a per CSA A23.1 Clause 10. Tolerance for floor slabs shall be as per Clause 22.

3.5 Curing

.1 All curing shall conform to CAN/CSA-a23.1 Clause 21.

.2 All concrete work shall be cured for minimum of 7 days at a minimum temp of 10 deg. C. The Contractor shall keep the temperature records at which the work is cured.

.3 All concrete work including walls shall be applied with curing compound or moist curing. curing compound shall not have any detrimental effect on floor finishes.

3.6 VERIFICATION

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established in PART 2 - Products, by Consultant and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

END

PART 1 - GENERAL

1.1 General Requirements

.1 Concrete floors to receive finish by other contractors must be accepted by that contractor as suitable for application of the specified finish. Such acceptance will be for smoothness, cleanliness and evenness.

1.2 Quality Assurance

.1 Requirements of Regulatory Agencies.

.2 Applicable Codes and Standards governing the work of this Section.

.3 Related Standards
.1 CSA A23.1-04 Concrete Materials and Methods of Concrete Construction.
.2 CSA A23.2-04 Methods of Tests for Concrete.
.3 ASTM C 260-01 Air Entraining Admixtures for Concrete.
.4 ASTM C 494-04 Chemical Admixtures for Concrete.

.4 Except as otherwise specified, placing, finishing, curing, joint cutting, and forming and temperature control of concrete slabs on which surface hardeners are to be applied, shall be in accordance with 1.2.1 and 1.2.2. clauses-2.1 and 2.2.

.5 Work shall be done by a Firm and by Mechanics with at least five years experience in this type of work and who are members of the Concrete Floor Construction Association.

1.3 Warranty

.1 Contractor shall warrant that materials and workmanship shall be free of defects in accordance with General Conditions for an extended period of one year.

1.4 Submittals

.1 Submit manufacturers' product data, performance criteria and other documentation for each material specified in this section that is proposed for use, including, but not limited to the following:
.1 Admixtures
.2 Curing Compounds
.3 Sealing Compounds
.4 Surface Hardeners
.5 Joint Filler

PART 2 - PRODUCTS

2.1 Materials

.1 General - use materials specified herein or approved equal as defined in General Requirements.

.2 Non-Metallic Hardener - Surflex by Euclid Canada or Mastercron FF by BASF. Refer to Finish Schedule.

.3 Curing and Sealing Compound:
.1 "Diamond Clear" by Euclid Canada or Kure-N-Seal 25 by BASF in areas receiving a floor finish or an exposed concrete finish.

.4 Joint filler for sawn control joints:
.1 For Storage Areas, joint filler to be grey or as selected by the Consultant, "Euco 700" by Euclid Canada or "Load Flex" by Sika Canada or other approved manufacturer.
.2 Open Floor Areas: "Euco 700" or "Load Flex" or "Euco QWIKJOINT 200", colour to be Mocha Brown.

.5 For Heal and Seal Concrete and penetrating shrinkage cracks: "Dural 50" by "Euclid Canada".

.6 For Control Joints, Fixture Grouting: "Euco #452" Epoxy system by "Euclid Canada".

.7 Follow manufacturers' instructions for surface preparation, direction for use and precautions/limitations.

2.2 Schedule

.1 Refer to the Room Finish Schedule - 09 00 00.

PART 3 - EXECUTION

3.1 Preparation

.1 Examination Before work commences, ensure that all preceding work has been completed in accordance with the specifications. Report any deficiencies to the Consultant before proceeding with the work.

3.2 Installations

.1 Floor Finishes Unless otherwise specified or directed, all floors within the building shall be finished with a power float and power trowel to finish the surface to a smooth, even finish.

.2 Conform to the requirements of CSA A23.1&2-04 Finishing and/or as hereinafter specified.

.3 Employ a minimum amount of hand trowelling to remove any machine marks after the power trowelling.

.4 Provide a non-slip, spin trowel finish where directed.

.5 Secure the Consultant's approval of finished surfaces before leaving any area.

.6 Cure and protect the surface of finished floors in accordance with CSA A23.1.

.7 Keep traffic, which would affect and/or otherwise disturb the curing procedures, off the finished surface for a period of seven (7) days minimum.

.8 Protect exposed concrete finishes against damage until accepted by the Consultant.

.9 Protect floors which are to receive an architectural finish against contamination by oil, paint, or other deleterious materials.

.10 Floors in all rooms with an exposed concrete floor finish shall receive a non-metallic hardener and curing & sealing compound, applied strictly in accordance with the manufacturer's directions at the rate of 3.9 kg/sq m - 5.0 kg/sq m of surface.

.11 The selected mineral aggregate for the dry shake shall be applied immediately before power floating begins. As soon as concrete is firm enough to support the weight of workmen and their equipment and no surface water is present, apply the first shake of material. Treat areas adjacent to walls and columns first. Spread the material evenly by sprinkling at right angles in two passes close to floor level. Do not broadcast from the stationary position. Approximately two-thirds of the material shall be broadcast uniformly over the surface. Power floating shall begin immediately after application of the dry shake. Work wall, column and door areas first. After this material is adequately embedded or blended into the surface by power floating, the remaining one-third of the material shall be applied to the surface at right angles to the previous application. During the second application, care should be exercised to apply sufficient material to all areas to secure uniform coverage.

3.3 Finishing of Formed Concrete Surface

.1 Conform to the requirements of Cast-in-Place Concrete: Section 03 30 00, except as hereinafter specified.

END

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
.1 ASTM A 53/A 53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
.2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International)
.1 CSA W59-1989(R2001),Welded Steel Construction (Metal Arc Welding) (Imperial Version).

.4 The Environmental Choice Program
.1 CCD-047a-98, Paints, Surface Coatings.
.2 CCD-048-98, Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Protection:
.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Municipal and Provincial by-laws.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative Consultant

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W 350W.

.2 Welding materials: to CSA W59.

.3 Welding electrodes: to CSA W48 Series.

.4 Bolts and anchor bolts: to ASTM A 307.

.5 Aluminum sheet: plain.

2.2 FABRICATION

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

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

.1 Shop coat primer: to CAN/CGSB-1.40.

2.4 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:
.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
.2 Concrete, mortar and masonry.
.3 Wood.

2.5 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

2.6 ANGLE LINTELS

.1 Steel angles: galvanized sizes indicated for openings. Provide 150 mm minimum bearing at ends.

.2 Weld or bolt back-to-back angles to profiles as indicated.

.3 Finish: Prime and Paint.

.4 Angle lintel schedule:
.1 <1m - 89 x 89 x 7.9
.2 >2m - 102 x 89 x 7.9
.3 <3m - 127 x 89 x 13

2.7 CORNER GUARDS

.1 Stainless Steel angle: 50 x 50 x 1.2 mm thick x 1500 mm high, mechanically fastened.

2.8 STEEL CHANNEL

.1 Install steel channel frames at overhead doors in size and shape as indicated on plan.

2.9 OPERABLE WALL SUPPORTS

.1 Columns, beams and base plates of structural steel sizes and shapes indicated.

2.10 STEEL BOLLARDS

.1 Steel pipe 150 mm diameter as indicated. Bollards are to be galvanized steel, filled with concrete and set in concrete. Dome concrete at top, steel trowel finish. Provide yellow PVC purpose made pipe cover on top.

2.11 HSS SHELF SUPPORTS

.1 50mm x 50mm x 6mm welded HSS sections to size indicated. All joints and connections to be welded and ground smooth. Prime paint finish.

2.12 METAL SHEETS FOR BACKING

.1 Refer to Section 09 22 16 - Non-Structural Metal Framing.

PART 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 CORNER GUARDS

.1 Install corner guards in locations as indicated.

3.3 CHANNEL FRAMES

.1 Install steel channel frames to overhead door opening.

3.4 OPERABLE WALL SUPPORTS

.1 Install operable wall support structure as detailed and coordinate with wall supplier.

3.5 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.

3.6 STEEL BOLLARDS

.1 Locate as indicated:
.1 Between propane tank and parking lot.
.2 Between transformer pad and driveway to maintain electric specifications.
.3 At 2M centers beside truck loading dock (6 required).

3.7 BALCONY BRACKETS

.1 Required at 2 locations and each of 3 posts as indicated.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM C 591-01, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
.2 ASTM C 1289-05a, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
.3 ASTM E 96/E 96M-05, Standard Test Methods for Water Vapour Transmission of Materials.

.2 CAN/ULC-S702-1997: Standard for Thermal Insulation, Mineral Fibre, for Buildings.

.3 Canadian General Standards Board (CGSB)
.1 CGSB 71-GP-24M-77(R1983), Adhesive, Flexible, for Bonding Cellular polystyrene Insulation.

.4 Underwriters Laboratories of Canada (ULC)
.1 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
.2 CAN/ULC-S704-03, Standard for Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's insulation products and adhesives.

.2 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

1.3 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 30 - Health and Safety Requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Municipal and Provincial Bylaws.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

PART 2 - PRODUCTS

2.1 INSULATION

.1 Roof
- .1 Rigid Cellular Polyisocyanurate:
  - .1 Unfaced: to ASTM C 591.
    - .1 Type: 2.
    - .2 Thickness: as indicated.

.2 Exterior Walls:
- .1 Extruded polystyrene:
  - .1 to CAN/ULC-S701-2001.
    - .1 Type: 2 rigid, closed cell type with integral high density skins
    - .2 Thickness: as indicated, CFC free and HCFC free without ozone depletion potential greater than zero.

.3 Underslab and foundation:
- .1 Extruded polystyrene:
  - .1 to CAN/ULC S701
    - .1 Type: 4 rigid closed cell with integral high-density skin.
    - .2 Acceptable Products:
      - .1 Dow Styrofoam SM.
      - .2 TrueFoam Type 2.
      - .3 Celfort 300.

2.2 ADHESIVE

.1 Adhesive (for polystyrene): to CGSB 71-GP-24. As recommended by manufacturer Low VOC type.

2.3 ACCESSORIES

.1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

.2 Sealant: to CGSB 19-GP-21M.

.3 Tape for sealing as recommended by manufacture.

2.4 MECHANICAL FASTENERS

.1 Corrosion-resistant gripcon or tapcon fasteners.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 type B and L vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset both vertical and horizontal joints in multiple layer applications.

.7 Do not enclose insulation until it has been inspected and approved by Departmental Representative.

3.3 EXTERIOR INSULATION

.1 Exterior application: install boards on interior face of perimeter foundation walls where indicated and under exterior concrete slabs walkway leading from entries, to thicknesses indicated, 2400 mm out, and elsewhere as indicated on the drawings.

.2 Exterior application: Install boards as part of integral insulation/waterproofing system on the outside of the foundation wall.

3.4 EXAMINATION

.1 Examine substrates and immediately inform Consultant in writing of defects.

.2 Prior to commencement of work ensure:
.1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.5 RIGID INSULATION INSTALLATION

.1 Apply adhesive to insulation board in accordance with manufacturer's recommendations.

.2 Imbed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.

.3 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 0.15 mm modified bituminous membrane over expansion and control joints using compatible adhesive and primer before application of insulation.

3.6 PERIMETER FOUNDATION INSULATION

.1 Interior application: Complete the installation of perimeter insulation boards to underside of wood sills to make a thermally tight construction installed on the inside face of the perimeter wall.

3.7 WALL INSTALLATION

.1 Install polyisocyanurate rigid insulation on the exterior side of steel columns and at all areas where thermal bridging may occur and that cannot be insulated in a later contract.

3.8 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-51.33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
.2 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

.2 ASTM: E 1745-97

1.2 SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet and include:
.1 Product characteristics.
.2 Performance criteria.
.3 Limitations.

.3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS).

.4 Quality assurance submittals:
.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.2 Instructions: submit manufacturer's installation instructions and comply with written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance Municipal and Provincial Bylaws.

PART 2 - PRODUCTS

2.1 SHEET VAPOUR BARRIER

.1 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick.

.2 Underslab:
.1 Perminator by W.R. Meadows - seal tight 15 mil thick.
.2 Viper Vaporcheck 16-mil by 16-mil by Soprema Soprema Inc. Inc.
.3 Vapor Block 15 by Raven Industries.

.3 Concrete Pit Waterproofing?

.4 Perimeter flashing for windows and doors.
.1 Dupont Flexwrap, NF or approved equal.

2.2 ACCESSORIES

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, cloth fabric duct tape type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.

.2 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer to Section 07 92 00 - Sealants.

.3 Staples: minimum 6 mm leg.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install vapour retarder on the interior side of insulation and at all areas where thermal bridging may occur.

.2 Ensure services are installed and inspected prior to installation of retarder.

.3 Install sheet vapour retarder on warm side of exterior wall, ceiling and floor assemblies prior to installation of interior finish to form continuous retarder.

.4 Use sheets of largest practical size to minimize joints.

.5 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.2 EXTERIOR SURFACE OPENINGS

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

.2 Install 'flexible membrane' at all openings and penetrations in the exterior wall.

.3 Install material as per manufacturers instructions in conjunction with air barrier materials.

3.3 PERIMETER SEALS

.1 Seal perimeter of sheet vapour barrier as follows:
.1 Apply continuous bead of sealant to substrate at perimeter of sheets.
.2 Lap sheet over sealant and press into sealant bead.
.3 Install staples through lapped sheets at sealant bead into wood substrate.
.4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.4 LAP JOINT SEALS

.1 Seal lap joints of sheet vapour barrier as follows:
.1 Attach first sheet to substrate.
.2 Apply continuous bead of sealant over solid backing at joint.
.3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
.4 Install staples through lapped sheets at sealant bead into wood substrate.
.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.5 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END

PART 1 - GENERAL

1.1 Related Work

.1 Section 01 35 43 - Environmental Procedures

.2 Section 32 91 19.13 - Topsoil Placement and Grading

.3 Section 31 23 33.01 - Excavating Trenching and Backfilling

1.2 Site Conditions

.1 Known underground and surface utility lines and buried objects are indicated on site plan.

1.3 Protection

.1 Prevent damage to any landscaping, existing trees, existing pavement, and surface or underground utility lines which are to remain. Make good any damage.

PART 2 - PRODUCTS

2.1 Materials

.1 Fill material: Type 5 in accordance with Part 2 of Section 31 23 33.01 - Excavating Trenching and Backfilling

.2 Obtain approval of excavated or graded material used as fill for grading work. Protect approved material from contamination and freezing.

PART 3 - EXECUTION

3.1 Removal of Topsoil

.1 Refer to Section 32 91 19.13 - Topsoil Placement and Grading.

3.2 Grading

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Slope rough grade away from building 1:50 minimum.

.3 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.4 Compact filled and disturbed areas to corrected maximum dry density maximum dry density to ASTM D698-78, method C D, as follows:
.1 85% under landscaped areas.
.2 Paved and walk areas as specified in Section 32 16 15 - Concrete Walks, Curbs and Gutters.

3.3 Testing

.1 Inspection and testing of soil compaction will be carried out by designated testing laboratory.

.2 Costs of tests will be paid by Owner.

3.4 Surplus Material

.1 Remove surplus material from site.

.2 Remove material unsuitable for fill, grading or landscaping from site.

END

PART 1 - GENERAL

1.1 Work Included

.1 This section specifies requirements for furnishing all materials, labour, tools and equipment and performing all operations necessary to complete excavation of all types of material encountered, placing of excavated material as backfill in trenches and embankments, disposal of unsuitable and surplus material and furnishing backfill material as specified below, all as shown on the drawings and as specified; see also Section 31 22 13 - Rough Grading.

.2 The work generally includes, but is not necessarily limited to the following items:
.1 Trench excavation and backfilling for pipelines and appurtenances.
.2 Structure excavation and backfilling.
.3 Control of water by dewatering.
.4 Providing borrow material when required..
.5 Removal and disposal of surplus and/or unsuitable material.
.6 Sheeting, shoring, trench box and bracing to support trench walls, sides of excavations, existing structures or utilities.
.7 Stripping, stockpiling and replacing topsoil.

1.2 Protection of Existing Features

.1 Existing buried utilities and structures:
.1 Size, depth and location of existing utilities and structures as indicated on the drawings are for guidance only. Completeness and accuracy are not guaranteed.
.2 Prior to commencing any excavation work, notify applicable owner 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 excavations.
.4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated. Obtain direction of Consultant before moving or otherwise disturbing utilities or structures.
.5 Advise Consultant to remove or re-route existing lines in area of excavation not otherwise on drawings. Pay costs for such work.

.2 Existing buildings and surface features:
.1 Conduct, with Consultant, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, and paving, survey bench marks and monuments which may be affected by work at no additional cost.

.2 Protect existing buildings and surface features which may be affected by work from damage while work is in progress and repair damage resulting from work.
.3 Where excavation necessitates root or branch cutting, do so only as approved by Consultant.

1.3 Support of Excavation

.1 Suitably slope or properly shore sides of excavations according to site conditions, all in accordance with the Provincial Safety Act. Provide use of support as considered necessary.

.2 The choice of any method of support shall be the responsibility of the Contractor. However, drawings and calculations for the method of support selected, including trench boxes, designed by a qualified professional engineer in accordance with the Provincial safety requirements, are to be submitted to the Consultant for information prior to its use.

.3 If it is desirable that any support, other than that which may be shown on the drawings, be left in the excavations, then the Consultant will issue instructions accordingly.

.4 Take every precaution against slips or falls, but if any should occur, at once make good the same. If any such slip or fall affects or may affect the stability of the permanent work, execute such remedial work as necessary, including filling up of any space left by the slip or fall with approved granular material.

1.4 Samples

.1 At least 1 week prior to commencing work, inform consultant of proposed source of fill materials and provide access for sampling.

.2 Submit samples in accordance with Section 01 33 00 Submittal Procedures.

PART 2 - PRODUCTS

2.1 Materials

.1 Granular Class A: as per Department of Transportation & Infrastructure Renewal, Division 401 (Imported).

.2 Interior Slab Granular: to be clean, hard, gravel or crushed stone, free from shale, clay, friable materials, organic matter and other deleterious substances and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart:

ASTM sieve designation	% passing
37.5mm	100
25.0mm	90-100
19.0mm	20-55
12.5mm	0-10
9.5mm	0-5

.3 Select Borrow: Select 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 4.75mm sieve shall pass the 75mm sieve.

.4 Bedding Sand: Clean, sand free from clay shale and organic matter.

Clean Sand Gradation

Sieve size	Percent Passing
10 mm	100
2.5 mm	80-90
0.630 mm	25-75
0.315 mm	10-35
0.160 mm	10-17
0.075 mm	0-5

.5 Common Fill: Selected material from excavation or other sources, approved by the Consultant for use intended, unfrozen and free from rocks larger than 75mm, cinders, ashes, sods, refuse or other deleterious material.

.6 Under-Slab Vapour Barrier: Refer to Section 07 26 00 - Vapour Retarders.

.7 Shoulder Material: Shoulder material to be Class C as per Department of Transportation, Infrastructure and Energy, Division 401.

.8 Granular Class D as per the Department of Transportation, Infrastructure and Energy, Division 401 (Imported).

PART 3 - EXECUTION

3.1 Site Preparation

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Strip topsoil from within limits of excavation and stockpile as directed by Consultant, for respreading after backfilling.

.3 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 Stockpiling

.1 Stockpile fill materials in areas designated by Consultant. Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

3.3 Dewatering

.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 a manner not detrimental to public and private property, or any portion of work completed or under construction.

3.4 Excavation

.1 Excavate to lines, grades, elevations and dimensions indicated or as directed by Consultant.

.2 Excavate in all kinds of materials encountered and make own computations of amounts and nature of excavation required.

.3 Remove concrete masonry paving walks demolished foundations and rubble and other obstructions encountered during excavation.

.4 Excavation must not interfere with normal 45° splay of bearing from bottom of any footing.

.5 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw. Seal cuts with approved tree wound dressing.

.6 For trench excavation, unless otherwise authorized by Consultant in writing, do not excavate more than 30 m(60ft) of trench in advance of installation operations and do not leave open more than 15 m(30ft) at end of day's operation.

.7 Dispose of surplus and unsuitable excavated material off site.

.8 Do not obstruct flow of surface drainage or natural watercourses.

.9 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.10 Notify Consultant when soil at bottom of excavation appears unsuitable and proceed as directed by Consultant .

.11 Remove unsuitable material from trench bottom to extent and depth directed by Consultant.

.12 Where required due to unauthorized over- excavation, correct as follows:
.1 Fill under bearing surfaces and footings with concrete specified for footings.
.2 Fill under other areas with Type 3 fill compacted to minimum of 98% corrected maximum dry density. (SPMDD)

.13 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Consultant.

.14 Obtain Consultant's approval of completed excavation.

3.5 Excavation and Backfilling Required For Other Trades

.1 Excavating and backfilling for mechanical and electrical work as well as any other trade requiring same within the Extent of Contract Line or as noted, is included in this section and shall be carried out in accordance with provisions specified herein and as indicated. This work is to be laid out and supervised by the trade concerned.

.2 Excavate trenches to lines and grades shown to a minimum of 150 mm(6") below underside of pipe, conduit, cable, or duct. Provide recesses for bell and spigot pipe to ensure bearing will occur along barrel of pipe.

.3 Cut trenches 600 mm(24") wide (or wider where indicated) than maximum pipe width. Trim and shape trench bottoms and leave free of irregularities, lumps, or projections.

3.6 Fill Types and Compaction

.1 Use fill of types as indicated or specified below. Unless otherwise specified, compact to following densities:
- .1 Granular Class 'A': 100% corrected maximum dry density.
- .2 Interslab Granular: 100% corrected maximum dry density.
- .3 Select Borrow: 100%corrected maximum dry density.
- .4 Bedding Sand: 100% corrected maximum dry density.
- .5 Common Borrow: 95% corrected maximum dry density.

.2 Exterior side of perimeter walls: Use Select Borrow Fill to subgrade level.

.3 Within building area: Use Select Borrow to underside of base course for floor slabs.

.4 Under Light Duty Asphalt Paving:
- .1 Provide minimum 150mm Granular Class 'A' fill to underside of asphalt.
- .2 Provide minimum 300mm Select Borrow fill from compacted subgrade to underside of Granular Class 'A' fill specified above and as indicated.

.5 Under Heavy Duty Asphalt Paving:
- .1 Provide minimum 250mm Granular Class 'A' fill to underside of asphalt.
- .2 Provide minimum 400mm Select Borrow fill from compacted subgrade to underside of Type 1 fill specified above and as indicated.

.6 Under Interior Concrete Slab-on-grade:
- .1 Provide minimum 100mm base course of Interior Slab Granular fill to underside of concrete.

.7 Under concrete slabs at entrances to building:
- .1 Provide minimum 600 mm base course of Granular Class 'A' fill to underside of 100mm rigid insulation under asphalt walks where indicated.

.8 Site Preparation including base and sub-base for foundation and slab:
- .1 The placement of base and sub-base for foundation and slab shall be done as per the soils report.

.9 Underground services within building area:
- .1 Cradle half diameter of pipe or conduit using Bedding Sand fill. After pipe or conduit is in place cover with Select Borrow fill to underside of base course for floor slabs.
  - .1 Compact bedding and cover to 100% density
  - .2 Notify Consultant prior to backfilling of trenches.

.10 Underground services outside building area:
.1 Trench preparation:
.1 Trench shall be true to the alignment and depth required and only so far in advance of the pipe laying as directed.
.2 The minimum width of trench shall be 600mm greater than the normal diameter of pipe.
.3 Pipe trench shall be shaped to give even bearing for length of pipe.
.4 Boulders and rock shall be removed or excavated to provide a clearance of at least 150mm below pipe.
.2 Trench Bottom Preparation:
.1 Where required due to removal of unsuitable material or unauthorized over-excavation, bring bottom of excavation to design grade with approved material.
.2 Compact trench bottom to density at least equal to density of adjacent surrounding soil.
.3 Pre-Installation Inspection:
.1 Excavations require inspection and approval prior to commencement of installation operations.
.4 Pipe / Conduit Bedding:
.1 Bedding for watermain, sanitary sewer to be Bedding Sand fill compacted to 95% standard proctor from 150 mm below pipe invert to 300 mm above the top of pipe.
.2 Bedding for storm sewer to be Granular Bedding as per this section, compacted to 95% standard proctor as per the dimensions indicated on the drawings.
.3 Pipe conduits other than above, cradle half diameter of pipe or conduit using Bedding Sand fill.
.5 Use Select Borrow fill to rough grade for pipe or conduit cover:
.1 In non-pavement areas: to a density of 95% standard proctor density.
.2 In Pavement areas: compact to 100% standard proctor density.

.11 Site backfill under seeded and sodded areas:
.1 Use Type 5 fill material to bring exterior site up to rough grades required or as indicated.

3.7 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 or frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Backfilling around installations.
.1 Place bedding and surround material as specified elsewhere.

.2 Do not backfill around or over cast-in- place concrete within 24 h 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 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval 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 600 mm of cover is provided. Dumping material directly on installations will not be permitted.

.5 Install drainage system in backfill as indicated or directed by Consultant.

.6 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.8 Backfilling Trenches

.1 Backfill trench from top of bedding to top of grades indicated using materials shown on drawings.

.2 place backfill in 300 mm horizontal layers and compact to 95% Standard Proctor density except to 100% Standard Proctor density under existing or proposed asphalt. Thoroughly compact each layer before placing next layer. Carry out compaction tests to demonstrate the effectiveness of backfill thickness per lift versus the number of passes with the selected equipment to achieve the specified compaction.

.3 Provide a letter from a Geotechnical Engineer outlining the thickness per lift, method of compaction to be followed and compaction results.

.4 During backfilling keep trenches free of water at all times and controlled so as to prevent surface water running into excavated areas. Remove silty materials which become wetted and subsequently liquid or extremely plastic.

3.9 Restoration

.1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects noted by Consultant.

.2 Replace topsoil as indicated or directed by Consultant. Reseed grass or sod as indicated.

.3 Clean and reinstate areas affected by work as directed by Consultant.

END