DEPARTMENT OF TRANSPORTATION AND INFRASTRUCTURE

Province of Prince Edward Island

TENDER FORM AND AGREEMENT
Revision 0

THIS AGREEMENT made by and between ..... , herein called the Contractor, the Party of the First Part and The Government of Prince Edward Island as represented by the Minister of Transportation and Infrastructure, herein called the Minister, the Party of the Second Part.

WITNESS, AS FOLLOWS:

1. Definitions

The definition of terms used in this Tender Form and Agreement shall conform in all respects to the definition of terms contained in the document entitled "General Provisions and Contract Specifications for Highway Construction", published by the Department of Transportation and Infrastructure of the Province of Prince Edward Island as amended on the date of closing of Tenders pursuant to this Agreement.

2. General Covenant

The Contractor hereby covenants and agrees with the Minister as herein provided in connection with the following work, namely:

DINGWELLS MILLS BRIDGE - STRUCTURE REPLACEMENT and ROAD RESURFACING
DISTRICT 1
STATION 16+688 to 17+145
Total Distance: 460m

The scope of this work includes, but is not necessarily limited to the following: the supply of all labour, equipment, and materials necessary to completely replace the existing bridge structure with a new bridge structure. The work on this project shall consist of but not limited to: excavation, slope protection, environmental controls; asphalt excavation; cold plane and stockpile asphalt; stream containment; demolition and removal of existing structure; pipe structure supply and placement; rip rap; road work complete with asphalt paving; concrete curb; and all other ancillaries required to completely install the structure to the satisfaction of the Owner.

TENDER SUBMISSION:
Thursday, 8 July 2021, 12:00PM to 2:00 PM
355 Brackley Point Road, Queens County Highway Depot, Charlottetown, PEI

TENDER CLOSES:
Thursday, 8 July 2021, 2:00 PM
355 Brackley Point Road, Queens County Highway Depot, Charlottetown, PEI

3. No Implied Contract

It is hereby understood and agreed between the parties hereto that no implied contract of any kind whatsoever, by, or on behalf, of the Minister shall arise or be implied from anything contained in this Contract, or from any position or situation of the parties at any time, and that this Contract made by the Minister is, and shall be, the only Contract upon which any rights against the Minister are to be founded.

4. How Party of the First Part is Read

Whenever this Contract is entered into by more than one party or parties of the first part, the word "Contractor" shall be read "Contractors," and pronouns in the contract referring to the Contractors shall be read as plural and whenever a corporation is the Party of the First Part, the said pronouns shall be read accordingly.

5. Consideration of Clauses as Covenants

Wherever it is stipulated that anything shall be done or performed by either of the Parties hereto, it shall have the same effect and be constructed as if such Party had entered into a covenant with the other Party to do or perform the same, and as if such covenant had been expressly made on the part of the Contractor, not only on the Contractor's own behalf, but also on the behalf of the Contractor's legal representative, successors or assigns; and as if any such covenant on the part of the Minister has been made on behalf of the Minister, and the Minister's successors in office.

6. Contractors Submission Respecting the Agreement

The Contractor shall, as part of the Contractor's submission respecting this Contract, complete the attached Schedule B, Identification of Principles; Schedule C, Schedule of Tendered Unit Prices; Schedule D, Schedule of Equipment to be used on the work; and Schedule E, Schedule of Sub-Contractors.

The Contract including all appended schedules shall be completed in complete conformity with the instructions to bidders contained in the document entitled "General Provisions and Contract Specification for Highway Construction".

In presenting the Contractor’s submission for consideration by the Minister, the Contractor understands that until, and unless, the Contract is endorsed by the Minister, no Contract between the parties shall exist and the Minister shall not be bound to endorse any Contract.

7. Performance by Contractor

The Contractor, at the Contractor's own expense, shall, except as herein otherwise specifically provided, furnish and provide all and every kind of labour and superintendence, services, tools, implements, machinery, plant materials, articles and whatsoever is necessary for the due execution of the work. The Contractor shall fully construct and erect the work in the most thorough, professional and substantial manner, in every respect to the satisfaction and approval of the Engineer. The Contractor shall complete the work within the time specified herein and deliver it to the Minister in the manner and upon the terms and conditions of the Contract.

8. Bid and Performance Security

The Contractor hereby and herewith deposits with and delivers to the Minister, as security of the due fulfilment of the Contract, one of the following, which shall remain in effect for a minimum of 30 days after tender closing:

a) a Certified Cheque in the amount stipulated in Schedule A - Schedule of Special Provisions.

OR

b) a Bank Draft in the amount stipulated in Schedule A - Schedule of Special Provisions.

OR

c) a Bid Format irrevocable standby Letter of Credit on a Government approved form in the amount stipulated in Schedule A - Schedule of Special Provisions.

OR

d) a Bid Bond in the amount stipulated in Schedule A - Schedule of Special Provisions. The Bond shall be from a surety company authorized to carry on business in Canada guaranteeing to supply a Performance Bond equal to 50% of the contract value, excluding HST, and a Labour and Material Bond equal to 25% of the contract value, excluding HST.

Performance Security must be filed with the Department before work on the project commences. This security shall be held and retained by the Minister for the due and faithful performance, observance and fulfilment by the Contractor of all the covenants, provisos, agreements, conditions and reservations in this Contract contained on the part of the Contractors to be observed, performed and complied with shall be in the form of:

a) a Certified Cheque in the amount of ten percent (10%) of the Contract value, excluding HST, which shall be retained until the warranty period (one (1) year after substantial completion) has elapsed.

OR

b) a Bank Draft in the amount of ten percent (10%) of the Contract value, excluding HST, which shall be retained until the warranty period (one (1) year after substantial completion) has elapsed.

OR

c) a Performance Format irrevocable standby Letter of Credit on a Government approved form in the amount of ten percent (10%) of the Contract value, excluding HST, which shall be retained until the warranty period (one (1) year after substantial completion) has elapsed.

OR

d) a Performance Bond equal to 50% of the contract value, excluding HST, and a Labour and Materials Bond equal to 25% of the contract value, excluding HST, both of which shall be retained until the warranty period (one (1) year after substantial completion) has elapsed.

All performance security which has an expiry date which precedes the end of warranty date must be renewed prior to the time that the security would expire. The bidder will forfeit security to the Minister if the bidder fails to enter into or carry out the Contract when called upon to do so.

It is understood and agreed that the Contractor assumes risk and must bear any loss in respect to the performance security as aforesaid, occasioned by the failure or insolvency of the banks on which any cheque was drawn or in which any deposit was made in connection with the security aforesaid. If at any time hereafter the said Contractor should make default under the said Contract, or if the Minister acting under the powers reserved in the said Contract shall determine that the said works, or any portion thereof remaining to be done, should be taken out of the hands of the Contractor and be completed in any manner or way whatsoever than by the Contractor, or if the Contractor refuses or neglects to pay for work done or materials supplied by any person in connection with the said work, the Minister may, in either case dispose of said security for the carrying out of the construction and completion of the work of the Contract or for paying any salaries or wages for work done, or any accounts for materials supplied for the said works that may be left unpaid by the said Contractor.

In the event of any breach, default or non-performance being made or suffered by the Contractor in or in respect of any of the terms and conditions, covenants, provisions, agreements, or restrictions herein contained, which on the part of the said Contractor should be observed, performed or complied with, the said security so delivered to or deposited with the Minister or by the Minister received in respect thereof, shall by the contractor, be forfeited absolutely to the Minister.

Upon the due and faithful performance, observance and fulfilment by the Contractor of all the terms, provisions, covenants, agreements, conditions, reservations, hereinbefore contained, on the part of the Contractor to be observed, performed and complied with, the Minister shall surrender the performance security.

9. Minister Covenants to Pay

In consideration of the faithful performance by the Contractor of all and singular covenants, agreements and provisions of the Contract, the Minister hereby covenants and agrees with the Contractor that, on the full completion by the Contractor of all the work as specified in the Contract, within the time specified and limited for the final completion thereof, and to the entire satisfaction of the Engineer to be evidenced by the certificate of the Engineer in writing, the said Minister will well and truly pay, or cause to be paid, to the said Contractor the amount of the Contract price, representing the actual quantities in the several items in the Schedule of Prices, identified as Schedule C to this Contract, at the unit prices or lump sum prices quoted by the Contractor. This amount paid to the Contractor as above, shall include all and every kind of work, labour, superintendence, services, tools, implements, machinery, plant materials, articles and things whatsoever necessary for the full execution and completion of the work to the entire satisfaction of the Engineer.

10. Final Payment

It is hereby agreed by the parties hereto that the payment of the final amount due under the Contract, and the adjustment and payment of any bills that may be rendered for work done, in accordance with any alteration in or addition to the same, shall release the Minister from any and all claims or liability on account of work performed under the said Contract or any alteration in or addition to the same.

11. No Waiver

It is hereby agreed that no condoning, excusing, or overlooking by the Minister, or any person acting on the Minister's behalf on previous occasions of breaches or defaults similar to that for which any action is taken or power is exercised, or forfeiture is claimed or enforced against the Contractor, shall be taken as a waiver of any provisions of the Contract, or as defeating, affecting or prejudicing in any way the right of the Minister under the Contract.

12. Components of the Contract

Any and all plans or drawings prepared by the Department, the document titled “General Provisions and Contract Specifications for Highway Construction”, the advertisement, the Tender Form and Agreement together with Schedule A, Schedule of Special Provisions; Schedule B, Identification of Principals; Schedule C, Schedule of Tendered Unit Prices; Schedule D, Schedule of Equipment; and Schedule E, Schedule of Sub-Contractors, as well as any addenda which may be issued by the Department pursuant to this Contract shall hereby be a part of this Contract as fully and to the same effect as if the same had been set forth at length in the body of the Contract.

13. Completion of Work

The Contractor agrees to complete the work no later than 15 October 2021.

14. FOIPP Clause

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

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 subject to appropriate consideration under the Freedom of Information and Protection of 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 subject to release under the Freedom of Information and Protection of Privacy Act. You will be consulted prior to the release of any information.

IN WITNESS WHEREOF the parties hereto have hereby caused these presents to be signed and sealed on the dates stated.

SIGNED, SEALED AND DELIVERED
by the Contractor on the day
of , 2021.

.....
CONTRACTOR

In the presence of:

.....

SIGNED, SEALED AND DELIVERED
by the Minister on the day
of , 2021.

.....
MINISTER

In the presence of:

.....

SCHEDULE 'A'
SCHEDULE OF SPECIAL PROVISIONS
Revision 0, June 17, 2021

DINGWELLS MILLS BRIDGE – STRUCTURE REPLACEMENT and ROAD RESURFACING

1. GENERAL PROVISIONS AND CONTRACT SPECIFICATIONS forHIGHWAY CONSTRUCTION

This Document can be accessed online at:
https://www.princeedwardisland.ca/en/publication/general-provisions-and-contract-specifications-highway-construction

Note this document also includes Section 1300 'Highway Structures' which applies to this project. Note that the 1300 series section numbers do not align with the Schedule A nor Schedule C cost item section numbers.

2. PROJECT SCOPE

This project scope includes bridge structure replacement, as well as road resurfacing ie asphalt milling and paving (including concrete curb removal, cutting asphalt, and new curb) beyond the bridge site's Farmington limit for an approximate distance of 365 metres.

3. TENDER SUBMISSION CONTENT

Tender submission shall include all of and ONLY the following documents:

Tender Form and Agreement all six (6) pages, with page six (6) signed and dated by Bidder
Completed Schedule B – Identification of Principals
Completed Schedule C – Schedule of Tender Unit Prices
Completed Schedule D – Schedule of Equipment to be used on the Work
Completed Schedule E – Schedule of Subcontractors
Each addendum transmittal, signed and dated by Bidder
Bid Security

4. SECTION 102.07 - BID AND PERFORMANCE SECURITY

The stipulated Bid Security amount shall be minimum one hundred and twenty thousand dollars ($120,000).

Upon award, the successful Contractor shall replace the Bid Security by submitting to PEI Department of Transportation and Infrastructure (the Department) a Performance Security.

The Performance Security shall remain in place until the warranty period expires (one year after substantial completion).

5. SECTION 102.10 - COMPETENCY OF BIDDER

Bidders must be capable of performing the various items of work bid upon. Bidders shall, upon the request of the Department, provide a statement covering experience on similar work and a statement of their financial resources.

6. ALTERNATE BIDS

The Department will not be entertaining alternate bids on this project.

7. DEPARTMENT CHARLOTTETOWN STORAGE YARD - ENTRY

Contractor entry into the Department's Charlottetown Storage Yard shall only be permitted via first contacting the Storage Yard Manager. The Department will provide the Contractor with the Manager's contact information upon Contract award.

8. SITE VISIT

The Department recommends that bidders visit the site during the tender period to become familiar with and take into account the existing bridge system and all relevant surrounding site conditions. The successful Contractor to have included in tender price all costs associated with performing all aspects of the work which are affected by existing conditions or related existing conditions which arise as a result of performing any aspect of the work. The Contractor shall investigate the possible presence of underground utilities/services which maybe encountered while performing the work, and take into account all associated precautions and/or altered work methods. No additional compensation will be provided for any work items affected by existing site conditions.

Bidders are responsible for their own safety during the site visit, and are not to negatively affect the safety of the travelling public.

9. SUBMISSIONS

Prior to submission to the Department, the Contractor shall be responsible to review the content of all documents for completeness, correctness, and meeting criteria of the Contract. The Contractor shall also be responsible to coordinate submission's timing such that the Department and/or its Consultant have a reasonable and sufficient amount of time to review submission and return comments so that such comments can be incorporated into the related work without negatively affecting project schedule. Incomplete submissions that do not meet project requirements and/or which may negatively affect the Contractor's construction schedule shall be the responsibility of the Contractor.

All submissions shall be Portable Document Format (PDF), except for as-built drawings which are to be both an Autocad Civil 3D file (Dept has version 2019) and a PDF file. All multi-page PDF file documents to be created as a file booklet as opposed to individual files, unless booklet byte size is too large for email transmission.

Note that should the Contractor decide to use any part of the Department's drawing(s) to facilitate the preparation of a submission, the Contractor shall first remove from the drawing(s) all references connected to the Department (provincial logo, title block text, engineer's seal, etc).

Note that final claim payment shall not be considered for approved by the Department until all submissions are submitted with their content approved by the Department.

10. SECTION 102.13 - SCHEDULING OF THE WORK

The number of working days stipulated for this Contract is forty (40) working days. No claims for delays caused by whatever external agencies or factors shall be allowed. The Contractor shall work Saturdays (if he deems necessary to meet deadline) and/or maximize the hours per day on site.

Note that construction must start on site on 23 August 2021. The bridge/roadway (entire width) complete with asphalt and guardrails must be opened to traffic no later than 15 October 2021, with no interruption to traffic after this date. The overall project must be completed no later than 15 October 2021.

Prior to Contract award, the selected Bidder shall submit a detailed Final Construction Schedule to the Department for review. The Final Construction Schedule shall identify all primary work activities (eg: excavation, demolition, new structure installation, rock placement, earthwork backfill, road work, topsoil, seeding, guardrails, etc). The Final Schedule shall indicate applicable time lines and milestones for all work activities and Phases.

Throughout the project the Contractor shall notify the Department of any situations that may negatively affect the project's Final Construction Schedule.

The Contractor shall, upon the Department's request at any time throughout the project, update and submit to the Department an updated Construction Schedule as deems required to reflect any circumstances that may cause the need for an updated Schedule.

11. SECTION 103.03 - EXTRA WORK

The Cost of any extra work shall not include the costs of service vehicles nor the wages of the supervisory personnel except under special circumstances authorized by the Engineer.

Extra work shall be defined as work activity, or service, on its own or part of a larger component of work to be performed, which is not already included as a cost item in the project's Schedule C.

Note that a Department bridge construction representative (project manager, engineer) shall compare the as-tendered scope of work versus the concerned scope of work to determine whether the concerned work is indeed extra work.

Any extra work which is to be conducted under a Time and Materials System shall be agreed to by both parties, and shall be complimented with the appropriate supplemental information, including, but not limited to:

a) Labour: Submit (for each worker) name, date(s), description of work performed, time of day work performed, manhours, and associated rates;
b) Material: Submit identification, quantity, backup invoices, and associated costs for each;
c) Service or rentals: Submit supporting documentation verifying costs for each item;
d) Equipment: Submit identification, date(s), description of work performed, time of day work performed, quantity of hours, as well as the equipment's year, make, and model. Equipment charges shall be paid based on the Province of PEI Machinery Rental Rates.

Failure to provide the above information, or any other documentation requested by the Engineer to assist verification of actual cost incurred, shall be cause for rejection of the Claim. All claims shall be submitted within thirty (30) days of the extra work being complete, or within the associated progress claim period. Failure to provide the requested documentation in a timely manner may result in a delay of payment for the extra claim, with no incremental extra compensation entertained.

Note that a Department bridge construction representative (data collector, project manager, engineer) must be notified prior to the Contractor performing any activities He deems to be extra work. A bridge representative also must be notified of any non-activity items the Contractors deems extra (eg: lost time and delays, meals, accommodations, services, etc) prior to these costs being incurred by the Contractor. Failure to notify may result in non-consideration of payment.

Note that the Department reserves the right to consider a lump sum cost proposal (complete with a detailed breakdown of costs as per the Time and Materials breakdown above) from the Contractor. This consideration not does eliminate the Department's option to pay for extra work via Time and Materials.

Note that the Department also reserves the right to award any extra work to a third party other than the Contractor.

12. SECTION 103.04 - FINAL CLEANUP

Site cleanup to existing road, structure, and surrounding area within the contract limits will be considered incidental to the performance of the work and shall be part of this Contract's scope of work. Refer to section 103.04 for more information.

13. SECTION 104.08 - CONTRACTOR'S RESPONSIBILITY

The Contractor shall identify and place a competent and reliable representative with authority to act for the Contractor in charge of the work. The representative shall be responsible for all aspects of the work, including, but not limited to the Contractor's own forces, any and all sub-contractors, suppliers, etc., reviewing, verifying and approving any claims for additional work submitted by sub-contractors, and organizing each day's work plan in light of completing the work within the allotted time frame. No compensation shall be given for any extra work. See Clause 103.03 above.

14. SECTION 104.10 - DAMAGE BY VEHICLES OR OTHER EQUIPMENT

Any damage to any structure elements, or adjacent property, during any activity due to vehicles, heavy equipment, or any other equipment controlled by the Contractor shall be repaired or replaced as determined by the Department and at the Contractor's expense. Do not park heavy equipment on roadway. Refer to section 104.10 for more information.

Reinstatement of existing asphalt, shoulders, ditches, adjacent property, or any other existing feature which is outside the project limits, yet which is damaged by the Contractor, shall be at the Contractor's expense with no additional cost to the Contract. Determination and extent of damage shall be at the discretion of the Department. Reinstatement shall be reasonably to that condition prior to project start.

15. SECTION 104.17 - ENVIRONMENTAL PROTECTION

Dispose of demolished materials at an approved disposal site in accordance with applicable Provincial Environmental Guidelines.

The Contractor shall be responsible to apply, obtain, and pay for all environmental permits such as but not limited to waste disposal, creosote disposal, pit material, etc. The Contractor shall provide copies of applicable permits to the Department upon request.

Any related permits applied for in advance by the Department on behalf of the successful Contractor are made solely in the interest of the project schedule. Any permits issued to the Department shall automatically become the entire responsibility of the Contractor with respect to performing all work activities in compliance with the concerned permits.

The Contractor shall be responsible to apply for, pay for, and submit a copy to the Department of both a Hazardous Waste Permit and a Pit Permit.

The primary criteria to determine the required type and extent of environmental control shall be:

a) all work to be performed in isolation of the watercourse, and/or separated from the watercourse and the toe of slopes via installation of environmental control(s); and
b) the release of sediment into the watercourse shall be prevented.

All environmental controls shall be in place prior to and during related project activities. Refer to specific bid items for related description and measurement of payment for some environmental controls. Controls without a bid item (such as but not limited to Emergency Response Kit) shall be considered incidental to the project with no additional compensation provided.

The type, location, and extent of environmental controls as a minimum shall be as indicated on the Environmental Control Drawing E1 included in this tender.

The Contractor shall be responsible to monitor (on a daily basis, including non-work days such as weekends or Holidays) all environmental controls. All environmental controls shall be maintained and/or replaced by the Contractor (at no additional cost to the Department) throughout the entire duration of the project such that controls are effectively performing their function.

The Contractor shall provide all labour, materials, and equipment required for the installation, secure attachment, handling, and disposal of a collection system for all timber material waste generated as a result of drilling, cutting, and installing hardware, etc into any timber members. No timber material waste shall be permitted to enter the watercourse (neither directly nor indirectly). This item also includes the loading, transport from site, and disposal off site of all collected waste. This item shall have no cost line item and shall be considered incidental to the project.

No additional compensation will be provided for this item.

16. SECTION 106 - PROSECUTION AND PROGRESS, OCCUPATIONAL HEALTH AND SAFETY (OH&S) ACT AND REGULATIONS

No additional compensation shall be provided for this item. All work shall be performed in accordance with the PEI Occupational Health and Safety (OH&S) Act and Regulations.

The Contractor shall submit to the Department a copy of all OH&S reports (independent of report content) related to this construction site. The Contractor shall also submit to the Department written documentation of corrective/remedial measures taken to address any issued identified as requiring such in an OH&S report.

The Contractor shall submit to the Department a copy of a clearance letter issued to the Contractor by the PEI Workers Compensation Board indicating that the Contractor is in good standing. The Contractor shall submit to the Department additional copies verifying renewal of good standing status throughout the duration of the project.

The Contractor shall fully complete and submit to the Department (prior to mobilizing on site) the attached Hazard Assessment Form and the attached Pre-Construction Contractor Site Safety Check List. Alternatively, the Contractor may elect to use his/her own forms provided they meet or exceed (at the Department's discretion) those provided.

DINGWELLS MILLS BRIDGE – STRUCTURE REPLACEMENT and ROAD RESURFACING

The Contractor shall develop and submit to the Department (prior to mobilizing on site) a COVID-19 Safety Plan. This Plan shall include measures/procedures to meet the PEI Chief Public Health Office COVID-19 restrictions as they relate to all pertinent activities, such as but not limited to: employees travelling to/from the site, all work activities on site, worker breaks, portable toilets, wash stations, equipment/tools sanitation, and the Contractor's monitoring system to ensure compliance. Refer to attached Construction Association of PEI document ' Pandemic Planning for the Construction Industry - a Guide.' Note that all costs the Contractor incurs as part of complying with COVID-19 restrictions shall be incorporated into any and/or all bid cost items. No additional compensation shall be provided by the Department for the Contractor to comply with COVID-19 restrictions.

The Contractor shall fully complete and submit to the Department (prior to mobilizing on site) the attached Contractor's Safety Statement.

The Contractor shall submit to the Department Safety Inspection Certificates of any cranes (track, mobile, and/or truck mounted) to be used on site and/or in the Department's Storage Yard. All crane certificates shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

The Contractor is responsible to ensure that the work is performed in a safe manner and that all personal protective equipment, equipment, etc., are in good working order and safe working condition. The Contractor is also responsible to ensure that his labourers, traffic control personnel, and skilled trades people have been adequately trained in their respective roles and duties, as well as their rights and responsibilities under the PEI Occupational Health and Safety Act and Regulations.

The Contractor is responsible to ensure that all equipment can safely enter, manoeuver within, and exit the site. The Contractor shall take measures to ensure trucks can safely enter, manoeuver within, que, load, off-load, and exit the site. This includes measures to provide adequate and safe turning areas as required. The Contractor shall be required to arrange and pay for any off-site areas required to facilitate truck/equipment utilization.

Note for any circumstance whereby traffic control personnel are required on site, the Contractor shall prepare and submit to the Department a site specific Traffic Control Plan prepared by a certified Traffic Control Manager. The Traffic Control Plan shall be developed in accordance with the Prince Edward Island Temporary Workplace Traffic Control Manual (latest edition). Note that the Traffic Control Manual is a document with minimum guidelines. The Traffic Control Manager shall also be on site at all times while traffic control personnel are on site. Work shall not proceed until all conditions of this section are met. Failure to meet these conditions shall result in a stop work order as per Section 106.07 Suspension of Work.

Note for any circumstance whereby traffic control personnel are utilized on site, the Contractor shall fully complete and submit to the Department on a weekly basis (for each applicable day within that week) the attached Daily Traffic Control Checklist. This form shall be completed in full each working day by the Contractor prior to mobilizing any equipment or work personnel on site, as well as just after demobilizing any equipment or work personnel on site.

The Contractor shall submit to the Department upon request any documentation (example: tool box meeting minutes, incident reports, accident reports, training certificates, etc) related to safety for this project.

Delivery of earth material shall be by tandem truck only. Delivery via trailers shall not be permitted, except for rip rap material. Any other circumstances must be approved by the Department.

DINGWELLS MILLS BRIDGE – STRUCTURE REPLACEMENT and ROAD RESURFACING

In accordance with Chapter 0-1, Part 2, of the Occupational Health and Safety Regulations, the Contractor shall provide portable toilet during construction.

The Contractor agrees to accept sole responsibility to comply with all federal, provincial and municipal legislation which may have application to the Work and agrees to comply with all provincial and federal legislation affecting conditions of work and wage rates including the Employment Standards Act R.S.P.E.I. 1988, Cap. E-6.2, the Workers Compensation Act R.S.P.E.I. 1988, Cap. W-7.1, or any other laws that impose obligations in the nature of employers' obligations. The Contractor agrees to follow the Public Service Commission Human Resource Policies 9.05 Violence in the Workplace Policy; 9.08 Drug, Alcohol, and Medication Policy, and 11.01 Policy for the Prevention and Resolution of Harassment in the Workplace while working on Government sites, in Government vehicles or alongside Government staff.
https://psc.gpei.ca/sites/psc.gpei.ca/files/HRPolicy/HRManual_9.05.pdf
https://psc.gpei.ca/sites/psc.gpei.ca/files/9.08%20DrugAlcoholAndMedicationPolicy.pdf
https://psc.gpei.ca/files/PDF%20Files/hrp-manual/hrppm_11.01.pdf
The Contractor agrees to accept the full cost of doing those things required under this paragraph and will not charge nor seek reimbursement from the Owner in any way, such costs having been taken into consideration and included in the rates of payment stipulated in this Agreement.

17. SECTION 107.04 – PAYMENT OF WORKERS

The Contractor shall be responsible for employing enough traffic control personnel to cover off the minimum requirements of PEI OH&S or as indicated by a representative of PEI OH&S. The Department shall provide a list of trained candidates for the Contractor to select from if he so chooses.

No additional compensation shall be provided, for any reason, beyond the hourly rate compensation as indicated in tender document Schedule C, for hours served performing traffic control.

18. SECTION 201.01 - CLEARING

The unit price bid for this item shall be full compensation for the provision of all labour, materials, and equipment required to remove trees and associated stumps, within the project area as required to facilitate construction work. Note that prior to any tree clearing the Contractor shall confirm with the Department the extent of such.

Work shall include but not be limited to the cutting of trees, delimbing, cutting into lengths as required for transport, loading, transport off site, and disposal. All fallen tree components shall be deemed the property of the Contractor and shall be disposed of in an environmentally acceptable manner in accordance with the PEI Waste Management Regulations at no additional charge to the Contract. Location and extent of area of tree removal shall first be confirmed with the Department prior to cutting any trees.

19. SECTION 202.01 - GRUBBING

Grubbing shall also include the stripping, removal, and disposal of all topsoil as required within the project limits.

20. SECTION 907 - VEHICLE CONFIGURATIONS AND RESTRICTIONS

The bridge site shall remain open with one (1) lane of alternating traffic directions 24/7 at all times during construction. Construction shall therefore be done in Phases. The Contractor shall be responsible for organizing his work crews and traffic control personnel accordingly and shall be responsible for all aspects of traffic control as per General Conditions 105.06 and 105.07 of the General Provisions and Contract Specifications.

The Department will install and maintain 'stop and go' (green and red) traffic lights at both approaches to the site to control the alternating direction and que length of traffic 24/7 at all times during the construction period.

The SADT (summer average daily traffic) on this project shall be understood to be approximately 4900 vehicles per day.

21. BID ITEM # 20306 - EXCAVATION: EARTH SURPLUS/SUITABLE

The unit price bid for this item shall include the handling of surplus material to a separate site designated by the Contractor to be later used as common borrow material for embankment or roadbed construction for this project's site. The Department will determine on site the identification and extent of material deemed surplus suitable. The unit rate bid for this item shall include the excavation, loading, transportation off site (or store on site if the Contractor determines there is sufficient space), stockpiling, any environmental controls required, reloading, transportation back to this site, placement, grading, and compaction of the material. Contractor to determine in conjunction with the Department representative the extent of excavation so to place any equipment and/or manouevre trucks or equipment within the site. The Contractor is responsible for providing a separate site to temporarily store the material and ensure that it is secured for use by the Department. No additional compensation shall be entertained for any part thereof required to conduct the work as intended.

Contractor to determine in conjunction with the Department representative the extent of excavation so to place any equipment and/or manouevre trucks or equipment within the site.

For the purpose of determining the volume of material excavated, the Contractor shall be responsible for all costs to perform a site survey of the excavated area (both prior to and after excavation) and submit to the Department a digital file (Autocad Civil 3D file, Dept has version 2019) indicating digital sketches of applicable cross sections used to determine the volume of material. The sketches shall also indicate the associated volume of material in units of cubic metres. The survey results are to be referenced to the Department's site survey benchmark. The Department will provide to the Contractor an Autocad file indicating the results (coordinates and ground elevations) of the Department's site topographical survey of the existing conditions. This data shall be used by the Contractor to aid in determining the volume of material excavated.

Note that the Department shall determine on site, during excavation, the vertical extent of excavation within the existing roadbed from the mass excavation back to the project limits.

The Contractor shall take due care during all ground disturbing activities on the site relative to possibly unearthing items of cultural significance. If any such items are unearthed all ground disturbing activities shall halt until applicable authorities are notified and proper care and attention has been undertaken.

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22. BID ITEM # 20307 - EXCAVATION: EARTH WASTE

The unit rate bid for this item shall include the excavation, loading, transportation, any environmental controls required, and disposal of earth waste material off site. The Department will determine on site the identification and extent of material deemed waste. Contractor to determine in conjunction with the Department representative the extent of excavation so to place any equipment and/or manouevre trucks or equipment within the site. No additional compensation shall be entertained for any part thereof required to conduct the work as intended.

For the purpose of determining the volume of material excavated, the Contractor shall be responsible for all costs to perform a site survey of the excavated area (both prior to and after excavation) and submit to the Department a digital file (Autocad Civil 3D file, Dept has version 2019) indicating digital sketches of applicable cross sections used to determine the volume of material. The sketches shall also indicate the associated volume of material in units of cubic metres. The survey results are to be referenced to the Department's site survey benchmark. The Department will provide to the Contractor an Autocad file indicating the results (coordinates and ground elevations) of the Department's site topographical survey of the existing conditions. This data shall be used by the Contractor to aid in determining the volume of material excavated.

Note that the Department shall determine on site, during excavation, the vertical extent of excavation within the existing roadbed from the mass excavation back to the project limits.

The Contractor shall take due care during all ground disturbing activities on the site relative to possibly unearthing items of cultural significance. If any such items are unearthed all ground disturbing activities shall halt until applicable authorities are notified and proper care and attention has been undertaken.

23. BID ITEM # 20316 - EXCAVATION: PAVEMENT

The existing asphalt pavement shall be excavated to full depth off the existing road. The RAP (reclaimed asphalt pavement) shall be transported and stockpiled by the Contractor at the Department's Bridgetown Storage Yard. The unit bid price for the above listed shall be full compensation for the work. No additional compensation shall be provided.

Note that the Contractor shall confirm with the Department, prior to starting any asphalt excavation activities, the extent of excavation required.

24. SECTION 20602 – BORROW: SELECT

The unit bid price for this item shall include the supply, placement, and compaction of select borrow material for the roadway as well as the same required for the temporary bypass road located within the site. This item shall also include all costs associated with maintenance / grading as required on the temporary bypass lane to provide a reasonable wearing surface. Contractor shall determine and verify quantity of material required prior to ordering and site delivery. Use and extent of material may also be determined on site by Department representative. There shall be no additional measurement nor payment for fine grading, placement, and compaction of select borrow material.

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25. SECTION 20701 - GRANULAR BASE: CLASS A

The unit bid price for this item shall include the supply, placement, and compaction of Class 'A' granular base for the roadway as well as granular shoulders. This item also includes the cost of use of a shoulder machine. Contractor shall determine and verify quantity of material required prior to ordering and site delivery. Use and extent of material may also be determined on site by Department representative. There shall be no additional measurement nor payment for fine grading, placement, and compaction of shoulder material.

26. SECTION 20709 - CLASS D GRAVEL

This item includes the supply, placement, and compaction of Class 'D' granular material within site areas as deemed required by the Department. Contractor shall determine and verify quantity of material required prior to ordering and site delivery. Use and extent of material may also be determined on site by Department representative.

27. SECTION 21301 - RANDOM RIP-RAP R5

The unit bid price for this item shall include the supply and placement of random R5 rip rap as indicated on the drawings, or as directed on site by the Department. Use and extent of material may also be determined on site by Department representative. The Contractor shall co-ordinate delivery of material on site such that it is dumped off a truck only once on site prior to its final placement. Contractor shall determine and verify quantity of material required prior to ordering and site delivery.

Note that all rip rap material shall be granite and meet the Department's Technical Specification Clause 213.02 for Class 1 material.

Note that R5 is required along the bottom of the new realigned watercourse, as well as local treatment along inlet and outlet embankments.

28. SECTION 21303 - RANDOM RIP-RAP R50

The unit bid price for this item shall include the supply and placement of random R50 rip rap as indicated on the drawings, or as directed on site by the Department. Use and extent of material may also be determined on site by Department representative. The Contractor shall co-ordinate delivery of material on site such that it is dumped off a truck only once on site prior to its final placement. Contractor shall determine and verify quantity of material required prior to ordering and site delivery.

Note that all rip rap material shall be granite and meet the Department's Technical Specification Clause 213.02 for Class 1 material.

Note that the Department's specification for the percent finer by mass for the 330mm size shall read 0%, not 0-20%.

29. SECTION 21304 - RANDOM RIP-RAP R100

The unit bid price for this item shall include the supply and placement of random R100 rip rap as indicated on the drawings, or as directed on site by the Department. Use and extent of material may also be determined on site by Department representative. The Contractor shall co-ordinate delivery of material on site such that it is dumped off a truck only once on site prior to its final placement. Contractor shall determine and verify quantity of material required prior to ordering and site delivery.

Note that all rip rap material shall be granite and meet the Department's Technical Specification Clause 213.02 for Class 1 material.

Note that the Department's specification for the percent finer by mass for the 420mm size shall read 0%, not 40-55%.

30. BID ITEM # 21327 - RAP: LOAD, TRANSPORT, AND PLACE

The unit bid price bid for the above listed item shall be full compensation for the provision of all labour, materials, and equipment required to load RAP (reclaimed asphalt pavement) at the Department's Charlottetown Storage Yard, transport to site, offload, place, and compact RAP for the temporary bypass roads to serve as the wearing surface. No additional compensation shall be provided.

The unit bid price for this item shall also include all costs (such as but not limited to labour, equipment, vehicle, trucking, loading, unloading, etc) related to maintaining the RAP throughout the duration of its use on the temporary bypass roads. Maintenance activities shall include, but not limited to, filling potholes, regrading, etc as required to provide a reasonable wearing surface given the material and volume of traffic. Any additional RAP required shall be supplied by the Department's in a stockpile at the Department's Charlottetown's Storage Yard. Maintenance activities shall also be commenced at any time upon the request of the Department.

31. SECTION 21801 - FILTER FABRIC

The unit bid price for this item shall include the supply and placement of filter fabric as indicated on the drawings or as required for other purposes such as but not limited to environmental controls. Note that the cost associated with filter fabric which is included as part of other cost items shall not be included as part of this cost item. Filter fabric shall be type N3 at all locations.

32. BID ITEM # 50101 - ASPHALT CEMENT

For bidding purposes, an artificial rack price of nine hundred dollars ($900.00) per tonne, without anti-stripping, shall replace the Department's posted Average Asphalt Binder Rack Price table for this Contract. This artificial price shall be used as the price index when calculating the liquid asphalt cement price adjustment.

33. BID ITEM # 50109 – SURCHARGE FOR POLYMER LIQUID ASPHALT

The polymer modified asphalt cement shall be used for the asphalt seal. Performance Graded Asphalt Cement (PGAC) on this contract shall comply with AASHTO M332 for the surface mix and shall be graded as PG 58-28H. Additionally the PGAC shall meet the elastic recovery requirements detailed in Appendix X1 of AASHTO M332. Note, when ordering the PGAC to include reference to the specification, grade with designation and the appendix (e.g., M332, PG 58-28H, Appendix X1). Additional costs to the contractor for the purchase, haul, storage, and use of this product in lieu of 58-28 will be paid for under Item 50109 - Surcharge for Polymer Liquid Asphalt. No additional compensation shall be provided.

34. BID ITEM # 60332 – ASPHALT PATCHING B

This item shall be for the supply and placement of asphalt seal in a narrow area between the existing asphalt and the new concrete curb.

35. BID ITEM # 70405 - COLD PLANE & STOCKPILE: RAP

The existing asphalt pavement along both approach roads and over the existing bridge structure, as well as the recently placed asphalt millings on the temporary bypass roads shall be cold planed to full depth, except 50mm depth at each end of project limits as indicated on the drawings. The RAP (reclaimed asphalt pavement) shall be transported and stockpiled by the Contractor at the Department's Bridgetown Storage Yard. The unit bid price for the above listed shall be full compensation for the work. No additional compensation shall be provided.

Note this item does not include existing asphalt to be excavated as per Item # 20316.

Note that the Contractor shall confirm with the Department, prior to starting any cold planing activities, the extent of cold planing required.

36. BID ITEM # 71001 – CUTTING PAVEMENT

This item shall be for cutting and removal of pavement to allow for the installation of the concrete curb as required.

37. BID ITEM # 71201 – RAP SHOULDER MATERIAL

This item shall be for the cold planning of the existing asphalt surface (50mm), stockpiling and shouldering of the project.

The transportation of the RAP to the temporary stockpile and from the temporary stockpile to the site (shoulders) shall be a closed haul.

Once placement of the shoulder material is complete, the excess material (RAP) will be hauled to a location determined by the Department and stockpiled. The Contractor shall be required to load, transport and stockpile the excess RAP from the temporary stockpile onto the trucks and deliver to the designated site with no additional compensation being provided.

The transportation of excess material from the temporary stockpile to any stockpile sites determined by the Department shall be an open haul, and open haul rates shall apply. A price adjustment shall apply based on the actual haul distance.

38. BID ITEM # 80302 - HYDROSEEDING

The unit bid price for the above listed item shall include seeding of all topsoiled areas once the concerned areas are topsoiled. This shall include all disturbed embankments, ditches, new roadway embankments, etc within the project limits. Acceptable products shall be Flexterra, Firbramulch, or equivalent approved by the Department.

39. BID ITEM # 82100 - ENVIRONMENTAL CONTROLS

This lump sum cost item shall include all costs associated with the supply, overall fabrication, installation, relocation as required, maintenance/repair, replacement of damaged areas, daily inspection, positive fastening or anchorage measures required to keep in location, adjustments, decommissioning, and removal from site of silt boom(s) as required on site to meet the primary environmental protection criteria. The unit price shall be specific for this project only. Loss of future use (for any reason) of the silt boom on separate projects shall not be compensated.

The boom(s) shall be installed for a maximum of eight (8) hours during a day to permit fish passage. The bid price shall allow for removal and reinstallation of boom(s) as required to satisfy this requirement.

This item shall also include all costs associated with the supply, overall fabrication, installation, maintenance/repair, replacement of damaged areas, daily inspection, positive fastening or anchorage measures required to keep in location, adjustments, decommissioning, and removal from site of type 1 silt fence, type 2 silt fence, filter fabric, and straw blanket as required on site to meet the primary environmental protection criteria. Note that straw blanket to remain on site.

The type, location, and extent of environmental controls as a minimum shall be in place, prior to starting construction activities, as indicated on the Environmental Control Drawing E1 included in this tender.

This item shall also include all costs associated with the supply, placement, and daily inspection of hay mulch and hay bales as required on site to meet the primary environmental protection criteria.

No additional compensation shall be provided for this item.

40. BID ITEM # 90301 – FLEXBEAM GUIDERAIL: ERECT

The unit price bid for the above listed item shall include the supply of all new flexbeam guardrail, timber posts, timber spacer blocks, and all associated hardware; transport all to site; unloading, and installation of all elements on site. Note that posts are to be located as per Department Specification. End terminations shall be extruder terminators complete with related strut and cable system at all four (4) locations. No additional compensation shall be provided for this item.

Note that guardrail installation shall not occur until after the final shoulder work is complete.

41. BID ITEM # 90803 – TRAFFIC CONTROL DEVICES

The Contractor shall be responsible for the supply, fabrication, secure placement on site, replacement, periodic maintenance / repositioning / keeping upright, handling, repositioning prior to and after any vehicle entry/exit to/from the site, repositioning between Phases, and final removal from site of all temporary traffic control condition devices such as but not limited to delineators, warning, guidance, protection, etc. Concrete barriers are not included in this item. No additional compensation shall be provided for this item.

42. BID ITEM # 130002 - STREAM DIVERSION

Note that this item pertains to stream containment, even though the title is Stream Diversion. The existing watercourse alignment will be altered, other than local containment measures.

This item pertains to constructing and maintaining stream containment required to perform all new construction activities in a dry condition. Dry condition means no ponded water.

This item shall include dewatering (including all associated environmental controls) of the site required to completely install all components of the new structure in a dry condition. Dry condition means no ponded water.

The work activity shall include but not be limited to: supply, placement, maintenance, and eventual removal from site of all material, as determined by the Contractor, to create a fully contained watercourse such as but not limited to gabion baskets, sand bags, sheathing, concrete jersey barriers, steel sheet piling, steel plates, timber framing, shoring and bracing, plastic liners, HDPE liners, concrete or plastic pipes, stakes, rip rap, weight/anchorage material, pumps, etc; monitoring and maintenance of area receiving pumped water away from the construction area; provision of all required labour, security personnel, and all other ancillaries required to completely divert the watercourse away from the associated work area. Any shoring and bracing required shall be designed by a professional engineer registered with Engineers PEI.

This item shall include all work activities associated with the supply, installation, and eventual removal of watercourse barriers (full water depth and width of the watercourse) upstream and downstream of the work area, and pumping the watercourse water from the upstream area to the downstream area (including all associated environmental controls) of the site as required to perform related work in a dry condition. Dry condition means no ponded water.

This item shall also include all costs associated with the development and submission by the Contractor to the Department a Dewatering Plan indicating items such as but not limited to the location of outfalls and any associated environmental controls. The Dewatering Plan shall be submitted at least two (2) weeks prior to commencing any activity which will require dewatering.

This item shall also include all work activities associated with the development and submission by the Contractor to the Department a Stream Containment Plan indicating items such as but not limited to: type of materials to divert/contain/direct the water monitoring and maintenance systems, and any associated environmental controls. The Stream Containment Plan shall be submitted at least two (2) weeks prior to commencing any activity related to the diversion.

After watercourse is diverted into new structure and realignment, this item shall also include all work activities associated with performing a fish rescue and then pumping excess water remaining from the former watercourse area.

This item shall not be paid, and shall be incidental to the project cost.

43. BID ITEM # 130503 - INSTALL CONCRETE PIPE CULVERT

NOTE TO BIDDERS: ONLY PRICE ONE (1) OF THE FOLLOWING BID ITEMS IN SCHEDULE C. ENTER PRICE OF ONE DOLLAR ($1.00) FOR BID ITEM NOT PURSUING.

130503 - Install Concrete Pipe Culvert
130510 - HDPE Structure

This cost item pertains to the all costs associated with the design, supply, and installation of precast concrete pipe structures complete with cut-off wall and inlet control element as indicated on Department drawings. Note that the material for both the inlet control element and the cut-off wall shall be either concrete or aluminum.

Note that the baffles shall be concrete and shall be cast at the fabricator's plant (not on site).

Note that the Department has performed the hydraulic design for the site, and has determined the cross section required for the pipe structures. The structure's inside surface, as well as the inlet control element's exposed surfaces, shall have a Mannings Roughness Coefficient no more than 0.013.

Note also that the Department has performed a fish passage elevation design, with the resulting invert elevations indicated on the Department's drawings.

The Department requires the structure to be placed in its field position utilizing maximum lay lengths.

The use of Duraforms or equivalent product shall not be used on any portion of the work.

The use of snap-off form ties is not permitted on any portion of the work.

This item shall also include all costs associated with the supply, installation, fitting, and removal of form liner material on the entire surface area of the water side vertical face of the sidewalls of the inlet control element.

PRECAST UNITS:

The lump sum price for the above listed item shall be full compensation for:

A) The engineered culvert design as per CAN/CSA-S6-S19 Canadian Highway Bridge Design Code. The structure design shall also include the design of: granular bedding, inlet control element, inlet cut-off wall, and the engineered granular backfill envelope. Both the granular bedding and granular backfill shall be with material identified, and with associated properties, indicated in the Department's document 'General Provisions and Contract Specifications for Highway Construction'.

B) The development of structure design drawings for all of the above components listed in (A) indicating all material criteria, material grades, dimensions, invert elevations (as provided by the Department), component-to-component joint connection detail (to be structurally intregal and water-tight), bedding material limits (minimum 450mm thick), backfill envelope limits, backfill procedures, inlet control element connection details to the structure, inlet cut-off wall connection details to the structure, each component length field location and resulting cutoff location, compaction criteria, calculated maximum soil bearing pressure below structure, any construction methodologies and/or restrictions, and other any design related information. Design drawings to be submitted to the Department for general review. All design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

C) The development of structure lift design drawings indicating structure's total mass associated with component length installed, location of lift points relative to structure's length, angle of connection to the structure, lift equipment location and required lift capacity, any spreader beam details (size, location, length), cable and/or strap sizes, and connections. Lift design drawings to be submitted to the Department for general review. All lift design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

D) The development of structure storage design drawings indicating any blocking and/or supports. Storage design drawing to indicate requirements for both transport trailer condition and a ground surface condition. Storage design drawings to be submitted to the Department for general review. All storage design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

E) Supply, transport to site, off-loading, on-site storage (if required), lift reinforcement and/or spreader beams, and installation and alignment of the entire structure to the satisfaction of the Engineer, manufacturer, and structure Supplier's technical representative. The Contractor shall adhere to the strict instructions or recommendations of the structure Supplier.

F) Design and installation of the pipe structure(s) and surrounding granular material in accordance the American Concrete Pipe Association's Standard Installation Type 1.

The bid price for this item shall also be full compensation for: all design engineering, drafting, labour, equipment and materials required to completely design, fabricate, and supply precast concrete units, concrete testing, temperature protection, concrete repair, all complete with: the provision of design drawings, the provisions of rebar placement drawings, the provision of concrete mix proportion, the provision of reinforcement mill certificates, the provision of crane safety certificates, the provision of insurance and safety related documents, the provision of inspection and test report documents, any falsework, reinforcing steel, cast-in lift hardware, concrete supply and placement, curing, handling of units within the Supplier's production facility, rigging design, storage design, all costs associated with storing all units at the Supplier's yard, all costs associated with loading and handling all units at the Supplier's yard; all costs (including any permits) associated with transporting all units to the bridge site; all costs associated with unloading and installing all units at the bridge site; supply and installation of joint flexible material for all unit-unit joints upon site installation, and all other incidentals required to complete the work.

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DESIGN COMPANY & INSURANCE:

Note that the structural design of all units shall be performed by a company registered to practice engineering in PEI. The Supplier shall submit to the Department a copy of the design company's Certificate of Authorization (COA) as granted by Engineers PEI.

The company performing the structural design shall also carry at least two million dollars ($2,000,000) coverage (per occurrence) of Professional Liability (Errors and Omissions) Insurance. The Supplier shall submit to the Department a copy of the design company's Certificate of Insurance verifying such coverage.

CONCRETE MIX PROPORTION:

NOTE: ALL CONCRETE MIX PROPORTION SHALL BE DESIGNED AS HIGH- PERFORMANCE CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE DESIGN STRENGTH OF 45 MPA, CLASS C-1 EXPOSURE.

The mix proportions for concrete (indicating mix contents and associated proportions) shall be submitted to the Department for general review. The mix proportion shall be noted as specific for this project. The mix design and certification shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI. Certification shall state that the mix design will meet or exceed project requirements.

DESIGN CRITERIA:

Design criteria shall conform to the following:

A) Loading shall be in strict accordance with CSA S6-19 Canadian Highway Bridge Design Code, with CL-625 live loading, and any other relevant codes (ie CSA A23.1, CSA A23.2, G40.21, etc);
B) Depth of Bury: as per Department Drawings;
C) Unit Weight of Backfill: $\gamma = 22$ kN/m^3;
D) Internal Angle of Friction: $\varphi = 31$ °;
E) Use of snap-off form ties shall NOT be permitted on any portion of the precast units;
F) Clear Diameter: as per Department Drawings;
G) Joint detail around the entire perimeter of both ends of all units shall incorporate a bell and spigot concept whereby the units can be installed in the field similar to field installation of storm or water pipe (ie water flows into the bell end).

DESIGN DRAWINGS:

The Supplier shall provide final design drawings indicating the following but not limited to: design dead and live loads, all dimensions, lay length, concrete and reinforcing steel material criteria, rigging diagram for lifting the units, minimum concrete compressive strength required for lifting, storage support diagram, total unit mass, identification of the centre of gravity for future transportation information, backfill material criteria and placement extent, all steel reinforcement size and spacing, local reinforcement details, lift insert type and associated local reinforcement detail, and any other pertinent information related to the design, fabrication, handling, and eventual field installation of the units. All final design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

Note that the following, as well all other pertinent design related information, as a minimum, shall be noted on the design drawings:

A) 28 day compressive design strength, minimum 45 MPa;
B) Minimum compressive strength required for lifting the unit;
C) Load combinations per the latest edition of CSA S6-19;
D) The eight (8) load combinations related to depth of bury;
E) Soil backfill properties;
F) Reactions (ULS and SLS) for foundation design, based on each load combination;
G) Mass of a unit;
H) Storage diagram indicating plan view locations of timber block supports, for single tier storage.

REINFORCEMENT MILL CERTIFICATIONS:

This item also includes all costs associated with submitting to the Department mill certificates for the reinforcing steel incorporated into all of the precast units.

CRANE SAFETY CERTIFICATION:

The Supplier shall submit to the Department crane safety certificates for all cranes used in the Supplier's fabrication shop and within its storage yard, and for all cranes to be used for unloading units.

All certifications shall bear a P Eng stamp signed and dated by a professional engineer registered with the Association of Professional Engineers of the province where the crane is to be used.

The company performing the crane inspection shall also submit to the Department a copy of the company's Certificate of Authorization (COA) as granted by the Association of Professional Engineers of the province where the crane is to be used.

PRE-PLACEMENT INSPECTION:

This item also includes all costs associated with performing a pre-placement inspection and completing a Pre-Placement Inspection Form for each unit cast. Items on the Pre-Placement Inspection Form shall include but not limited to: date, inspector's name (printed), ambient temperature, form dimensions, form space cleaned, rebar size, rebar spacing, protective cover, tie-wire not within the protective cover width, and inserts: quantity, type, size, location, and positive aligned positioning.

All results shall be documented and matched with each unit's identification label. All Pre-Placement Inspection Forms shall be submitted to the Department maximum every two (2) weeks throughout the duration of casting the project's first to final unit.

The Department shall not approve the shipment of any unit from the Supplier's yard until the Pre-Placement Inspection Form associated with the unit has been submitted to the Department, with related content deemed acceptable by the Department.

CONCRETE TESTING:

This item also includes all costs associated with concrete testing (slump, air, and cylinder samples complete with associated breaks) as per CAN/CSA A23.3 and CAN/CSA A23.2 latest edition for each unit.

Note the following regarding concrete tests:

A) Cylinder samples shall be made only by certified personnel;
B) All tests shall be performed only by certified personnel;
C) Certification shall be granted through industry recognized programs by either Canadian Standards Association (CSA) and/or American Concrete Institute (ACI);
D) The Supplier shall submit to the Department valid (indicating expire date) certification records of individuals making cylinders and/or performing concrete tests.

All test results and associated reports shall be documented and match with each unit's identification (NOT the supplier's internal unit number).

For each unit the Supplier shall submit to the Department its concrete compressive strength test report verifying that the minimum compressive strength for lifting the unit has been attained.

Refer to Curing Inspection section of this document regarding compressive test required to verify 70% strength has been attained.

Note that the criterion for a unit's final compressive strength acceptance shall be the 28 day test result (the average of 2 cylinders). Beyond the 28 day cylinders, the Supplier shall determine the number of cylinders (field and/or lab cured) required for other means such as but not limited to curing verification.

All units' individual concrete test reports shall be submitted to the Department maximum every two (2) weeks throughout the duration of casting the project's first to final unit.

All test results and associated reports shall indicate the tester's name (printed).

The Supplier shall also develop a summary spreadsheet indicating all test results and corresponding test dates for each unit. This spreadsheet shall be submitted to the Department maximum every two (2) weeks throughout the duration of casting the first to final unit.

The Department shall not approve the shipment of any unit from the Supplier's yard until all concrete test results associated with the unit have been submitted to the Department, with related content deemed acceptable by the Department.

TEMPERATURE PROTECTION:

The unit bid price for this item shall also be full compensation for the provision of all labour, materials, energy source, and equipment required to supply heat to maintain ambient temperatures (ie temperature surrounding the unit) within criteria as indicated in CAN/CSA A23.1 latest edition. This applies to pre-placement of concrete, placement, and curing time periods.

Upon request from the Department, the Supplier shall develop and submit a Temperature Protection Plan to the Department. Items on the Temperature Protection Plan shall include but not limited to: minimum form temperature prior to concrete placement, heat supply source, type of enclosure and materials surrounding unit, temperature targets during placement and cure period, temperature monitoring system, duration of applied heat, and cool-down system and associated temperature targets.

CURING INSPECTION:

Since the concrete specified is high performance concrete, immediately upon form release all concrete shall be moist cured, in accordance with CAN/CSA A23.1 latest edition, continuous 24/7 for the time necessary to attain 70% of the specified 28 day compressive design strength. This requirement is to satisfy 'additional curing for durability' as per CAN/CSA A23.1 latest edition. For each unit the Supplier shall submit to the Department its concrete compressive strength test report verifying that this strength threshold has been attained.
This item also includes all costs associated with performing curing inspection and completing a Curing Inspection Form for each unit cast. All curing shall be performed in accordance with CAN/CSA A23.1 latest edition.

Items on the Curing Inspection Form shall include but not limited to:

A) Date of concrete placement;
B) Date(s) and ambient temperature (ie temperature surrounding the unit);
C) Date(s) and method of curing throughout the 'basic curing period';
D) Justification (concrete cylinder test results) to transition from 'basic curing period' to 'additional curing for durability';
E) Date(s) and confirmation of moist curing throughout the 'additional curing for durability' period;
F) Justification (concrete cylinder test results) to terminate 'additional curing for durability';
G) Concrete cylinder break results (should it be used for justification in D and/or F). Note that a field-cured cylinder (not lab-cured) shall be used for justification D if the minimum time duration did not trigger the transition.

Note that the concrete testing criteria noted elsewhere in this document shall also apply to concrete cylinders if used as part of curing transition and/or termination. All results shall be documented and matched with each unit's identification label. All Curing Inspection Forms, complete with any associated concrete cylinder break results, shall be submitted to the Department maximum every two (2) weeks throughout the duration of casting the project's first to final unit.

All Curing Inspection Forms shall indicate the inspector's name (printed).

The Department shall not approve the shipment of any unit from the Supplier's yard until the Curing Inspection Form associated with the unit has been submitted to the Department, with related content deemed acceptable by the Department.

POST-PLACEMENT INSPECTION:

This item also includes all costs associated with performing a post-placement inspection and completing a Post-Placement Inspection Form for each unit cast. Items on the Post-Placement Inspection Form shall include but not limited to: unit identification date, inspector's name (printed), and address (indicating whether present or not, and if so their location and extent) the following defects and/or damages: honeycombing, bugholes, exposed tie wires, cement paste and/or fins, projections beyond concrete face, voids around inserts, cracks, spalls, inserts: quantity, type, size, location, and positive aligned positioning, and removal of any placement aids.

Units shall be stored in the Supplier's storage yard such that all surfaces are accessible and visually exposed for observation. Do not store units one than one (1) tier in height.

Addressing defects and/or damages shall be noted on the Post-Placement Inspection Form via indicating whether present or not, and if present then note their location, size, and extent.

All results shall be documented and matched with each unit's identification label. All Post-Placement Inspection Forms shall be submitted to the Department maximum every two (2) weeks throughout the duration of casting the project's first to final unit.

The Department shall not approve the shipment of any unit from the Supplier's yard until the Post-Placement Inspection Form associated with the unit has been submitted to the Department, with related content deemed acceptable by the Department.

UNIT IDENTIFICATION:

This item also includes all costs associated with the supply and placement of permanent identification labelling for each precast unit. Label text shall be the casting date (yyyy-mm-dd) of respective unit, and the Supplier's company name.

Labelling shall be painted/applied directly on the unit's concrete surface. Size and colour of label/paint to be visible and be located within the 'upper middle third' on the inside face (so visible upon site installation, and above expected elevation of top of watercourse). Label paint shall be of quality to resist climate/air/moisture attack throughout the expected service life (75 years) of the structure. Labels must be applied within two (2) days after each unit's curing completion.

Note that the supplier's internal 'unit number' shall not be used as part of unit identification, nor shall a 'unit number' be used within record documents.

The Department shall not approve the shipment of any unit from the Supplier's yard until its identification label has been applied and deemed acceptable by the Department.

CONCRETE REINFORCEMENT:

The item also includes full compensation for the supply and installation of each kilogram of concrete reinforcing steel required, as well as the supply and installation of any sacrificial frame-up bars as deemed required by the Contractor. Grade of reinforcing steel shall be 400W. Rebar placement drawings indicating plan and section views, concrete element dimensions, material grade, piece marks and associated bar size and spacing, lap locations and associated lengths, etc shall be submitted to the Department by the Contractor at no extra cost to the Contract. Also include directly on the placement drawing (not on a separate drawing nor document) a detailed bar list indicating a piece mark for all bar types (including straight bars), quantity of bars for each mark, bend type, bend dimensions, total length for each mark, total mass for each mark, and grand total mass for the project. Contractor responsible to review content of placement drawings for correctness prior to submitting to the Department.

The Contractor shall submit to the Department mill certificates indicating heat numbers and corresponding chemical composition (components and amounts) for all reinforcing steel used for this project.

The unit price for this item shall also include all costs associated with the on-site storage of material supported/elevated off the ground such that it does not get contaminated with soil, mud, earthen debris, etc, as well as to maintain the material's shop fabricated shape.

PRECAST UNIT INSTALLATION:

The lump sum price for the above listed item shall also be full compensation for off-loading, on-site storage (if required), installation, and alignment of all precast concrete units; supply and installation of joint sealant (flexible gasket) entire perimeter of all joints; and all other incidentals required to completely install the precast units to the satisfaction of the Engineer, manufacturer, and technical representative. The Contractor shall adhere to the strict instructions or recommendations of the precast concrete structure Supplier's installation procedures and/or his on-site technical representative.

Contractor shall co-ordinate site delivery of precast units with the Supplier.

The Contractor is responsible to ensure enough available space on site shall be provided for concrete structure installation procedures. Any temporary layout areas, crane pads, fill, etc. shall be included in this item, as well as any land negotiations, permits, engineering (such as but not limited to geotechnical engineering advice regarding ability of existing soil to safely support loads imposed by crane pads, fill, crane outrigger loads, etc) required for the proper installation of the concrete structure.

The Contractor is responsible for all safety, crane capacities, number of cranes, location of cranes, any spreader beams, cable and related hardware capacities, outrigger locations and resulting soil bearing pressure, etc for the safe installation of all panels.

Bidders shall make allowances for any over excavation, levelling, grading, etc. of material (if required) for the setup of cranes for this item. No measurement nor payment shall be considered for constructing levelling pads for cranes.

Lift hooks/clutches compatible with the precast units' cast-in lift inserts shall be provided by the Contractor for all situations (unloading at bridge site, installation, etc).

DAMAGE AND DEFECTS:

Any damage and/or defects such as but not limited to honeycombing, disintegration, spalls, cracking, stratification, segregation, cold joints, etc shall be repaired by the Supplier prior to shipping any units from the Supplier's yard. Final determination of damage and/or defects and their extent shall be solely by the Department.

Prior to commencing any repairs, a repair method for each type of damage and/or defect shall be developed by the Supplier and submitted to the Department for review and acceptance. The Supplier shall also submit the material data sheet of proposed repair material(s).

Repair methods shall address perimeter cutout depth (minimum 6mm deep vertical cut, NO feather edges) and extent, surface preparation (minimum 5mm roughness amplitude), material removals, repair materials, surface moisture preparation, method of placement, and curing method complete with duration.

Cracks wider than 0.4mm shall be epoxy injection filled.

All costs associated with damage and/or defect repair shall be at no additional charge to the Contract, and will be charged back to the Supplier.

PAYMENT:

This item shall be lump sum cost for precast concrete structure designed, fabricated, supplied, off-loaded, and installed at the bridge site; as well as for precast concrete structure related to the inlet control element and cut-off wall.

Payment shall only be approved for amounts related to units with a correct identification label, delivered, unloaded, and installed FREE of damage, to the bridge site. Final determination of damage and its extent shall be solely by the Department.

Units shipped and/or installed to the bridge site with an identification label not matching casting records will not be paid for, with the transport truck directed to leave the bridge site with unit on board.

Any damage to any unit incurred during loading, handling, transport, unloading, and up to its final as-stored position within the bridge site shall be repaired with all associated costs incurred by the Contractor. Repair criteria shall be as per this cost item's DAMAGE AND DEFECTS section.

44. BID ITEM # 130510 - HDPE STRUCTURE

NOTE TO BIDDERS: ONLY PRICE ONE (1) OF THE FOLLOWING BID ITEMS IN SCHEDULE C. ENTER PRICE OF ONE DOLLAR ($1.00) FOR BID ITEM NOT PURSUING.

130503 - Install Concrete Pipe Culvert
130510 - HDPE Structure

This cost item pertains to the all costs associated with the design, supply, and installation of HDPE structure(s) as indicated on Department drawings, the primary structure's inlet control element, and the inlet cut-off wall, both located at the upstream end.

The HDPE material shall new and be steel reinforced (if required to satisfy structural capacity) polyethylene. Note that the material for both the inlet control element and the cut-off wall must be compatible with the primary structure's material.

Note that the baffles shall be fabricated by the structure's fabricator, be the same material as the structure, and be connected to the structure at the fabricator's plant (not on site).

Note that the Department has performed the hydraulic design for the site, and has determined the cross section required for the pipe structures. The structure's inside surface, as well as the inlet control element's exposed surfaces, shall have a Mannings Roughness Coefficient no more than 0.013.

Note also that the Department has performed a fish passage elevation design, with the resulting invert elevations indicated on the Department's drawings.

The Department requires the pipe structure(s) to be placed in their field position utilizing maximum stock lengths complete with bell/spigot joints (or welded joints for larger diameters) over entire circumferential perimeter of structure. Each component length field location, and resulting cutoff to be indicated in structure design drawings.

The Contractor shall submit to the Department mill certificates indicating heat numbers and corresponding chemical composition (components and amounts) for all steel band reinforcement. Note that any Boron content shall not exceed 0.008 percent.

DINGWELLS MILLS BRIDGE – STRUCTURE REPLACEMENT and ROAD RESURFACING

The lump sum price for the above listed item shall be full compensation for:

A) The engineered pipe structure design as per AASHTO LRFD Bridge Design Section 12. The applied live load shall be CL-625 in accordance with the latest edition of CSA S6 Canadian Highway Bridge Design Code. The pipe structure(s) design shall also include the design of: granular bedding and the engineered granular backfill envelope. Both the granular bedding and granular backfill shall be with material identified, and with associated properties, indicated in the Department's document 'General Provisions and Contract Specifications for Highway Construction'.

B) The development of structure design drawings for all of the above components listed in (A) indicating all material criteria, material grades, dimensions, invert elevations (as provided by the Department), component-to-component joint connection detail (to be structurally intregal and water-tight), baffle thickness, baffle connection detail to the structure, bedding material limits (minimum 450mm thick), backfill envelope limits, backfill procedures, inlet control element connection details to structure, inlet cut-off wall connection details to structure, each component length field location and resulting cutoff location, compaction criteria, calculated maximum soil bearing pressure below structure(s), any construction methodologies and/or restrictions, protective cover dimensions (vertical and horizontal) to steel reinforcement, and other any design related information. Design drawings to be submitted to the Department for general review. All design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

C) The development of structure lift design drawings indicating structure's total mass associated with component length installed, location of lift points relative to structure's length, lift equipment location and required lift capacity, any spreader beam details (size, location, length), cable and/or strap sizes, and connections. Lift design drawings to be submitted to the Department for general review. All lift design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

D) The development of structure storage design drawings indicating any blocking and/or supports. Storage design drawing to indicate requirements for both transport trailer condition and a ground surface condition. Storage design drawings to be submitted to the Department for general review. All storage design drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI.

E) Supply, transport to site, off-loading, on-site storage (if required), lift reinforcement and/or spreader beams, and installation and alignment of the entire structure to the satisfaction of the Engineer, manufacturer, and structure Supplier's technical representative. The Contractor shall adhere to the strict instructions or recommendations of the structure Supplier's installation and/or his on-site technical representative.

F) All costs associated with the structure Supplier providing a technical representative on site at all times during the placement and compaction of granular bedding, structure installation, pipe component-to-component joint connection work, and placement and compaction of the granular backfill envelope. Contractor to submit to the Department daily reports from technical representative indicating extent of work observed, any directives, and statement indicating work is in compliance with structure's design.

G) All costs associated with the structure Supplier providing a technical representative to develop, and submit to the Department, a written record addressing all of the above items constructed in accordance with the structure's design.

Note that the structural design of: the structure, lift design system, storage design system, granular bedding, and the engineered granular backfill envelope shall be performed by a company registered to practice engineering in PEI. The Contractor shall submit to the Department a copy of the design company's Certificate of Authorization (COA) as granted by Engineers PEI.

The company performing the structural design shall also carry at least two million dollars ($2,000,000) coverage (per occurrence) of Professional Liability (Errors and Omissions) Insurance. The Supplier shall submit to the Department a copy of the design company's Certificate of Insurance verifying such coverage.

45. BID ITEM # 130812 - SITEWORK DEMOLITION AND REMOVAL

No additional compensation will be provided for this item. Refer to attached Schedule 'F' and drawings for additional details. Refer also to section 104.14 of the Department's Specifications.

Note that demolition of existing structure components shall not start until the watercourse is completely diverted through the new structure, with the realigned watercourse isolated from the existing structure.

The lump sum bid price for the above listed item shall be full compensation for the demolition, removal from site, and the disposal off site of all existing structure components including but not limited to:

> corrugated steel arch complete with all components, timber mudsills spaced along arch length, timber runners, timber stops, timber flooring, all associated hardware and connections for all members,
>
> all connections associated with all members to be demolished or salvaged,
>
> and all other removals as required to facilitate the new structure placement complete with new approach roadways.

All of these items shall be deemed the property of the Contractor and shall be disposed of in an environmentally acceptable manner in accordance with the PEI Waste Management Regulations at no additional charge to the Contract. All items to be removed from site and disposed of, independent of their protective coating or lack thereof.

This item includes the cost of disposal fees (and any required permits) to dispose material in an environmentally acceptable manner.

The Department recommends that bidders visit the site during tender period to become familiar with and take into account the existing structure's system and all relevant surrounding conditions. Successful Contractor to have taken into account all costs associated with all existing conditions. Bidders are responsible for their own safety during the site visit, and are not to negatively affect the safety of the travelling public.

46. BID ITEM # 130831 - CONCRETE BARRIERS

The unit rate bid price shall be full compensation for loading concrete barriers at the Department's Charlottetown Storage Yard, transport to site, offloading on site, placement as per Traffic Control Plan, handling/repositioning on site as required, handling/repositioning on site as required for channelization for Phase setup and/or periodic adjustment, handling/repositioning on site to channel traffic's entry and exit on/off the temporary bypass road within the site, handling/repositioning on site to accommodate any equipment setup or material delivery to the site, site loading, transport back to the Department's Charlottetown Storage Yard, and offloading at the Storage Yard.

The unit rate price shall also be full compensation for loading concrete barriers at the Department's Charlottetown Storage Yard, transport to site, offloading on site, placement as part of any embankment base earth containment, handling/repositioning on site as required, site loading, transport back to the Department's Charlottetown Storage Yard, and offloading at the Storage Yard.

Note that the Contractor shall confirm with the Department prior to loading at the Storage Yard the quantity of barriers required on site.

47. BID ITEM # 130876 - GENERAL MOBILIZATION AND DEMOBILIZATION

The lump sum bid price for the above listed item shall be full compensation for the mobilization and demobilization of all equipment, material, and labour to and from the site, including land negotiations for storage areas as well as any negotiations with utilities. This item also includes the provision of parking areas for equipment and vehicle parking including any land negotiations for such. This item also includes the supply, placement, and removal from site any earth materials and associated environmental controls required as part of mobilization and demobilization. No additional compensation shall be provided for this item.

Contractor shall provide a site trailer to be shared by the Contractor and Engineer. Trailer shall be equipped with electricity, lights, table, chairs, one (1) screened window, and one (1) man door. It is the Contractor's responsibility to find a location near the structure to place the trailer. This item shall be included in the lump sum price bid for this item. The Contractor shall provide heat in the trailer at no additional cost to the Contract.

This item shall also include all costs associated with the supply, installation, and eventual removal of a safe walkway from one foundation side to the other. The walkway shall meet requirements of the PEI OH&S Act and Regulations. The walkway shall be for use by Contractor, sub-contractor, supplier, the Department, DFO, or any other individual authorized to be on site.

48. BID ITEM # 131056 - BACKFILL CONCRETE STRUCTURE

This cost item is for backfill the new structure(s), even though its title indicates Backfill Concrete Structure.

The unit bid price for this item shall include the supply, placement, shaping for underside the pipe structure, and compaction of Class 'A' granular material for the underside / against / and over top of the structures as indicated on the pipe structure design drawings (as developed by the Contractor's pipe structure designer). Contractor shall determine and verify quantity of material required prior to ordering and site delivery. Within 300mm of the structure the material shall be compacted with a hand tamper. There will be no additional compensation entertained for meeting the required density on the Class 'A' backfill.

49. BID ITEM # 135101 - PROJECT LAYOUT

The lump sum bid price for the above listed item shall be full compensation for all surveying and layout of the project site, including excavation cross section survey and volume calculation, elevations, temporary bypass road layout and profile, new watercourse alignment layout, new watercourse bottom elevations along its length, bedding gravel layout and profile, pipe structure layout, invert elevations at inlet and outlet, toe of slope layout, road base select borrow and gravel layout and profile, edge of pavement layout, dimensions, flexbeam post layout, and all other measurements and layouts required to complete the work.

This item shall also include all labour, materials, and equipment associated with the Contractor locating and setting up temporary control points in the field.

The Department will provide layout information upon request of the project layout team. Any discrepancies or irregularities shall be promptly pointed out to the Engineer for resolution prior to proceeding with the work. Copies of all digital files required for on site quantity calculations shall be provided to the Department for verification. The provision of Project Record Drawings shall be considered incidental to this item.

The Contractor shall perform an as-built survey and submit to the Department, at no additional cost to the Contract, digital file (Autocad Civil 3D file, Dept has version 2019) and PDF file as-built drawings developed to scale indicating plan locations (Northing and Easting coordinates using the same grid system as used to locate the new bridge foundation) and corresponding elevations (relative to project benchmarks) of all finished features at maximum 20 metre intervals aligning with project stationing (as well as at center of each bearing and midspans) within the project limits, and including any new work constructed under this Contract but located outside the project limits. Northing, Easting, and Elevation data shall be presented via the Contractor submitting to the Department a coordinate file (digital ASCII).

Road features to be identified and as-built surveyed include primary construction types and visual changes and/or extents such as but not limited to: utility poles, toe of slope, toe and crest of rip rap for each Rsize, crest (rounding) of shoulder, guardrail, edge of pavement, traffic lane lines, and road centerline.

New bridge features to be identified and as-built surveyed include primary construction types and visual changes and/or extents such as but not limited to: all structures' top crown at inlet and outlet, all structures' inlet and outlet inverts.

As-built drawings shall also include a separate plan view indicating all precast structure units with each unit identified with their respective cast date. This plan view shall also indicate plan orientation such as but not limited to direction to adjacent communities, upstream/downstream, etc.

All surveyed elements to be clearly identified on the drawing file via use of piece marks, tabulated data, CAD layers complete with visually identifiable colors and line types.

Note for scope of work beyond the bridge site's Farmington limit, the Department will provide and pay for survey service.

50. BID ITEM # 136261 - GABION BASKETS: REMOVE

The lump sum price for this item shall be full compensation for the provision of all labour, materials, and equipment required to remove and handle existing gabion baskets as identified by the Department, empty out all rock and stockpile rock on site, place all rock from the stockpile to areas throughout this site as part of this project, and dispose of off site the associated emptied baskets.

51. SIGNAGE

The Contractor shall be responsible for the supply, fabrication, secure placement on site, and any periodic maintenance / repositioning / keeping upright / covering over when warranted of traffic signage required for communicating to the travelling public the presence of a construction site and traffic control persons (to be used during the turning of trucks and equipment on the open portion of the road during entry and exit to and from the site) and the channelization of the roadway. All signage shall be in accordance with the Prince Edward Island Temporary Workplace Traffic Control Manual (latest edition).

Submit type of signage and associated locations (plan dimensions relative to each other, traffic control personnel, and bridge abutments) to the Department for review prior to sign fabrication. Refer to Section 908 of the General Provisions and Contract Specifications for further details. This item shall have no cost line item and shall be considered incidental to the project. No additional costs shall be entertained for this item.

Note the size, and color (fluorescent orange), of the signs as indicated in the Prince Edward Island Temporary Workplace Traffic Control Manual (latest edition). The fluorescent orange color requirement has been phased in, and will now be implemented by the Department.

The Department will be supplying and maintaining signage related to the channelization of traffic.

All energy powered control devices (and associated equipment) related to the channelization of traffic shall be supplied (including energy supply, hookup, and decommissioning) and maintained by the Department.

52. MEETINGS

The Contractor shall make himself available for meetings with local utilities, local authorities, and the Department representatives for an initial start-up meeting prior to construction to discuss environmental controls, the sequence of construction relative to environmental controls, site safety, schedule, temporary utility locations, traffic control plan, and any other pertinent issues related to the project. This shall be considered incidental to the project. No additional costs shall be entertained for this item.

The Contractor shall also make available his lead construction manager and site superintendent for periodic site meetings to be held throughout the construction time frame. Note that the purpose of the meetings is to discuss relevant issues with the Department, DFO, etc, and not for the Contractor to discuss internal issues nor issues with his sub-contractors, suppliers, etc.. Frequency of meetings will be maximum weekly during initial project stages, and biweekly throughout the remainder of project. This shall be considered incidental to the project. No additional costs shall be entertained for this item.

SCHEDULE B

IDENTIFICATION OF PRINCIPALS

Name of Contractor:

Mailing Address:

Telephone:

Fax:

Principal's Name:

Title:

Mailing Address:

If Contractor is a corporation, indicate in which province of Canada is the corporation registered:

Department of Transportation Infrastucture & Energy
Province of Prince Edward Island

Schedule C
schedule of item for tender

Item Description and Price			Estimated Quantity	Contractor Total Price
CLEARING				
Section: 201 Item: 20101				
		PER ha		
	$	PER ha	.20 $	
	100			
GRUBBING				
Section: 202 Item: 20201				
		PER ha		
	$	PER ha	.20 $	
	100			
EXCAVATION: MUCK				
Section: 203 Item: 20302				
		PER M3		
	$	PER M3	50.00 $	
	100			
EXCAV:EARTH SURPLUS/SUITABLE				
Section: 203 Item: 20306				
		PER M3		
	$	PER M3	1,500.00 $	
	100			
EXCAVATION: EARTH WASTE				
Section: 203 Item: 20307				
		PER M3		
	$	PER M3	3,500.00 $	
	100			
EXCAVATION: PAVEMENT				
Section: 203 Item: 20316				
		PER Square Metr		
	$	PER M2	300.00 $	
	100			

Total Carried Forward $ _____
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Item Description and Price				Estimated Quantity	Contractor Total Price
BORROW: COMMON					
Section: 206	Item: 20601				
			PER Tonnes		
	$		PER Tonnes	7,000.00 $	
		100			
BORROW: SELECT					
Section: 206	Item: 20602				
			PER Tonnes		
	$		PER Tonnes	2,000.00 $	
		100			
GRANULAR BASE: A					
Section: 207	Item: 20701				
			PER Tonnes		
	$		PER Tonnes	1,100.00 $	
		100			
CLASS D GRAVEL					
Section: 207	Item: 20709				
			PER Tonnes		
	$		PER Tonnes	100.00 $	
		100			
FINE GRADING					
Section: 208	Item: 20801				
			PER Square Metr		
	$		PER M2	2,000.00 $	
		100			
TOPSOIL: LANDSCAPING					
Section: 212	Item: 21201				
			PER Tonnes		
	$		PER Tonnes	200.00 $	
		100			

Total Carried Forward $ _____
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Item Description and Price			Estimated Quantity	Contractor Total Price
RANDOM RIP-RAP: R5				
Section: 213 Item: 21301				
		PER Tonnes		
	$	PER Tonnes	100.00 $	
	100			
RANDOM RIP-RAP: R50				
Section: 213 Item: 21303				
		PER Tonnes		
	$	PER Tonnes	50.00 $	
	100			
RANDOM RIP-RAP: R100				
Section: 213 Item: 21304				
		PER Tonnes		
	$	PER Tonnes	50.00 $	
	100			
FILTER FABRIC				
Section: 218 Item: 21801				
		PER Square Metr		
	$	PER M2	1,200.00 $	
	100			
BEDDING MATERIAL: A				
Section: 220 Item: 22001				
		PER Tonnes		
	$	PER Tonnes	45.00 $	
	100			
ASPHALT CEMENT				
Section: 501 Item: 50101				
		PER Tonnes		
	$	PER Tonnes	116.00 $	
	100			

Total Carried Forward $ _____
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Item Description and Price				Estimated Quantity	Contractor Total Price
SURCHARGE FOR POLYMER LIQUID ASPHALT					
Section: 501 Item: 50109					
			PER Tonnes		
	$		PER Tonnes	82.00 $	
		100			
TACK COAT					
Section: 601 Item: 60101					
			PER Square Metr		
	$		PER M2	13,800.00 $	
		100			
ASPHALT BASE: A					
Section: 603 Item: 60301					
			PER Tonnes		
	$		PER Tonnes	500.00 $	
		100			
ASPHALT PATCHING: B					
Section: 603 Item: 60332					
			PER Tonnes		
	$		PER Tonnes	25.00 $	
		100			
ASPHALT SEAL: B					
Section: 603 Item: 60350					
			PER Tonnes		
	$		PER Tonnes	1,300.00 $	
		100			
HMA DRIVEWAY MIX					
Section: 610 Item: 61003					
			PER Tonnes		
	$		PER Tonnes	15.00 $	
		100			

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Schedule C
schedule of item for tender

Item Description and Price			Estimated Quantity	Contractor Total Price
COLD PLANE & ST'PILE				
Section: 704 Item: 70405				
		PER Square Metr		
	$	PER M2	1,500.00 $	
	100			
COLD PLANE CONST. JOINT				
Section: 705 Item: 70501				
		PER Square Metr		
	$	PER M2	610.00 $	
	100			
CUTTING PAVEMENT				
Section: 710 Item: 71001				
		PER Metres		
	$	PER M	145.00 $	
	100			
RAP: SHOULDER MATERIAL				
Section: 712 Item: 71201				
		PER Square Metr		
	$	PER M2	8,800.00 $	
	100			
CURB REMOVAL				
Section: 714 Item: 71401				
		PER Metres		
	$	PER M	90.00 $	
	100			
HYDROSEEDING				
Section: 803 Item: 80302				
		PER Square Metr		
	$	PER M2	1,150.00 $	
	100			

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Total Carried Forward $

Department of Transportation Infrastucture & Energy
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Schedule C
schedule of item for tender

Item Description and Price			Estimated Quantity	Contractor Total Price
ENVIROMENTAL CONTROLS				
Section: 820 Item: 82100				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			
SIGNALLERS				
Section: 901 Item: 90101				
		PER hrs		
Twenty-One Dollars and 78 Cents	$ 21.78	PER hrs	920.00 $	20,037.60
	100			
FLEXBEAM GUIDERAIL: ERECT				
Section: 903 Item: 90301				
		PER Metres		
	$	PER M	120.00 $	
	100			
TEMPORARY OVERLAY MARKERS (TOMS)				
Section: 905 Item: 90506				
		PER unit		
	$	PER unit	60.00 $	
	100			
TRAFFIC CONTROL PLAN				
Section: 908 Item: 90802				
		PER hrs		
Thirty Dollars and 00 Cents	$ 30.00	PER hrs	200.00 $	6,000.00
	100			
TRAFFIC CONTROL DEVICES				
Section: 908 Item: 90803				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			

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Total Carried Forward $

Department of Transportation Infrastucture & Energy
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Schedule C
schedule of item for tender

Item Description and Price			Estimated Quantity	Contractor Total Price
SEMI-MOUNTABLE CURB				
Section: 1102 Item: 110203				
		PER Metres		
	$	PER M	90.00 $	
	100			
INSTALL CONCRETE PIPE CULVERT				
Section: 1305 Item: 130503				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			
INSTALL HDPE STRUCTURE				
Section: 1305 Item: 130510				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			
SITEWORK DEMOLITION & REM				
Section: 1308 Item: 130812				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			
CONCRETE BARRIERS				
Section: 1308 Item: 130831				
		PER unit		
	$	PER unit	100.00 $	
	100			
GENERAL MOBILIZATION\DEMOBILIZATION				
Section: 1308 Item: 130876				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			

Total Carried Forward $ _____
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Schedule C
schedule of item for tender

Item Description and Price			Estimated Quantity	Contractor Total Price
BACKFILLING CONCRETE STRUCTURE/CLAS				
Section: 1310 Item: 131056				
		PER Tonnes		
	$	PER Tonnes	1,000.00 $	
	100			
PROJECT LAYOUT				
Section: 1351 Item: 135101				
		PER L.S.		
	$	PER L.S.	1.00 $	
	100			

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Total Carried Forward $

HST $

Grand Total $

SCHEDULE D

SCHEDULE OF EQUIPMENT TO BE USED ON THE WORK

SCHEDULE E

SCHEDULE OF SUB-CONTRACTORS

SCHEDULE F

APPENDED ITEMS

ADDENDUMS

GENERAL PROVISIONS and CONTRACT SPECIFICATIONS for HIGHWAY CONSTRUCTION

Contractor's Hazard Assessment Form

Pre-Construction Contractor Safety Checklist Form

Contractor's Safety Statement Form

Daily Traffic Control Checklist

Construction Association of PEI – 'Pandemic Planning for the Construction Industry – a Guide'

Harbourside Geotechnical Investigation Report

Department Design Drawings S1 to S15 inclusive

Environmental Permit Drawing E1

CONTRACTOR'S HAZARD ASSESSMENT FORM

Hazard Assessments shall be regularly completed by the Project Manager or Designate. **All** Employees, Subcontractors, and Visitors ***Shall*** be advised of all hazards noted and shall also be advised of any hazards that develop during the project.

Job Location: _____ **Job Contractor:** _____

Project Manager: _____ **Job Foreman:** _____

Administration Checklist	**Circle**	**Correction Date if "NO"**	**Generic Hazard Identification**	**Circle**	**Correction Date if "NO"**
OH&S Act on Site:	Y N		Hydro/Phone Lines:	Y N N/A	
Construction & Safety Regs on Site	Y N		Underground Cables/Pipe:	Y N N/A	
Other Application Job Regs on Site	Y N		**Overhead Hazards:**	**Y N N/A**	
Employees Trained as Per Regs:	Y N		**Water Hazards:**	**Y N N/A**	
Employees Orientation Completed:	Y N		**Applicable Signage in Place:**	**Y N N/A**	

Identified Hazard	**Priority**	**Required Corrective Action**	**Completed By**	**Date & Initial**

Priority System: ***A*** **- Correct Immediately** ***B*** **- Correct within 24 hours** ***C*** **- Correct within 3 days**

Other Hazards/ Considerations:

Comments:

Completed By:(Print) _____ Signature: _____ Date: _____

Corrective Action:

This Hazard Assessment has been reviewed by the Contractor's Safety Representative. It has been verified by the Contractors Project Manager and the Job Foreman that corrective action has been taken according to priority.

Completed By: (Print) _____ Signature: _____ Date: _____

CONTRACTOR SAFETY CHECKLIST

Use this text as a guideline for completing the attached checklist. This checklist is a general, *pre-construction* review of the contractor safety program, as well as an information session to identify what the P.E.I. Department of Transportation and Infrastructure Renewal (TIR) requires of our contractors. Where the item requires a submission, ensure that it is received. If the item does not apply, enter N/A for not applicable.

The following information will assist you in establishing what will be reviewed in each section.

1. ***Safety Policy:*** Each employer is required by law to have a safety policy and program. TIR will ask for and may require a copy of that policy and program.

2. ***Safety Representative:*** Each contractor is required to advise TIR who their safety representative is. That representative has duties as described in the Occupational Health and Safety Act.

3. ***Emergency Procedure:*** Each contractor must have a site specific layout and emergency plan complete with emergency phone numbers.

4. ***Employee Orientation:*** Each and every person working for a contractor, including sub-contractors, will be given an orientation to familiarize them with the site safety program. Unless otherwise specified, each sub-contractor is responsible for the orientation of their workers.

5. ***Safe Work Plan:*** Most contractors are involved in tasks that subject workers to hazards. In order to ensure that these workers are secured from hazard, the contractor will supply TIR with a written safe work plan which affords protection against the hazards. This plan must be signed by a company representative and communicated to the workers involved in the task.

6. ***Personal Protective Equipment Review:*** Advise that all workers require CSA Class "B" hard-hat, CSA Grade 1,"Green patch", (eight inch) footwear, and eye, ear, and respiratory protection as required (boots and hat at all times).

7. ***Fall Protection:*** Fall restraint or fall arrest protection required where a fall of more than 2.4 meters is possible. **NO EXCEPTIONS.**

8. ***Housekeeping:*** Advise of daily, or as needed, clean-up requirements.

9. ***Tool Box Talks:*** Each contractor is required to conduct weekly safety meetings with their forces and advise TIR they have been done.

10. ***Material Handling/Storage:*** Advise contractor about storage areas and handling of material so as not to endanger their worker or another worker. Stacked material to be banded, chained, blocked, or otherwise secured.

11. ***Landing Platforms:*** Advise contractor about movement of material on or off platforms. All material to be secured. Platform gates or chains to be kept closed at all times workers are on platform. If not possible, worker to be tied off with fall restraint system independent of platform.

12. ***WHMIS Training:*** Receive verification that all contractor workers are trained and that the contractor submits the MSDS for chemicals on site.

13. ***GFCI:*** Advise contractor that all tools are required to have ground fault circuit interrupters (where electricity is supplied by contractor).

14. ***Accident Investigations:*** Any injury to any of their workers must be investigated and reported to TIR.

15. ***Verbal, Written, Gone:*** Explain Safety Tolerance Program.

16. ***Joint/Worker Safety Committee:*** Sites of over 20 workers must establish a safety committee; over 50, an additional worker committee. Workers required to attend committee meetings will do so and not be prevented by employers.

17. ***Fire Protection:*** All trades involved in performing hot work of any kind are required to provide fire protection at the work location.

18. ***Guardrails:*** Advise contractors that where temporary removal of guardrails is necessary, the area around them must be cordoned off with a barrier. Guardrails must be replaced as soon as possible.

19. ***First Aider:*** Each contractor is required to have a first aid kit and trained first aider. Employer must name their first aider.

20. ***Visitors:*** Advise contractor that any visitors to site must be suitably protected from hazard. They must wear hard hat, safety vest, and proper safety footwear while on site.

21. ***Task Lighting:*** Review responsibilities of task specific lighting (who provides it).

22. ***Swamper/Riggers Competency:*** Where cranes are used, the contractor must use a swamper/rigger. They shall provide TIR with a written statement identifying, by name(s), their rigger and that the named person is a competent worker as described in the construction regulations.

23. ***Scaffolds:*** Review scaffold building requirement:
    - ☞ Use all braces required by design.
    - ☞ Access ladder for platform over 1.5 meters.
    - ☞ Full width platform if height over ten feet. (PEI Regulations require double planks)
    - ☞ Full guardrails and toeboards.
    - ☞ Tied in three times base dimension or use of outriggers.
    - ☞ Engineered over 50 feet in height (standard frame type).

24. ***Elevating Work Platforms:***
    - ☞ All boom and scissors lifts required to be CSA approved and have approval on machine.
    - ☞ Operators manual required on machine at all times.
    - ☞ Maintenance record on machine at all times.
    - ☞ Operator must receive training in operation of equipment.
    - ☞ Fall protection must be used at all times on a boom lift.
    - ☞ Fall protection required to be used on scissors lift when unit is being moved.

25. ***Protruding Rebar:*** Installers of reinforcing steel must protect the protruding hazard or make arrangements to have it protected. Removal of protective coverings for task purposes only is allowed, however, protective covering must be replaced as soon as possible.

26. ***WCB Clearance Certificates:*** Advise contractor that TIR will not release any funds for payment until Workers Compensation Board Clearance Certificate has been received by TIR.

PRE-CONSTRUCTION CONTRACTOR SAFETY CHECKLIST

PROJECT: _____ DATE: _____ CONTRACTOR: _____
WORK BEING PERFORMED: _____

Print Name _____
Project Manager/Inspector

(Sign) _____

Print Name _____
Contractor Representative

(Sign) _____

✓ Means Yes ☒ Means No N/A Not Applicable

1. Safety Policy Submitted	☐	13. GFCI Requirements	☐
2. Safety Representative	☐	14. Accident/Incident Investigations Notification	☐
3. Emergency Procedure Review	☐	15. Verbal, Written, Gone	☐
4. Employee Orientation	☐	16. Joint/Worker Safety Committee	☐
5. Written Safe Work Plan Submitted	☐	17. Fire Protection	☐
6. Personal Protective Equipment Review • Hard Hats & Footwear • Safety Glasses • Hearing • Dust & Fumes	☐	18. Guardrails 19. First Aider on Staff - Name Supplied 20. Visitors & Safety Equip.	☐ ☐ ☐
7. Fall Protection	☐	21. Task Lighting	☐
8. Housekeeping	☐	22. Swampers/Riggers Competency (in writing)	☐
9. Tool Box Safety Talks (Weekly)	☐	23. Scaffolds	☐
10. Material Handling/Storage	☐	24. Elevating Work Platforms	☐
11. Landing Platforms	☐	25. Protruding Rebar Protection	☐
12. WHMIS Training Verification - MSDS Received	☐	26. WCB Clearance Certificate	☐

CONTRACTOR'S SAFETY STATEMENT

This form shall be completed in full by the Contractor, and submitted to the Department for review, prior to the Contractor mobilizing on site. This document shall be applicable for all equipment and workers whether under the direct operation/direction of the Contractor, or a Subcontractor.

PROJECT:

CONTRACTOR:

DATE:

SAFETY STATEMENT:

1. All equipment to be used for this project has been and will be safety maintained and is safe for use.
2. All workers have and will be safety trained to perform work activities for this project.
3. All personal protective equipment used for this project meets latest CSA Standards.

_____

Signature

_____

Print

DAILY TRAFFIC CONTROL CHECKLIST

This form shall be completed twice by the Project's Traffic Control Manager for each work day; prior to mobilizing equipment or work personnel on site, and after demobilizing equipment or work personnel on site. After the Traffic Control Manager completes this form at the start and end of each work day, this form shall then be signed by the Department's on-site data collector, prior to mobilizing and after demobilizing.

Project: **Date:**
Contractor: **Guide:**

Traffic Control Manager (Print):
Data Collector (Print):

Traffic Control Personnel

Name	Certificate #	Name	Certificate #

Prior to Mobilizing

All Signs Present and Securely in Position	yes	no
All Signs Facing Traffic	yes	no
Two Flags Present and Secure on Signs Requiring Flags	yes	no
Signs Covered During Previous Night are Uncovered and Exposed to View	yes	no
Traffic Control Manager (Signature):		
Data Collector (Signature):		

After Demobilizing:

Applicable Signs Removed	yes	no
Applicable Sign Covered	yes	no
Two Flags Removed from Signs Requiring Flags	yes	no
Traffic Control Manager (Signature):		
Data Collector (Signature):		

All checklist forms for each week to be submitted to the Department

Construction Association of Prince Edward Island

PANDEMIC PLANNING FOR THE CONSTRUCTION INDUSTRY – A GUIDE.

March 25th, 2020

INTRODUCTION.

At the beginning of last week, it was obvious to many of us that we were moving into unknown territory and, from a safety and health perspective, we as an industry were going to have to develop new protocols and best practices for our new reality.

Many organizations in our industry do not have internal resources to create such content while other larger organizations do. In a display of community leadership many of these larger organizations have been willing to share their various approaches over the last week as a way of helping to get the best information into as many sets of hands as possible to ensure that our industry has a strong response.

As we as an industry approach the current situation and attempt to maintain business continuity, we have gathered some of the best practices.

Please note that the following is provided merely as a guide and as stated above, it is based on collective policies and practices that are being followed by a number of General and Trade Contractors in Prince Edward Island.

We hope that by sharing this information our industry will be able to respond consistently and quickly to the Pandemic. These practices can be used, built on or amended as you see fit. We intend to keep updating this document as more information becomes available.

Our experts in safety and site management are the best in the world and with the right tools will be able meet these new challenges and the ones that lie ahead.

Please direct all questions or comments on this document to:

Sam Sanderson
General Manager
Construction Association of PEI

902-368-3303
sam@capei.ca

How COVID-19 is transmitted: overall guidance for protecting yourself and others

On all construction sites, either as a sub or prime contractor, you must do everything possible to follow the advice of Health Officials.

The following is a general overview of how COVID-19 is transmitted. It is provided merely for background and to inform strategies aimed at implementing the rules set out in the balance of this document. Full details on these issues should be obtained from the Centers for Disease Control and Prevention, Health Canada and the World Health Organization, or a medical professional.

- The virus is thought to spread through respiratory droplets. Respiratory droplets may be produced through a cough, a sneeze, normal breath or conversation.
- These respiratory droplets may cause viral transmission from person to person when individuals are near one another. Recent guidelines from the U.S. Department of Labor provide further guidance and recommend that individuals should avoid working less than six feet from others for prolonged periods.
- The respiratory droplets may also land on clothing or other objects. It may be possible for an individual to contract COVID-19 by first touching a surface or object that has the virus on it and then touching their own mouth, nose or possibly their eyes.

These general principles should be considered when applying the practices outlined in this document.

GENERAL PRINCIPLES.
Your Health and Protecting Others.

Active participation is critical as this is a work in progress which is new territory for us all. It will be a team effort across industry so do please share any ideas or suggestions that can make it safer and contact your supervisor or HSE Manager promptly. If you have questions or concerns, please direct them to your supervisor. The goal is to provide a safe workplace, if any person has a safety concern then sharing these is extremely important.

Adherence to safety procedures is necessary as safety and health is our principle concern. Contractors and workers who do not comply with these procedures may be asked to leave the site and not permitted to return until the current situation is less acute. At the end of the day risky behavior on the part of one puts all of us in jeopardy.

Prevention procedures should be based on health monitoring, social distancing, hand hygiene, cleaning and disinfecting as well as contractor and project specific procedures to prevent the transmission of COIVD-19 to workers on a project

Social Distancing

Social distancing is a technique to prevent the spread of COVID-19 by limiting close contact with others. The Public Health Authority recommends keeping a distance of 2 meters (6 ft.) from each other.

All workers shall observe social distancing. Social distancing measures include:

- limiting groups of workers coming together in orientation, lunch and meeting rooms, tool cribs, change rooms, smoking areas, etc.
- preventing workers from congregating at the entrance to the: project, hoist, stair wells, scaffolding, washroom facilities, etc.
- restricting access to occupied work areas like trailer offices, etc.
- controlling traffic patterns – where practicable designate only up and only down stairwells or in / out gates, this avoids the potential for workers to pass each other within the social distancing space.

Contractors are required to:

- communicate and reinforce **self-distancing** practices with their workers
- conduct regular inspections of their worker areas to verify that workers are practicing social distancing, to the best of their ability
- notify us of any concerns they have for social distancing practices or work procedures

Informational signage, warning workers of the importance of **self-distancing** will be installed at locations on the project were there is a potential for workers to congregate. We will conduct regular inspections of the project to verify that workers are observing social distancing.

Hand Washing and Hand Sanitization

Hand washing minimizes the risk of infection. Proper hand washing helps prevent the transfer of infectious material from the hands to other parts of the body—particularly the eyes, nose, and mouth—or to other surfaces that are touched. Hands that are visibly soiled or dirty should be washed with soap and water - hand sanitizer is less effective on soiled or dirty hands.

Workers are required to wash or sanitize their hands:

- at the start of their shift and before they start work
- before eating, drinking or smoking
- after using the toilet facilities
- after handling any tools or materials that may be contaminated
- at the end of the shift before they leave work

We will provide or make available hand washing and hand sanitization facilities to meet the needs of the volume of workers at the project.

Informational signage, describing proper hand washing and hand sanitization techniques will be posted at hand washing and hand sanitization facilities.

Cough / Sneeze Etiquette

Workers are expected to follow cough/sneeze etiquette, which is a combination of measures that minimizes the transmission of diseases via droplet or airborne routes. Cough/sneeze etiquette includes the following:

- Cover your mouth and nose with a sleeve or tissue when coughing or sneezing.
- Use tissues to contain secretions and dispose of them promptly in a waste container.
- Turn your head away from others when coughing or sneezing.
- Wash hands regularly.

Self-Awareness

If you are exhibiting flu-like symptoms such as fever, coughing or congestion: **Do not come to work**;

- Contact your supervisor and your Human Resources department to let them know that you are exhibiting the symptoms; and
- Consult with a healthcare professional on next steps before returning to work.

The response to the COVID-19 virus continues to change on a regular basis. All parties are required to meet current requirements and be adaptable to new initiatives when required.

Three Basic Rights of Every Worker

1. To know about existing and potential hazards.

2. To participate in making the workplace safe and healthy by being a Health & Safety Representative, a member of the JOSH Committee, or consulting with the employer, supervisor, JOSH Committee, or representative.

3. To refuse unsafe work.

   If a worker believes that a task or situation is dangerous, they must report the concern to a supervisor immediately. The worker must also go to a safe place at the workplace. The employer may have the worker do other work.

   The supervisor must investigate promptly, with the worker present.
   - If the supervisor finds the work unsafe, the employer must fix the problem before work can continue.
   - If the supervisor believes the task is safe, and the worker still feels unsafe, the worker must report the concern to the JOSH Committee or Health & Safety Representative.
   - The supervisor can ask another worker to do the job but must inform the other person about the work refusal reasons.
   - Important Note: A concerned worker is not to leave the sight. All workers should bring their concerns to their supervisor, to give the supervisor an opportunity to assign them to a different task if they feel unsafe. A work refusal concern can't be investigated if these first few vital steps are not followed.

The JOSH Committee or Health & Safety Representative must investigate the situation.

- If they agree with the refusal, JOSH Committee or Health & Safety Representative will recommend that the employer fix the problem.

- If they disagree, the JOSH Committee or Health & Safety Representative will advise the worker to return to work.

If the JOSH Committee or Health & Safety Representative is unsure or does not agree, they should consult standards, review procedures, or call an expert to help with the decision.

If the worker still feels unsafe and the problem is not resolved to their satisfaction, they can call the WCB Occupational Health and Safety Division at 902-368-5680 or toll-free in Atlantic Canada at 1-800-237-5049. Outside of normal working hours, they can call the 24-hour emergency number at 902-628-7513.

If the worker follows the process, an OHS Officer will investigate the concern. The OHS Officer will issue an order to the employer to correct the situation or advise the worker to return to work.

The OHS Act protects a worker's right to refuse unsafe work. The protection lasts up to the point where the OHS Officer advises the worker to return to work.

The OHS Act further protects a worker from discriminatory action by the employer. When a worker complies with and/or seeks enforcement of the OHS Act and its Regulations, they cannot be discriminated against, intimidated or coerced. If the worker does feel discriminated against, intimidated or coerced, they may file a complaint with the WCB by stating the nature of the complaint in writing to the WCB Director of OHS. The complaint will be sent to arbitration where there is a collective agreement or where the WCB Director of OHS finds it appropriate.

PANDEMIC PLANNING FOR WORKSITES:

Some of the following measures will be subject to site size and complexity.

COVID Safety Coordinator

At each appropriate worksite it is recommended to appoint one or more employees responsible to be the COVID Safety Coordinator (CSC). Should the site size be such that this is not feasible then the CSC function will be conducted by the site superintendent.

The CSC will:

- Review and assess Contractor COVID Prevention Procedures.
- Conduct regular inspections of the worksite to monitor adherence to COVID Prevention Procedures and record inspection findings.
- Review and store Health Questionnaires in accordance with privacy considerations.
- Document Contractor attendance issues.
- Monitor cleaning to verify that approved products and procedures are being followed.

- Inspect wash stations and hand sanitization stations to verify that they are adequately stocked and posters explaining hand washing and hand sanitization are posted.
- Post and inspect other signage to verify that it is located in correct location and in good order.
- Verify that First Aid Attendants have the necessary safety equipment and are using it correctly.
- Investigating any reports of workers that are not complying with procedures or concerns for workers health. Coordinate with our Superintendent and Contractors Supervisor / Contractors CSC.
- Refer any issues or concerns to Project Superintendent and HSE Manager.
- Immediately report and investigate presumed and confirmed cases of COVID – 19 with the assistance of Superintendent and HSE Manger.
- Review and instruct project staff in this procedure and other COVID-19 documentation.
- Monitor this procedure and other documents for updates and assist Project Supervision in disseminating that information to Contractors and workers.

Trade Contractors are required to appoint someone at each site responsible for monitoring their workers for compliance with their COVID prevention procedures and site COVID Prevention Procedures. This may be a foreman or senior site management. The Contractors CSC must spend a significant amount of their time monitoring workers by greeting and organizing them when they arrive to work, inspecting their work areas, monitoring their health, informing their workers of any changes to procedures and liaising with us and their companies management responsible for COVID prevention.

Contractors will provide the name and cell phone of their CSC to the on-site CSC.

Contractor COVID – 19 Prevention Procedures

Contractors are required to forward copies of their procedures to prevent the transmission of COVID – 19. Contractors must identify which tasks may be impacted by social distancing restrictions and implement mitigation measures. for example:

- site orientations
- training
- tasks that involve two or more workers to work in close proximity. i.e. Carrying pipe or drywall
- restricted work locations where there is insufficient space to maintain social distancing i.e. cab of a vehicle or small room

Contractors must identify tasks where there is a potential for transmission through shared use of PPE, tools and equipment and implement mitigation measures. For example:

- PPE – face shields at cutting stations, fall protection ropes and lanyards, etc.
- tools – hand saws, chop saws, grinders, vacuums, etc.
- equipment – aerial work platforms, forklifts, power trowels, etc.

Where Contractors are responsible for cleaning and disinfecting, they are required to provide two copies of cleaning product information and cleaning procedures for review to verify that they can prevent the transmission of COVID – 19.

Contractors are responsible for reviewing the procedures and implementing practices that prevent the transmission of COVID -19 for the subtrades working for them.

Contractors may be required to appoint a CSC at each work location.

If Contractors have not provided COVID – 19 Prevention Procedures, they may not be allowed to work on this project.

Health Verification of Workers and Visitors

The health and well-being of workers and visitors is paramount. To protect workers and visitors and provide a safe and healthy workplace there is an increased responsibility on Contractor supervisors and supervisors to be vigilant and that includes monitoring for symptoms of COVID19.

Workers and visitors who are exhibiting symptoms of COVID 19 or are otherwise recommended to be in self-isolation or self-quarantine in accordance with recommendations of the Public Health Authority are not permitted on projects.

1. Any workers or visitors intending to access the site must complete a Health Questionnaire (***see Appendix A***). The purpose of the questionnaire is to verify that workers are free, to the best of their knowledge, of COVID-19 symptoms and related restrictions in accordance with Public Health Authority recommendations.
2. Contractors supervisors must provide each day an attendance list of workers by name and phone contact – electronically. In the event that there is a COVID issue later this information will be especially helpful in identifying potential exposures. Attendance lists to be stored in accordance with privacy considerations.

3. Contractor supervisors are required to verify**, at start of shift**, that their workers are healthy, fit for work and to the best of their knowledge, free of any symptoms or restrictions associated with COVID-19 in accordance with the Health Questionnaire and recommendations of the Public Health Authority.

4. Contractors must provide an update on their workers' health to CSC **at start of shift**. If there are any significant changes in attendance or health concerns notify HSE Manager and document in Contractor Tracker.

5. Contractor supervisors are required to verify**, at end of shift**, that their workers healthy, fit for work and to the best of their knowledge, free of any symptoms or restrictions associated with COVID-19 in accordance with the Health Questionnaire and recommendations of the Public Health Authority.

6. Contractors must provide an update on their workers' health to the CSC **at end of shift.** If there are any significant changes in attendance or health concerns notify HSE Manager and document in Contractor Tracker.

Site Access:

- Post signs at all site entrances that say, "Site Sign in/out by texting Supervisor at _____".
- Site supervisor to update sign-in log regularly throughout the day to know who is at site.
- All site orientations to be done verbally without signature outside the job shack.
- No transfer of papers. Site supervisor to sign on their behalf.

Site Meetings:

- Job toolbox meetings to be held outside, with appropriate social distancing or have people call in. No signatures or transfer of documents. Site Supervisor signs on their behalf.
- Hazard assessment's and other paper submission documents boxes to be moved outside with two boxes – Documents can be retrieved 24 hours later.
- When arranging necessary inspections from consultants or authorities having jurisdiction, indicate to them they will not be allowed to visit our site if they are showing any signs of being sick.
- In person meetings must have no more than 10 people in attendance
- Consider conference / skype calls to reduce the number of attendees
- All non-essential events are canceled or postponed (e.g. site barbeques);
- Large job shacks limited to maximum 5 people and small job shacks limited to maximum 3 people. Social distancing required.
- Site constraints are based on site size using appropriate social distancing. Suggested guidelines are no more than 3 or 4 people working in 1000 sq. ft. of space, or 10 people working in 10,000 sq. ft. Examples and exceptions:
    - Tradespeople working in teams to do work (Carpenter and Apprentice) must know each other well enough to be sure of the proximity risk of working together.
    - For larger groups working together (concrete placement crews) who cannot manage social distancing to do their work must have a conversation with the Safety Advisor and the Project Team to ensure we can proceed with the work safely. Crews that work together all the time will have a lower risk than hastily assembled crews.
- Workers at sites should avoid working less than six feet from others for prolonged periods unless their role requires prolonged closer proximity. Case specific risks and solutions will be assessed by the workers employer for those individuals required by their roles to work within these close proximities;
- Individuals should utilize technologies available to them such as email, text and teleconferencing to minimize direct contact with others;

- The number of people allowed in the hoist at the same time will be reduced to avoid crowding
- Project teams should stagger break and lunch schedules to minimize the number of people near one another;
- Project teams may also consider staggering start / finish times aimed at reducing large group wait times at the gates and the hoists;
- Meetings should be held in the area where an individual works, instead of a large gathering point;
- For all remaining in person gatherings, and in work environments in general, participants should exercise recommended practices for reducing the risk of transmission as identified by the Centers for Disease Control and Prevention, Health Canada and the World Health Organization.

Jobsite Sanitation Measures:

- As hand sanitizer is becoming a scarce commodity Contractors are making immediate arrangements to construct temporary sinks / handwash areas with hand soap, paper towels and garbage cans. The locations will be at various high-traffic locations.
- Each subcontractor is responsible for providing hand sanitizer for their worker's needs.
- Each subcontractor remains responsible for cleanliness in their lunchrooms.
- Each subcontractor remains responsible to provide PPE, noting that glove use is mandatory at CCC.
- Each subcontractor is responsible for disinfecting shared tools, iPads, etc. between uses.

Cleaning and Disinfecting:

Conduct routine daily cleaning of hard non-porous surfaces throughout construction sites including: site office trailers, lunchrooms, orientation and meeting rooms, first aid rooms, stair railings, scaffold stair railings, portable toilets, elevator/hoist and equipment controls. Routine cleaning will be completed according to our Safe Work Procedure: Surface Cleaning for Potential **Virus Contamination:**

In the event there is a presumptive case for COVID – 19, present on site, we isolate and clean work areas / surfaces that may have been contaminated. In the event a confirmed case of COVID-19 was present on site, close the site and employ a specialized biohazard remediation, abatement company will professionally disinfect the contaminated areas.

All cleaning products and procedures from Contractor and Cleaning Services used on Projects must be vetted by an Industrial Hygienist Consultant to verify that they are sufficient for disinfecting COVID-19. If products or procedures are deemed unreliable, they must be discontinued.

Wearing Gloves:

All workers must wear gloves in accordance with their SWP and rules. Wearing gloves, besides being a safety requirement reduces the likelihood of workers touching their eyes, nose or ears reducing the potential of transmission from contaminated surfaces.

Workers should replace their used gloves frequently with new gloves and launder used gloves, if practicable, with their work clothes to prevent them from becoming potential sources of transmission.

Project Orientation:

The current concerns for COVID -19 makes orientations especially important as a means of communicating with new workers the safety precautions that they must comply with for them to work on this site.

It is also a point for screening workers and asking them questions about their travels and health to verify that they are healthy and not in contravention of any Public Health Authority recommendations.

It is also a moment when we can reassure workers that our project is being managed for their safety, that we are taking COVID – 19 seriously and that the most important thing to us is their health and safety.

The following are changes to the orientation routine:

- **Where practical, move orientation outdoors and conduct a verbal orientation – reinforce social distancing.**
- If orientations are conducted in a room keep the door secure and post social distancing signage on the door to the orientation room to prevent workers from grouping outside or in the room and waiting. Disinfect used pens, tables, chairs and table after each use.
- Host multiple orientation sessions to avoid violating social distancing.

Before providing an orientation have workers and visitors complete the Health Questionnaire COVID-19 to verify that they are healthy and fit for work. Workers that are not permitted access according to the questionnaire must be turned away.

As part of the verbal orientation, review:

- what is social distancing of 2 M (6 ½ ft.)
- location of hand washing and hand sanitization stations and the frequency that they are expected to clean their hands.
- location of posters and other communications • site specific procedures for hoists, stairwells, etc.
- what we are doing at the site to promote a safe workplace and remind them that their health is important to us.
- the importance of reporting to their supervisor if they are feeling unwell and leaving the project.

Hoist Operation:

Hoists must be operated in accordance with social distancing requirements. Projects must operate the hoist in accordance with the following:

- Outside the hoist: Post signage and remind the workers to maintain social distancing 2 M (6 ½ ft) while they are waiting to enter the hoist.
- Inside the hoist: Maintain social distancing and reduce the number of passengers at any one time. If necessary, mark a space on the deck of the hoist where each worker is expected to stand.
- Load the passengers in order so that they don't need to pass each other in the hoist as they are exiting – this requires organization.
- Passengers to face the outside of the hoist to avoid being inside each other's breathing zone.
- Hoist Operator is permitted to wear a respiratory protection.
- Hoist surfaces (call buttons, door handles, etc.) that are routinely touched will be disinfected regularly. **Project Radio / Cellphone:**

Do not share communication devices. Because radios and cell phones are held close to the mouth to talk, they are a likely source for transmission.

Disinfect radios and cell phones at start of shift and regularly throughout the shift.

Stairwells / Scaffold Stair Towers:

If workers have only a single means of access to their work areas, they need to observe protocols to prevent them from violating the social distancing. Those may include:

- Calling out and communicating that they have entered the stair and are proceeding up / down and thus warn people to prevent them from entering the stairwell until they have passed.
- Staging outside stair entrances until it is clear for them to enter.
- Stopping outside the social distancing area if they are approaching another worker and discussing how they will pass while maintaining social distancing.

Project Offices/Trailers:

Project offices and trailers are off limits to people that do not belong in them. The close quarters in a trailer may be a challenge to maintain social distancing. Hold discussion outside where practicable. Make use of vacant offices / trailers to redistribute staff to limit contact. The following applies:

- Post "Restricted Access" signage on door with contact information (phone #).
- Keep the door locked to prevent access.

- Restrict the number of people who are allowed to enter these offices to social distancing allowances.
- If you are a visitor in an office or trailer - do not touch things - If possible, keep your hands in your pockets or to yourself. Disinfect anything touched by the visitor prior to use.
- Do not share keyboard or mouse, pens, clipboards or documents.
- Disinfect commonly touched items like door handles, chairs, tables, stair handrails, etc.

Lunchrooms:

Lunchrooms are places where there is a potential for people to come to contact with each other or contaminated surfaces. The following applies:

- Post social distancing signage to remind workers to keep their distance.
- Post signage to remind workers to wash or disinfect their hands before and after eating.
- Stagger coffee/lunch breaks to reduce the number of workers in the lunchroom at the same time.
- Organize chairs and stagger seating arrangement to maintain social distancing or take lunch and coffee outside
- Remove garbage often.
- Clean and disinfect tables, microwaves and other commonly handled items between worker s/ lunch shifts.
- If air circulation is a concern install negative air units and vent outside lunchroom.
- Separate PPE and clothing that is hung up in the lunchroom to avoid touching.
- Workers intending to take work clothing home should place it in a plastic bag and not remove it until it goes into the laundry to be washed – ideally separately.

First Aid Treatment:

Report workplace injuries to the First Aid Attendant (FAA). As a precaution the FAA will wear N95 mask or ½ mask respirator, face shield and medical gloves when treating workers. As part of the FAA injury assessment the FAA will reconfirm the status of the workers' health in accordance with the *Health Questionnaire* questions.

If workers are feeling unwell or exhibiting symptoms of COVID -19 They need to inform their Supervisor ASAP. If they are fit enough to leave the project and arrive home safely, they should go home and follow the Public Health Authorities instructions for reporting self - isolating and treatment.

If workers are travelling on public transit or in close contact with others to get to their homes and <u>if available,</u> we will provide sick workers with N95 masks to be worn by them to help prevent any transmission from the sick worker.

Other Options to Consider:

- Only one driver per vehicle or sanitize between drivers.
- Use only your own tools or sanitize between operators.
- Eat lunch alone, where possible in your vehicle, respecting social distance.

Safety Certificates etc:

- Ensure that you have all necessary staff and backup staff compliant for the next 6 months. There is no suggestion that rules around fall protection or first aid etc. are going to be altered.
- Certifications in general could become harder to obtain – get up to date now
- Authorities are being lenient due to the circumstances on expiry dates as they are aware that these certificates may not be readily obtained.
- This does not remove the employer's obligation to ensure that the workers are knowledgeable about and competent to do the tasks that they are assigned to do.

Training on Tools:

- Some sites are already experiencing 20- 50% loss of manpower. Check your crews to ensure you can still safely operate equipment and maintain workflow.

Shifts:

- Consider adjusting shifts to accommodate reduced density of crews and rotate availability of workers who may have challenges manage children that are now not in school or daycare.

OFFICE:

Social distancing:

- If possible, have a work from home strategy, move desks apart, sanitize your office regularly.
- Larger organization have split their office staff between home and office. This allows distancing in the office by reducing density and allows the ability to switch out people if someone gets sick.

Warning on your door:

- Do not allow delivery people in your office unless they have confirmed they are in good health.

External workers or visitors:

- Have them complete a statement saying they are in good health before allowing them access to your premises.

Work from Home Security:

- Working from home brings risks to your organization. Workers must respect strict security rules to ensure they don't introduce viruses to your system. With many homes having children/teenagers it is imperative that workers logout from your system **every time** they leave their computer.
- The risk of phishing or other attacks is on the increase as the hackers are literally seeking to exploit the situation

RISK MANAGEMENT

Steps if a Case is Suspected:

- If it is suspected that someone is sick in the Workplace: Ensure protection of workplace and provide good solutions for workers.
- "Sick" means coughing or sneezing more than explainable from dust or environmental issues. It could be the common cold or the flu, either way if there is a possibility that someone is sick, they should be sent home.
- If a trade partner is suspected as sick, send them home and notify their manager.
- If an employee who can work from home effectively is identified as sick, they will be
- sent home and use technology to continue to work.
- If an employee who cannot work from home effectively is identified as sick, they will be temporarily laid off so they can recover.
- Anyone who goes home as sick or is sent home as sick must follow current guidelines in respect of screening, testing or self-isolation

What to do with a confirmed COVID-19 case:

The projections show that 30-70% of the population may ultimately get this illness. All the measures being implemented are to slow the spread to ensure the medical system has the capacity to treat those who need it when they get it.

In the event of a confirmed case –

- Notify everyone by email as soon as it is confirmed. It is important to communicate well through this so you will be the first to know.
- Follow the guidelines provided by Health PEI.
- Research is showing the virus lasts max 72 hours without people so we would shut down the workplace for 72 hours. After we would go in and disinfect the hard surfaces like door handles to be sure, but it would be safe to continue work there.
- If we have a crew or entire worksite that is quarantined, we will quarantine them for 14 days, shut down the site for 72 hours and restart it as above with a substitute crew to keep work proceeding.

Other Business Considerations:

- We must work together to ensure job sites remain open. Strong leadership to fully comply with government mandates is imperative.
- Now is the time to review your active contracts to ensure you understand payment terms and what could impact them.
- Understand your insurance coverage.
- Ensure that you understand the HR implications of any layoffs or absenteeism that may result from this situation.
- Have a process in place should any short-term site shutdown occur
- Preplan your orderly exit if an order is issued today to close one or many sites.
- If an inspector is required to sign off on your work, ensure they have an option in place in case they are unable to complete their inspections.

Our industry is known as a safety conscious and diligent community of professionals and as we work through this situation we will learn, continuously improve and take our capabilities to new heights as we serve our customers our people and the communities that we are part of.

APENDIX A

COVID-19 Health Check Questionnaire

The following questions are designed to ensure our Site Supervisors and Trade Partners are able to make informed and collaborative decisions that maintain the highest possible level of health and wellbeing on our projects. All workers must complete of this form.

Name:	**Project Name:**
Employer:	**Date:**

Please complete the following questions honestly and accurately by selecting "YES" or "NO".

QUESTIONS	Please Check	
	YES	NO
1. Have you travelled outside of Canada on or after March 12, 2020 or been in close contact with someone who has?		
2. Have you travelled to Italy, Iran, or the Hubei Province of China in February or March 2020 or been in close contact with someone who has?		
3. Are you experiencing the signs/symptoms of COVID-19? 4. i.e. shortness of breath, cough, sore throat, or fever?		
5. Have you been in contact with a person showing the symptoms of COVID-19 within the past 14 days?		
6. Have you been in contact with a person who has tested positive for COVID-19 within the past 14 days?		

If you answer "YES" to any of the questions above, you may be asked to leave the worksite and liaise with your Employer on next steps.

Your Employer will advise you on what must happen next and may include return to work or the recommendation to self-isolate and take the online COVID-19 self-assessment tool.

Workers who are determined not to present a risk of COVID-19 transmission to others on site will be allowed to return to work as per the relevant Policy.

***NOTE: This Health Check Questionnaire is mandatory for all workers.**

Workers who refuse to complete this Health Check Questionnaire as defined by the Site-Specific Pandemic Preparedness Plan will be denied access to the site.

I hereby acknowledge the above information to be true. **Employee Signature:**

APPENDIX B.

EXAMPLE COVID–19 PANDEMIC PREPAREDNESS PLANNING GUIDANCE DOCUMENT.

1.0 General

The health and safety of all employees, trade partners and workers are a top priority.

In response to the current pandemic situation, we require all worksites, both offices and projects, to develop a Site-Specific Pandemic Preparedness Plan based on the criteria below in order to reduce the risk of contracting or spreading Coronavirus (COVID-19).

2.0 Definitions

COVID-19: Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS- CoV). Coronavirus disease (COVID-19) is an infectious disease caused by a new virus that had not been previously identified in humans. (https://www.who.int/health-topics/coronavirus)

Self-Quarantine/Self-Isolation: To stay at home and monitor yourself for symptoms, even if mild, for 14 days and avoid contact with other people to help prevent the spread of disease in your home and in your community in the event you become symptomatic. (https://www.canada.ca/en/public-health/services/publications/diseases-conditions/selfmonitoring- self-isolation-isolation-for-covid-19.html)

3.0 Scope

The COVID-19 Pandemic Preparedness Planning Guidance Document is intended to provide guidelines for individuals visiting or working on a site or within an office, as well as providing clear expectations on the measures to be taken in reducing the risk of contracting or spreading COVID-19.

4.0 Document

This guidance document is intended for all employees and Trade Partner employees.

4.1 All projects must provide access to hand washing or hand sanitizing stations

- Where running water is available, additional sinks with hot and cold running water, soap, paper towels and trash bins should be available outside of breakrooms, trailers, and bathrooms.
- It is recommended to have two Hand Wash Stations per project and additional stations when the workforce exceeds 100 (Ratio 1:40, adjust if necessary, based on usage).

- Permanent plumbed sinks should be the first choice. Note: If you have access to permanent facilities on the project, then no additional hand-wash stations are required but please keep this area stocked with hand soap and one-time use paper towels. Also, maintain a regular cleaning of these facilities.
- Temporary portable wash stations are a secondary choice only when plumbed running hot and cold water are not available.
- If hand washing stations are not available, hand sanitizer is the next best option. Use an alcohol-based hand sanitizer with at least 60% alcohol.
- Hand sanitizer should also be available in common areas.
- Note: If you are unable to source supplies yourself then notify site supervisory of office management staff who will source and alternative.

4.2 Clean and disinfect frequently touched objects and surfaces

- Increase the cleaning frequency of common areas on the project. Surfaces can be cleaned using a regular household cleaning spray or wipe. A formal procedure and a responsibility matrix to accomplish and maintain these practices should be determined.
- Areas to consider would include: break/lunch areas, lunch tables, microwaves, coffee machines, turnstiles, handrails, doorknobs, bathrooms, commonly used equipment such as hoist, telephones, computer equipment, coffee machines and vending machines, and all common areas.
- Consider adding foot push/pull devices to doors for hand-free access/egress especially for bathrooms.
- Increase cleanings of temporary restroom(s) and ensure that these restrooms also have hand sanitizer available.
- Have a supply of surface disinfectant, Clorox wipes (or similar), Hand Soap and Hand Sanitizer available.
- While not sustainable, for now we recommend using disposable utensils, plates, and cups. Maintain a good supply on hand. Require anyone bringing a container to rinse it themselves and take home for thorough cleaning.

4.3 Communicate Basic Illness Prevention Hygiene

- Post signage and posters.
- Post signs encouraging proper hand hygiene and stopping the spread of germs.
- Post information at project entry points, break and lunchrooms, restroom facilities, on huddle/safety boards, etc.
- There are many resources available on Workday and online.

4.4 Limit size of gatherings

- Stagger / separate stretch and flex, stand downs, and large group meetings. These should be conducted by individual crews.
- High-risk activity announcements in the morning should become a written communication that the crew leader reviews with their individual crews.

- Conduct meetings in spaces that allow for social distancing between meeting attendees. Where and when possible, maintain a 6 ft. distance from each other while gathering.
- Run meetings via conference call when possible. Encourage those in the same office area to call in separately versus sitting in a room together.
- Implement strategies for staggering and/or reducing density and duration of workers:
- Stagger trade arrival times.
- Limit the total number of persons riding in hoists/elevators; encourage the use of stairs for travel any less than 3 floors.
- Arrange lunch/break areas in a manner that accommodates social distancing so that all workers are not joined together in same area. Stagger lunch/break times between trades.
- Limit all visitors to site to those only essential for project continuity. If the individual has been outside the country in the last 14 days or exposed to someone who has recently tested positive for COVID-19, then they MUST leave the worksite.

4.5 Remind everyone to stay home when they are sick and report to us any confirmed COVID-19 diagnosis

- The PHAC (Public Health Authority of Canada) recommends that workers who have a fever and respiratory symptoms stay at home until 24 hours after their fever ends (100.4 degrees Fahrenheit [37.8 degrees Celsius] or lower), without the use of medication.
- Travel and Exposure Policy covers additional measures to be taken around travel, confirmed cases and potential worksite closures.

4.6 Contractual Considerations

It is imperative that we manage our rights as well as those of our clients and industry partners as outlined in Prime Contracts and Subcontract Agreements. Should disruption of our work occur, our Contracts likely contain provisions that address unforeseen delay such as “Force Majeure” or “Delays” clauses.

Force Majeure is defined as a contract provision excusing a party from performing its contractual obligations when it becomes impossible or impracticable due to an event or effect that the parties could not have anticipated or controlled when the contract was signed.

Please ensure all project management staff does a review of all delay provisions outlined in their Contracts and immediately prepare for the appropriate next steps such as formal notice to our Clients. It is critical to provide protection to us as afforded under Contract in a timely and reasonable manner. Please also note that our standard Subcontracts allow for such provisions to our Subcontractors. As such, if we receive a

notification from our subs it also needs to trigger the notification noted above as a flow through.

As this is not standard operating practice, we encourage anyone with questions to elevate them to your supervisor or management to ensure that we get it right.

4.7 Supply Chain Audit

It is prudent that our project teams immediately complete a supply chain audit to identify, determine the impact and identify mitigation strategies for supply chain interruption including but not limited to the following:

- Possible shortages of raw materials
- Possible shortages of finished products
- Cost escalation of products or materials
- Any vulnerabilities to the supply chain
- Changes to delivery services or procedures

We will be providing support and sharing information as it becomes available to assist you in managing this potential disruption. It is important to recognize that these disruptions may not be seen or recognized for weeks or months. Timely notification of potential disruptions are typically defined in our Contracts so please become acutely familiar with notification periods as soon as possible.

Again, please communicate concerns or questions to your supervisor or management.

APPENDIX C

EXAMPLE COVID – 19 TRAVEL & EXPOSURE POLICY

1.0 General

As the coronavirus (COVID-19) outbreak continues, we are providing policy updates on how to protect yourself and prepare for potential outcomes.

This is a dynamic situation and our guidance is likely to evolve. We encourage you to continue to access the most up to date information from relevant sources.

2.0 Definitions

COVID-19: Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERSCoV) and Severe Acute Respiratory Syndrome (SARS- CoV). Coronavirus disease (COVID-
19) is an infectious disease caused by a new virus that had not been previously identified in humans. (https://www.who.int/health-topics/coronavirus)

Self-Quarantine/Self-Isolation: To stay at home and monitor yourself for symptoms, even if mild, for 14 days and avoid contact with other people to help prevent the spread of disease in your home and in your community in the event you become symptomatic.
(https://www.canada.ca/en/public-health/services/publications/diseases-conditions/self-monitoring-self-isolation-isolation-for-covid-19.html)

Essential Travel Impact Chart:

Level Impact

4 **High**- Significant Financial Risk if not present. Interruption making a critical operational functionality unavailable or severe impact on service availability. No alternative solution or workaround. Significant number of employees or teams impacted.

3 **Medium**- Critical functionality temporarily interrupted or unusable; Operational Impact on projects. Temporary workaround and alternative solutions cumbersome, costly and not timely.
Potential financial risk. Some teams and employees negatively impacted.

2 **Low**- Operational impact but no direct impact on functionality or service availability; Workaround is available. Alternative solution available but may not be most desired. Minimal number of teams and employees impacted.

1 **None**- No operational impact. System, application or process functions; maintain current state. Feasible workaround available. No Impact to team or employees.

Current Essential travel set to:* ***Level 4 Essential*

3.0 Scope

The Coronavirus (COVID-19) Travel & Exposure Policy is intended to provide guidelines for individuals who have or are planning to travel, including individuals who work or live within close proximity to travelers. In addition, these guidelines apply to individuals who have contracted or have been exposed to someone who has contracted COVID-19.

4.0 Policy

This policy is intended for all employees and Trade Partner employees.

4.1 Guideline for Business Travel

We have established a complete travel restriction on all international business travel.

All ****non-essential*** domestic business travel outside of your home metro-area should be suspended for the months of March and April.

All ***essential** domestic business travel must be pre-approved by your supervisor and your Business Unit Vice Presidents.

4.2 Guideline for employees returning from an international location, or who cohabitate or have had close contact with someone who has.

Federal and provincial public health leaders have recommended that all travelers returning to Canada self- isolate for 14 days. In response to this, all employees must follow Health Canada's recommendation and only return to work after 14 days and if symptom free.

4.3 Guideline for hosting visitors from an international location to our projects or offices.

Clearly communicate to all expected visitors that they are not allowed to visit a worksite or office until they have been back in the country for 14 days from their return and are symptom free. Visitors should also be limited to only those essential for project continuity.

4.4 Guideline for employees exhibiting symptoms of respiratory illness.

All individuals are required to disclose if they are experiencing symptoms consistent with COVID-19.

If someone is exhibiting symptoms, we should recommend they leave the worksite and advise them to self- isolate and call health link for further advice. If they are exhibiting respiratory distress requiring emergency care, they should go to the hospital.

If the individual has been outside the country in the last 14 days or exposed to someone who has recently tested positive for COVID-19, then they MUST leave the worksite.

4.5 Guideline for employees who cohabitate or have had close contact with someone who has tested positive.

All individuals are required to disclose if they have been exposed to persons who have tested positive for COVID-19. These individuals will be required to self-isolate for 14 days from last exposure. These individuals should contact Health PEI and follow health authority recommendations.

4.6 Guideline for employees who have tested Positive for COVID-19.

All individuals are required to disclose that they have tested positive for the virus. They are to notify, by email and phone, the site supervisor and HR.

Your organization will notify all workers on that site of a positive test and a temporary stop work order will be issued, until a further site assessment can be carried out and an effective control plan implemented.

All workers will be asked to self-quarantine and follow local exposure protocols as dictated by the governing health authority in their region. In Prince Edward Island currently, individuals who test positive are not permitted to return to a jobsite or office until they have two confirmed negative COVID-19 tests and have their isolation orders lifted by a medical professional.

Your employer will work with our leaders and clients to determine next steps when work will resume.

4.7 Guideline for Compensation during Quarantine Periods

Each organization will likely establish its own policy within the requirements of employment law and regulations

Geotechnical Investigation

Dingwells Mills Culvert Replacement (K5-007),
Highway 2, Dingwells Mills, Kings County, PE

File No: 203150

HARBOURSIDE
Geotechnical Consultants

Prepared for:
Prince Edward Island Department of
Transportation, Infrastructure & Energy
PO Box 2000
Charlottetown, PE C1A 7N8

Prepared by:
Harbourside Geotechnical Consultants
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February 8, 2021

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08/02/2021
File No: 203150

Attention: Neil Lawless, P.Eng.
Bridge Engineer
Department of Transportation, Infrastructure & Energy
PO Box 2000
Charlottetown, PE C1A 7N8

SUBJECT: GEOTECHNICAL INVESTIGATION, DINGWELLS MILLS CULVERT REPLACEMENT (K5-007), PE

Dear Mr. Lawless,

INTRODUCTION

Harbourside Geotechnical Consultants (Harbourside), acting at the request of Prince Edward Island Department of Transportation, Infrastructure & Energy (PE-TIE) has carried out a geotechnical investigation for the Dingwells Mills Culvert Replacement on Route 2 near Dingwells Mills in Kings County, Prince Edward Island.

The purpose of this geotechnical investigation was to determine the subsurface conditions at the site and to provide geotechnical recommendations to aid with design and construction of the replacement structure.

The scope of work completed for this project includes the following:

- Completion of a field investigation consisting of four boreholes with collection of samples for both environmental testing and geotechnical classification;
- A laboratory testing program; and
- Preparation of this report detailing the findings of the field investigation and laboratory analyses, as well as discussion and recommendations to aid with foundation design and construction.

This report has been prepared specifically and solely for the project described herein and contains all of the findings of this investigation.

The existing structure is a corrugated steel arch with an approximate diameter of 1.8 m, sitting on a timber foundation, which carries Route 2 over a small stream connecting the northerly Johnny Belinda Pond to Fortune River to the south. Route 2 runs approximately east-west at the location of the existing culvert, with grades descending gently from west to east. Near the existing culvert location, the road embankment is approximately 3.0 m in height. The embankment has a steep to gentle slope from the road surface to the inlet/outlet of the existing culvert. The surrounding area is heavily to moderately treed with one residential structure southeast of the existing culvert. At the time of the investigation the stream had a modest flow and was approximately 0.8 m deep.

Geological evidence indicates that the principal overburden strata consists of glaciofluvial and glaciolacustrine deposits of poorly stratified sand, gravel, and boulders. The bedrock consists of reddish-brown sandstone and conglomerate of the Hillsborough River Formation.

PROCEDURE

The field work was carried out between January 11 and 12, 2021. Four boreholes were put down using a track mounted CME55 diamond drill equipped for geotechnical testing and sampling. Boreholes BH01 and BH03 were put down in the eastbound lane, approximately 1 m east and 6 m west of the existing culvert, respectively. Boreholes BH02 and BH04 were put down in the westbound lane, approximately 1 m and 10 m west of the existing culvert, respectively. The specific locations of the boreholes are shown on drawing G-01, Appendix D.

Boreholes BH01 and BH02 were advanced using standard augers, while Boreholes BH03 and BH04 were advanced using a combination of standard augers and H-size casing. Borings were taken to total depths ranging from 5.7 to 15.2 m below ground surface. The soils were sampled at regular intervals using a 50 mm OD split spoon sampler advanced using Standard Penetration Test procedures. Bedrock was proven in two boreholes (BH03 and BH04) by core drilling in HQ size. Detailed logs of the soil and bedrock encountered, and the sampling and testing carried out, are given on the Borehole Records in Appendix A.

All soil and rock samples recovered were delivered to our Dartmouth laboratory for laboratory classification and testing. Samples remaining after testing will be stored until July 2021, at which time they will be discarded unless alternative arrangements are made.

The borehole locations were established in the field by Harbourside personnel relative to the existing structure. Ground surface elevations were subsequently surveyed in the field by PE-TIE personnel. Elevations given are with reference to Geodetic datum.

Geotechnical laboratory testing on select soil samples included water content determinations (*ASTM D2216 Standard Test Methods for Laboratory Determination of Water Content of Soil and Rock by Mass*), and particle-size analyses (*ASTM D6913 Standard Test Method for Particle-Size Distribution of Soils Using Sieve Analysis*).

A standpipe was installed in borehole BH04 and the water level was measured on January 13, 2021. The measured groundwater level is indicated on the Borehole Records in Appendix A.

Select samples of the existing fill and native soils recovered from the boreholes were submitted to AGAT Laboratories Limited. (Dartmouth, NS) for chemical analyses. The analyses included testing for chloride, metals, petroleum hydrocarbons (PHCs), and polyaromatic hydrocarbons (PAHs).

SOIL, BEDROCK AND GROUNDWATER CONDITIONS

The strata and groundwater conditions encountered in the boreholes are described in detail on the Borehole Records, with additional and supplementary information provided in this section. A summary of findings is presented in Table 1, below.

Table 1 Summary of Subsurface Conditions

Location	Ground Elevation[(a)] (m)	Layer Thickness (m)			Bedrock		Total Depth (m)
		Asphalt	FILL: Silty Sand	Glacial Till	Depth to Surface (m)	Surface Elevation [(a)] (m)	
BH01	5.23	0.20	3.22	>4.42	>7.85	<-2.62	7.85
BH02	5.21	0.23	3.68	>1.80	>5.72	<-0.51	5.72
BH03	5.40	0.15	4.42	6.48	11.05	-5.65	15.24
BH04	5.31	0.23	3.33	7.74	11.30	-5.99	13.72

(a) Elevations are referenced to CGVD2013

ASPHALT
All boreholes were advanced through the asphalt pavement with standard augers. The asphalt layer ranged from 150 to 230 mm in thickness at the test locations.

FILL: SILTY SAND WITH GRAVEL
A layer of fill was encountered at each of the four boreholes. The thickness of the fill material ranged from 3.2 to 4.4 m. Trace organic matter was noted within the fill layer in borehole BH03.

The results of two particle-size analyses conducted on the fill showed 9 to 15 percent gravel, 50 to 66 percent sand, and 25 to 35 percent silt- and clay-sized particles. The water content of four samples from this layer ranged from 8 to 14 percent with an average of 12 percent.

Standard Penetration Test (SPT) N-values obtained within the fill layer ranged from 8 to 32, indicating the compactness is variable. Refusal occurred once in borehole BH02, indicating the presence of occasional cobbles. Based on the sampling and laboratory testing carried out the fill can be described as reddish-brown silty sand to silty sand with gravel.

GLACIAL TILL
Reddish-brown silty sand glacial till was encountered in all of the boreholes. The thickness of this layer was approximately 4.4 and 3.3 m in boreholes BH03 and BH04, respectively. Boreholes BH01 and BH02 were terminated within this layer based on project criteria. Trace gravel was encountered within the glacial till layer. A boulder, 1.4 m in diameter, was encountered within the glacial till layer in borehole BH04 at a depth of 9.8 m.

The results of two particle-size analyses conducted on the glacial till showed 6 to 11 percent gravel, 46 to 49 percent sand, and 43 to 45 percent silt- and clay-sized particles. The water content of four samples from this layer ranged from 12 to 14 percent.

SPT N-values obtained within the glacial till layer ranged from 10 to 65. Refusal occurred twice within this layer on the bedrock surface, and once on inferred cobbles. Based on the N-values, the layer can be generally described as compact to very dense. Based on the sampling and testing carried out the till can be described as reddish-brown silty sand.

BEDROCK
Bedrock was encountered and proved in boreholes BH03 and BH04, below the till, at depths of 11.1 and 11.3 m below ground surface, respectively. The bedrock consisted of slightly weathered to fresh, reddish-brown sandstone. Based on the RQD, the bedrock may be described as fair to good quality. Occasional minor sand seams were noted within the sandstone bedrock in borehole BH03.

GROUNDWATER
The groundwater level was measured in a standpipe installed in borehole BH04, January 13th, 2021, approximately 24 hours after completion of drilling. The water level was found to be 3.0 m below ground level, as detailed on the borehole records. Groundwater levels were inferred prior to the introduction of drilling fluid in open boreholes BH01 and BH02 at depths of 4.5 and 3.9 m, respectively. Groundwater levels may fluctuate with precipitation events and in response to climatic and seasonal weather trends.

DISCUSSION AND RECOMMENDATIONS

It is understood that PE-TIE intends to replace the existing structure with two buried reinforced concrete pipes (RCP) at a similar elevation and alignment to the existing structure. A primary pipe and overflow pipe, both 2.7 m in diameter, will be located west of the existing culvert, near the approximate location of boreholes BH03 and BH04. It is further understood that PE-TIE wishes to found these RCP on 450 mm of Class A gravel, bearing on existing soil at approximate elevation - 0.85 m. The following discussion provides geotechnical recommendations to support design and construction.

SITE PREPARATION AND FOUNDATIONS

Based on the results of the present investigation, excavations for base preparations could extend below the stream level. Temporary cofferdams or other seepage barriers may be required for construction.

The placement of RCPs will result in a net unloading of the glacial till deposits at the culvert location. Due to this effect, as well as the relatively large burial depth of the culvert, the ultimate limit state (ULS) bearing resistance and settlement rarely have an effect on the culvert foundation design. The factored bearing resistance provided by the founding soils will exceed 275 kPa, including a bearing resistance factor of 0.5, as per Clause 6.9.1 of the Canadian Highway Bridge Design Code, 2019, which will be adequate for design. Settlements experienced by the RCP culverts should not exceed 25 mm.

Base preparation for the RCPs should consist of removal of all asphalt, fill, and any other deleterious materials (peat, organics, etc.) down to the target elevation of -0.85 m. Excavations within the existing fills and glacial till should be no steeper than 1 horizontal to 1 vertical without means of shoring. Slopes that extend below the water table will likely require further flattening or the use of a blanket of well-graded rockfill to provide stability from sloughing.

Groundwater should be kept to a minimum in the foundation excavations to prevent disturbance of the glacial till which is susceptible to softening. Dewatering could be accomplished by pumping from the base of excavation, filtered sumps or well-points installed below the base of excavation.

A stabilizing layer comprised of gravel (such as the suggested 450 mm of Class A) should be considered when working below the water table to stabilize the base of excavations. This material should be compacted well-graded non-frost susceptible gravel. This fill should be compacted to 100 percent of the standard Proctor maximum dry density.

The new RCP culverts should include seepage cut-offs at the upstream ends, designed to prevent erosion of the soil and undermining of the culverts. Cut-offs may consist of either concrete or low-permeability soil.

BACKFILL

Backfill composition and placement for the culvert will depend on the final design of the product but should generally be placed in lift thicknesses no greater than 300 mm and compacted to 95 percent of the Standard Proctor maximum dry density (SPMDD). Frost susceptible soils should not be placed as backfill directly against the culvert. The final 300 mm of subgrade below the pavement structure should be compacted to 100 percent of the SPMDD. The existing fill materials encountered during this investigation would be suitable for reuse as general backfill. However, portions of the fill at or below the static groundwater level may be too wet for reuse without drying.

TEMPORARY COFFER DAMS

The following unfactored values may be used for the design of temporary cofferdams. Steel sheet piles, if used, should be advanced to a sufficient depth below the bottom of excavation to resist basal heave, minimize flow and prevent base softening during dewatering.

Table 2 Unfactored Geotechnical Parameters

Parameter	FILL	Glacial Till
Effective Angle of Internal Friction, degrees	30	32
Effective Cohesion, kPa	0	0
Total Unit Weight, kN/m^3	20	21
Submerged Unit Weight, kN/m^3	10	11
Coefficient of Active Earth Pressure[(a)]	0.33	0.30
Coefficient of Passive Earth Pressure[(a)]	3.00	3.33
Coefficient of At-Rest Earth Pressure[(a)]	0.50	0.47
Friction Factor, Soil/Steel Interface[(a)]	0.25	0.25

(a) Coefficients of earth pressure presented in table assume a frictionless wall with a vertical back face and a horizontal back slope. Values can be provided for different conditions upon request.

SEISMIC SITE CLASSIFICATION

Based on the findings at the test locations, the site classification for seismic site response in accordance with Clause 4.4.3.2 of CAN/CSA S6-14 is Seismic Site Class D (Stiff soil).

ENVIRONMENTAL CONSIDERATIONS

To assess disposal options for soils to be excavated from the site, environmental soil samples of the insitu fills and soil deposits were taken and submitted for chemical analyses. The results of chemical analyses were then used to determine the levels of potential hazardous materials in accordance with CCME Guidelines for residential disposal as well as to determine the sodium chloride content in materials below Higher High Water (HHW).

The chemical analyses carried out included the following:

- Metals;
- Petroleum hydrocarbons (PHCs – includes BTEX and mTPHs);
- Polyaromatic hydrocarbons (PAHs); and,
- Chloride.

The soil samples obtained were coarse-grained and as such, results were compared to coarse-grained guidelines. Sources of PAHs were assumed to be creosote and to be conservative, the calculated Benzo[a]pyrene Total Potency Equivalents (B[a]P TPE) concentrations for the soil samples were multiplied by an uncertainty factor of three as stipulated in the Guidelines.

Table 3 Chloride Concentrations

Location	Sample No.	Sample Depth (m)	Chloride Concentration (µg/g)
BH01	SS06	4.50 to 5.11	243
BH01	SS10	7.24 to 7.85	51
BH02	SS03	2.08 to 2.69	423
BH02	SS06	4.50 to 5.11	472
BH03	SS04	2.06 to 2.67	862
BH04	SS02	1.42 to 2.03	525

Results of the testing carried out are included in Appendix C. The results of chemical analyses are below the guideline concentrations for residential/parkland disposal.

Chloride concentrations analyzed for six soil samples from this investigation are provided in Table 3, above.

CLOSURE

This report has been prepared to assist in the design and construction of the proposed Dingwells Mills Culvert Replacement. This report has been prepared for the sole benefit of Prince Edward Island Department of Transportation, Infrastructure and Energy and their agents. Any use that a third party makes of this report is the responsibility of such third party.

The recommendations made in this report are in accordance with our present understanding of your project. If any details are included in the final design of the proposed structure that differ from the assumptions outlined in this report, the geotechnical engineer should be consulted.

This report is based on the site conditions encountered by Harbourside Geotechnical Consultants at the time of the work at the specific sampling locations, and can only be extrapolated to a limited extent around these locations. Should any conditions differ from those detailed the engineer should be notified to allow reassessment of any design assumptions.

Respectfully submitted,

H a r b o u r s i d e
Geotechnical Consultants

Regards,

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APPENDIX A

Symbols and Terms Used on Borehole and Test Pit Records

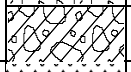
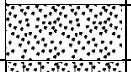
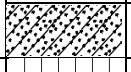
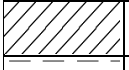
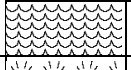
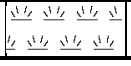
Borehole Records BH01 to BH04

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

STRATA PLOT

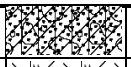
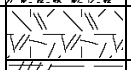
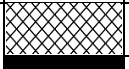
Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols:

USCS SOIL CLASSIFICATION SYMBOLS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN 75 µm SIEVE SIZE	GRAVELS MORE THAN 50% OF COARSE FRACTION RETAINED ON 4.75 mm SIEVE	CLEAN GRAVELS		**GW**	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				**GP**	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES. LITTLE OR NO FINES
		GRAVELS WITH FINES		**GM**	SILTY GRAVELS, GRAVEL – SAND – SILT MIXTURES
				**GC**	CLAYEY GRAVELS, GRAVEL – SAND – CLAY MIXTURES
	SANDS MORE THAN 50% OF COARSE FRACTION PASSING THE 4.75 mm SIEVE	CLEAN SANDS		**SW**	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				**SP**	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES		**SM**	SILTY SANDS, SAND – SILT MIXTURES
				**SC**	CLAYEY SANDS, SAND – CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN 75 µm SIEZE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		**ML**	INORGANIC SILTS
				**CL**	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY
				**OL**	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		**MH**	INORGANIC SILTS
				**CH**	INORGANIC CLAYS OF HIGH PLASTICITY
				**OH**	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				**PT**	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

OTHER COMMONLY USED SYMBOLS

GLACIAL TILL		UNSTRATIFIED GLACIAL DEPOSIT RANGING FROM CLAY TO BOULDERS
BEDROCK		IGNEOUS BEDROCK
		METAMORPHIC BEDROCK
		SEDIMENTARY BEDROCK
MATERIALS PLACED BY HUMANS		FILL: SUBSURFACE MATERIALS IDENTIFIED AS PLACED BY HUMANS
		ASPHALT
		CONCRETE

SAMPLE TYPE

SS	Split Spoon (obtained by performing SPT)
ST	Shelby Tube (Thin-Walled Tube)
GB	Grab Sample
PS	Piston Sample
WS	Wash Sample
HQ, NQ, AQ, BQ, etc.	Rock Core Samples Obtained Using Standard Size Diamond Bits

SPT N-VALUE (N-INDEX)

The standard penetration test (SPT) provides a qualitative evaluation of compactness and a qualitative comparison of subsoil stratification. The SPT is performed in in the bottom of a borehole where a split-barrel sampler having an outside diameter of 50.8 mm is impacted using a hammer weighing 623 N falling 0.76 m for each hammer blow. The SPT N-value is the blow count representation of the penetration resistance of the soil. In accordance with ASTM D1586, the N-value, reported in blows per 300 mm, equals the sum of the number of blows (N) required to drive the sampler over the depth interval of 150 to 450 mm. However, when a 600 mm sampler is used the number of blows (N) required to drive the sampler over the interval of 300 to 600 mm may be reported if this value is lower. For samples where insufficient penetration was achieved and N-Values cannot be presented, the number of blows are reported over sampler penetration in mm (e.g. 50/120). Although some methods make use of N-values corrected for various factors (for equipment used, overburden stress, length of drill rod, etc.) no corrections have been applied to the N-values presented on the logs.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests (DCPT) 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 SPT test. The DCPT value is the number of blows of the hammer required to drive the cone 300 mm. The DCPT provides a qualitative evaluation of compactness and allows for a qualitative comparison of subsurface stratification.

RECOVERY

For soil samples, recovery is recorded as the total length of the soil sample recovered. For rock core, recovery is expressed as a percentage of the total length drilled on a per run basis.

OTHER TESTS

S	Sieve Analysis	CD	Consolidated-Drained Triaxial	C	Consolidation
H	Hydrometer Analysis	CU	Consolidated-Undrained Triaxial	Q_u	Unconfined Compression
γ	Unit Weight	UU	Unconsolidated Undrained Triaxial	I_p	Point Load Index, Ip(50)
G_s	Specific Gravity of Soil Particles	DS	Direct Shear	k	Laboratory Permeability

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	A soil composed of vegetable tissue in various stages of decomposition usually with an organic odor, a dark-brown to black color, a spongy consistency, and a texture ranging from fibrous to amorphous.
Till	Non-stratified glacial deposit which may range from clay to boulders
Fill	Artificial (man-made) deposits transported and placed on the natural surface of soil or rock.

Terminology describing soil structure:

Homogeneous	The lack of visible bedding and the same appearance and colour throughout
Desiccated	Having visible signs of weathering by oxidation of clay minerals, shrinking cracks, etc.
Fissured	Having cracks and hence a blocky structure
Stratified	Composed of regular alternating successions of different soil types
Varved	Comprised of regular alternating successions of silt and clay which were transported into freshwater lakes by melt water
Layer	> 75 mm
Seam	2 mm to 75 mm
Parting	< 2 mm
Pocket	Small erratic deposit, usually less than 300 mm
Lens	Lenticular deposit

Terminology describing soil types:
Soils are described in accordance with the Unified Soil Classification System (USCS) as described in ASTM D2487 and ASTM D2488. This system classifies soil into categories representing the results of laboratory tests to determine the particle-size characteristics, the liquid limit, and the plasticity index. Using this system, soils are assigned a group name (e.g. silty sand) and symbol (e.g. SM). The various groupings of this classification system have been devised to correlate in a general way with the engineering behavior of soils. Laboratory tests are performed on the portion of the sample passing the 75 mm sieve.

When laboratory test results indicate that that the soil is close to another classification group, the borderline condition can be indicated with two symbols separated by a slash (e.g. CL/CH).

Terminology describing cobbles, boulders, and non-matrix materials:
Materials outside of the USCS (e.g. particles larger than 75 mm, organic matter, construction debris) are described based on the proportion of these materials by weight using the following terminology:

Trace, or occasional	< 10%
Some	10% to 20%
Frequent	> 20%

Terminology describing the compactness condition of cohesionless soils:
A qualitative term describing the compactness condition of a cohesionless soil is interpreted from the SPT N-value (also known as the N-index). The relationship between the SPT N-value and the compactness condition is shown in the following table.

Compactness Condition	**SPT N-Value (blows per 0.3 m)**
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	Over 50

Terminology describing the compactness condition of cohesive soils:
Cohesive soils can be classified in relation to undrained strength. Undrained strength can be determined by a number of tests including: unconfined compression tests, field and laboratory vane tests, laboratory fall-cone tests, shear-box tests, and triaxial tests. The consistency and undrained shear strength may also be approximately related the SPT N-Value. The relationship between the consistency and the undrained shear strength, as well as a rough correlation with SPT N-Value as shown in the following table.

Consistency	Undrained Shear Strength (kPa)	SPT N-Value (blows per 0.3 m)
Very Soft	< 12	< 2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	> 200	> 30

ROCK DESCRIPTION

Rock is a natural aggregate of minerals that cannot be readily broken by hand and that will not disintegrate on a first wetting and drying cycle. A rockmass comprises blocks of intact rock that are separated by discontinuities such as cleavage, bedding planes, joints, shears and faults.

Terminology Describing Geological Classification of Rock:

Rock is classified with respect to its geological origin or lithology as follows:

Igneous Rocks	Rocks such as granite, diorite, and basalt, which are formed by the solidification of molten material.
Sedimentary Rocks	Rocks such as sandstone, limestone and shale, which are formed by the lithification of sedimentary soils.
Metamorphic Rocks	Rocks such as quartzite, schist, and gneiss, which have been altered by the application of intense heat and/or pressure.

Terminology Describing the Strength of Intact Rock:

Strength is the maximum stress level that can be carried by a specimen. Rocks may be classified based on their intact strength as shown in the following table.

Term	Unconfined Compressive Strength (MPa)
Extremely Weak	0.25 to 1
Very Weak	1 to 5
Weak	5 to 25
Medium Strong	25 to 50
Strong	50 to 100
Very Strong	100 to 250
Extremely Strong	> 250

Terminology Describing Discontinuity Spacing

The structural integrity of a rockmass will be affected by the presence of discontinuities. The spacing of discontinuities can vary from extremely wide to extremely close as indicated in the table below.

Term	Spacing Width (m)
Extremely Close	< 0.02
Very Close	0.02 to 0.06
Close	0.06 to 0.20
Moderately Close	0.20 to 0.6
Wide	0.6 to 2.0
Very Wide	2.0 to 6.0
Extremely Wide	> 6.0

Rock Quality Designation (RQD)

RQD is an indirect measure of the number of fractures within a rockmass. The method provides a quick and objective technique to estimate rockmass quality during diamond drill core logging. All pieces of intact and sound rock greater than 100 mm long are summed and divided by the total length of the core run in accordance with ASTM D6032.

RQD Classification	RQD (%)
Very Poor Quality	0 to 25
Poor Quality	25 to 50
Fair Quality	50 to 75
Good Quality	75 to 90
Excellent Quality	90 to 100

Terminology to Describe Rock Weathering

The state of weathering significantly alters the geotechnical behaviour of rocks and rockmasses. Weathering of the rockmass may be classified as shown in the following table.

Term	Description
Fresh	No visible sign of rock material weathering; perhaps slight discolouration on major discontinuity surfaces.
Slightly Weathered	Discolouration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discoloured by weathering and may be somewhat weaker than its fresh condition.
Moderately Weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discoloured rock is present either as a discontinuous framework or as corestones
Highly Weathered	More than a half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discoloured rock is present either as a discontinuous framework or as corestones.
Completely Weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.

HARBOURSIDE
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BOREHOLE RECORD

BH01

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 11/01/2021 **WATER LEVEL** 11/01/2021
BH SIZE HW/HQ

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm)	BLOWS / 150 mm (N VALUE)	OTHER TESTS
	5.23								
	5.03	ASPHALT							
		FILL: reddish-brown silty sand to silty sand with gravel			SS	1	500	35-18-10-13 (23)	
1									
					SS	2	325	6-6-5-6 (11)	
2					SS	3	300	8-6-4-4 (8)	
3									
	1.80				SS	4	350	6-6-8-12 (14)	
		Compact to dense reddish-brown silty sand TILL - with trace gravel			SS	5	75	7-9-13-16 (22)	
4				▽					
					SS	6	300	3-5-9-10 (14)	
5					SS	7	300	9-9-12-12 (21)	
6									
					SS	8	500	8-13-12-11 (23)	
					SS	9	300	14-15-13-12 (25)	
7					SS	10	300	20-20-26-23 (46)	
	-2.62								
8		End of borehole							
9									

UNDRAINED SHEAR STRENGTH - kPa
20 40 60 80
W_P W W_L
WATER CONTENT & ATTERBERG LIMITS
DYNAMIC PENETRATION TEST, BLOWS/0.3m
STANDARD PENETRATION TEST, BLOWS/0.3m
0 10 20 30 40 50 60 70 80

■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

HARBOURSIDE GEOTECHNICAL CONSULTANTS, BOREHOLE RECORD 26/1/21

HARBOURSIDE
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BOREHOLE RECORD

BH02

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 11/01/2021 **WATER LEVEL** 11/01/2021
BH SIZE HW/HQ

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm)	BLOWS / 150 mm (N VALUE)	OTHER TESTS
	5.21								
	4.98	ASPHALT							
0		FILL: reddish-brown silty sand to silty sand with gravel - with occasional cobbles			SS	1	450	17-13-9-8 (17)	
1					SS	2	500	5-7-6-9 (13)	
2					SS	3	300	4-4-6-9 (10)	
3					SS	4	200	20-15-50 / 100 mm	
	1.30			▽	SS	5	300	3-5-12-16 (17)	
4		Compact reddish-brown silty sand TILL - with trace gravel			SS	6	225	2-5-5-17 (10)	
5	-0.51				SS	7	225	10-11-19-18 (30)	
6		End of borehole							
7									
8									
9									

UNDRAINED SHEAR STRENGTH - kPa
20 40 60 80
W_P W W_L
WATER CONTENT & ATTERBERG LIMITS
DYNAMIC PENETRATION TEST, BLOWS/0.3m
STANDARD PENETRATION TEST, BLOWS/0.3m
0 10 20 30 40 50 60 70 80

■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

HARBOURSIDE GEOTECHNICAL CONSULTANTS, BOREHOLE RECORD 26/1/21

HARBOURSIDE
Geotechnical Consultants

BOREHOLE RECORD

BH03

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 11/01/2021
WATER LEVEL NOT MEASURED
BH SIZE HW/HQ

UNDRAINED SHEAR STRENGTH - kPa
20 40 60 80
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
DYNAMIC PENETRATION TEST, BLOWS/0.3m
STANDARD PENETRATION TEST, BLOWS/0.3m
0 10 20 30 40 50 60 70 80

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm) REC. ROCK (%)	BLOWS / 150 mm (N VALUE) RQD %	OTHER TESTS
	5.40								
	5.25	ASPHALT							
		FILL: reddish-brown silty sand to silty sand with gravel - with trace organic matter			SS	1	225	25-26-17-15 (32)	
1					SS	2	300	10-11-12-17 (23)	
					SS	3	550	8-7-7-5 (12)	S
2					SS	4	25	3-5-3-5 (8)	
					SS	5	500	3-6-9-10 (15)	
3					SS	6	350	10-5-9-5 (14)	
					SS	7	400	5-5-6-8 (11)	
4	0.83								
		Compact to very dense reddish-brown silty sand TILL			SS	8	500	8-8-9-9 (17)	
5					SS	9	500	8-7-9-6 (15)	
					SS	10	400	11-10-13-15 (23)	S
6					SS	11	450	11-13-17-24 (30)	
					SS	12	400	13-19-20-27 (39)	
7					SS	13	400	27-32-33-35 (65)	
		- with trace gravel below 8.8 m			SS	14	450	15-17-22-43 (39)	
8					SS	15	400	27-40-45-50 / 125 mm	
9									

■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

HARBOURSIDE GEOTECHNICAL CONSULTANTS, BOREHOLE RECORD 26/1/21

(Continued Next Page)

HARBOURSIDE
Geotechnical Consultants

BOREHOLE RECORD

BH03

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 11/01/2021
WATER LEVEL NOT MEASURED
BH SIZE HW/HQ

UNDRAINED SHEAR STRENGTH - kPa
20 40 60 80
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
DYNAMIC PENETRATION TEST, BLOWS/0.3m ★
STANDARD PENETRATION TEST, BLOWS/0.3m ●
0 10 20 30 40 50 60 70 80

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm) REC. ROCK (%)	BLOWS / 150 mm (N VALUE) RQD %	OTHER TESTS
11	-5.65	Compact to very dense reddish-brown silty sand TILL *(continued)*			SS	16	225	20-30-50 / 125 mm	
12		Fair to good quality reddish-brown SANDSTONE - with occasional sand seams - fresh to slightly weathered			HQ	17	100%	67%	
13					HQ	18	100%	53%	
14					HQ	19	100%	81%	
15	-9.84	End of borehole							
16									
17									
18									
19									

■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

HARBOURSIDE GEOTECHNICAL CONSULTANTS, BOREHOLE RECORD 26/1/21

HARBOURSIDE
Geotechnical Consultants

BOREHOLE RECORD

BH04

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 12/01/2021 **WATER LEVEL** 13/01/2021
BH SIZE HW/HQ

UNDRAINED SHEAR STRENGTH - kPa (20, 40, 60, 80)
WATER CONTENT & ATTERBERG LIMITS (W_P, W, W_L)
DYNAMIC PENETRATION TEST, BLOWS/0.3m
STANDARD PENETRATION TEST, BLOWS/0.3m
(0, 10, 20, 30, 40, 50, 60, 70, 80)

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm) REC. ROCK (%)	BLOWS / 150 mm (N VALUE) RQD %	OTHER TESTS
	5.31								
	5.08	ASPHALT							
		FILL: reddish-brown silty sand to silty sand with gravel			SS	1	300	18-7-8-8 (15)	
1					SS	2	500	6-6-6-5 (11)	
2					SS	3	400	8-10-6-7 (13)	
3				▼	SS	4	400	3-5-6-10 (11)	S
	1.75								
		Compact to very dense reddish-brown silty sand TILL - with trace gravel - with trace cobbles			SS	5	500	3-6-7-8 (13)	
4					SS	6	500	4-12-12-13 (24)	
5					SS	7	450	11-15-24-22 (39)	S
6					SS	8	475	19-45-32-16 (48)	
7					SS	9	450	26-23-21-18 (39)	
					SS	10	500	21-22-31-38 (53)	
8									
9					SS	11	300	13-27-29-35 (56)	
		- with 1.4 m boulder at 9.8 m							

■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

(Continued Next Page)

HARBOURSIDE
Geotechnical Consultants

BOREHOLE RECORD

BH04

CLIENT PRINCE EDWARD TRANSPORTATION INFRASTRUCTURE AND ENERGY
PROJECT No. 203150
LOCATION ROUTE 2, DINGWELLS MILLS, KINGS COUNTY, PRINCE EDWARD ISLAND
DATUM CGVD2013
DATES: BORING 12/01/2021 **WATER LEVEL** 13/01/2021
BH SIZE HW/HQ

UNDRAINED SHEAR STRENGTH - kPa
20 40 60 80
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
DYNAMIC PENETRATION TEST, BLOWS/0.3m
STANDARD PENETRATION TEST, BLOWS/0.3m
0 10 20 30 40 50 60 70 80

DEPTH (m)	ELEVATION (m)	SOIL/BEDROCK DESCRIPTION	GRAPHIC LOG	WATER LEVEL	TYPE	NUMBER	REC. SOIL (mm) REC. ROCK (%)	BLOWS / 150 mm (N VALUE) RQD %	OTHER TESTS
11	-5.99	Compact to very dense reddish-brown silty sand TILL - with trace gravel - with trace cobbles *(continued)*			SS	12	500	18-27-29-50 / 125 mm	
12		Fair quality reddish-brown SANDSTONE - fresh to slightly weathered			HQ	13	100%	53%	
13	-8.41				HQ	14	100%	68%	
14		End of borehole - standpipe installed							
15									
16									
17									
18									
19									

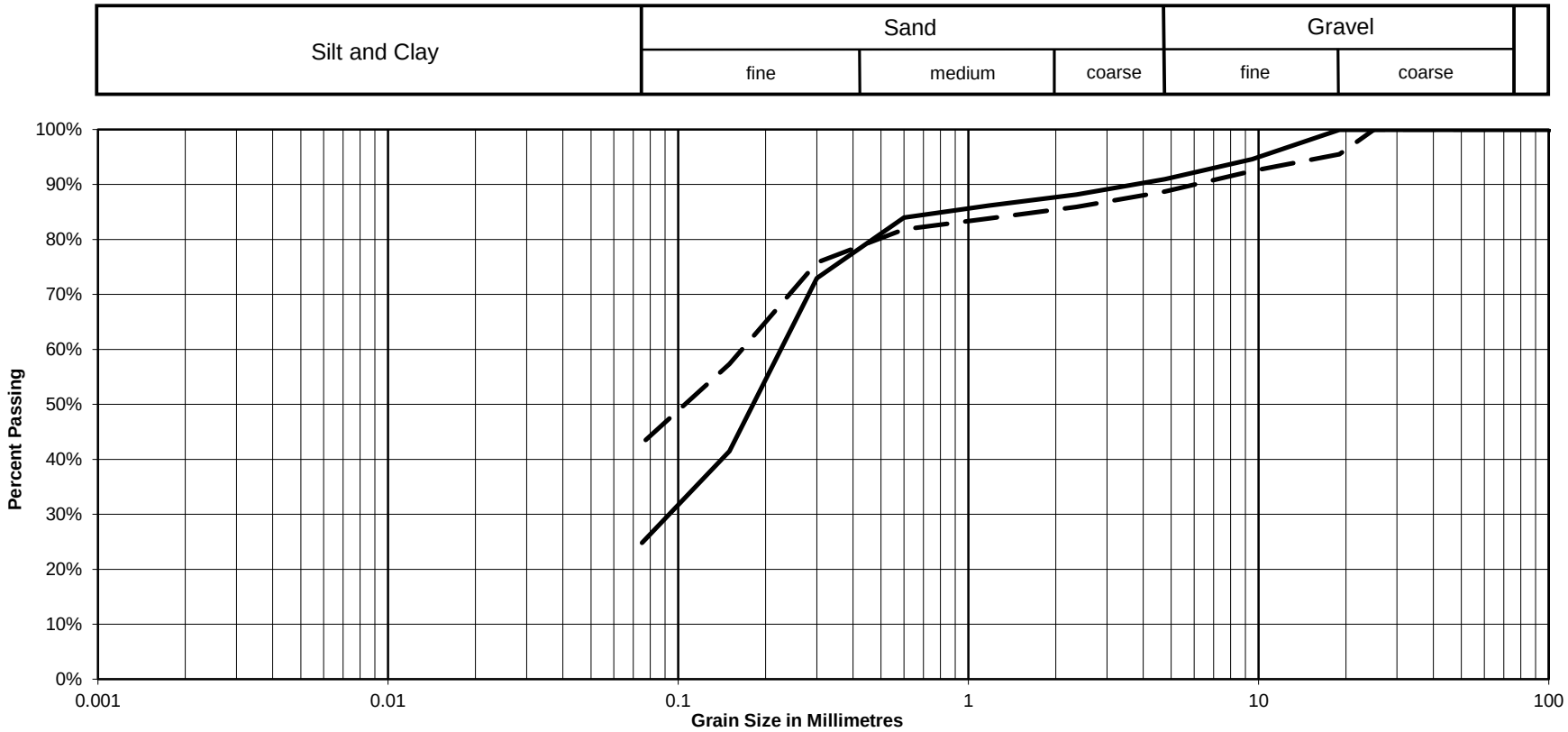
■ Miniature Vane □ Torvane
◆ Penetrometer ◇ UU Triaxial
▲ Field Vane △ Unconfined Compression

APPENDIX B

Grain Size Analyses Plots

Checked: **DJW**

GRAIN SIZE DISTRIBUTION



CURVE	BOREHOLE / TESTPIT	SAMPLE	DEPTH (m)	SOIL FRACTION			SOIL DESCRIPITION
				GRAVEL	SAND	SILT/CLAY	
———	BH03	SS03	1.45 to 2.00	9%	66%	25%	Silty SAND
— — -	BH03	SS10	5.90 to 6.48	11%	46%	43%	Silty SAND

PROJECT No.: 203150

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Dartmouth, NS B2X 2C3
http://harboursideengineering.ca

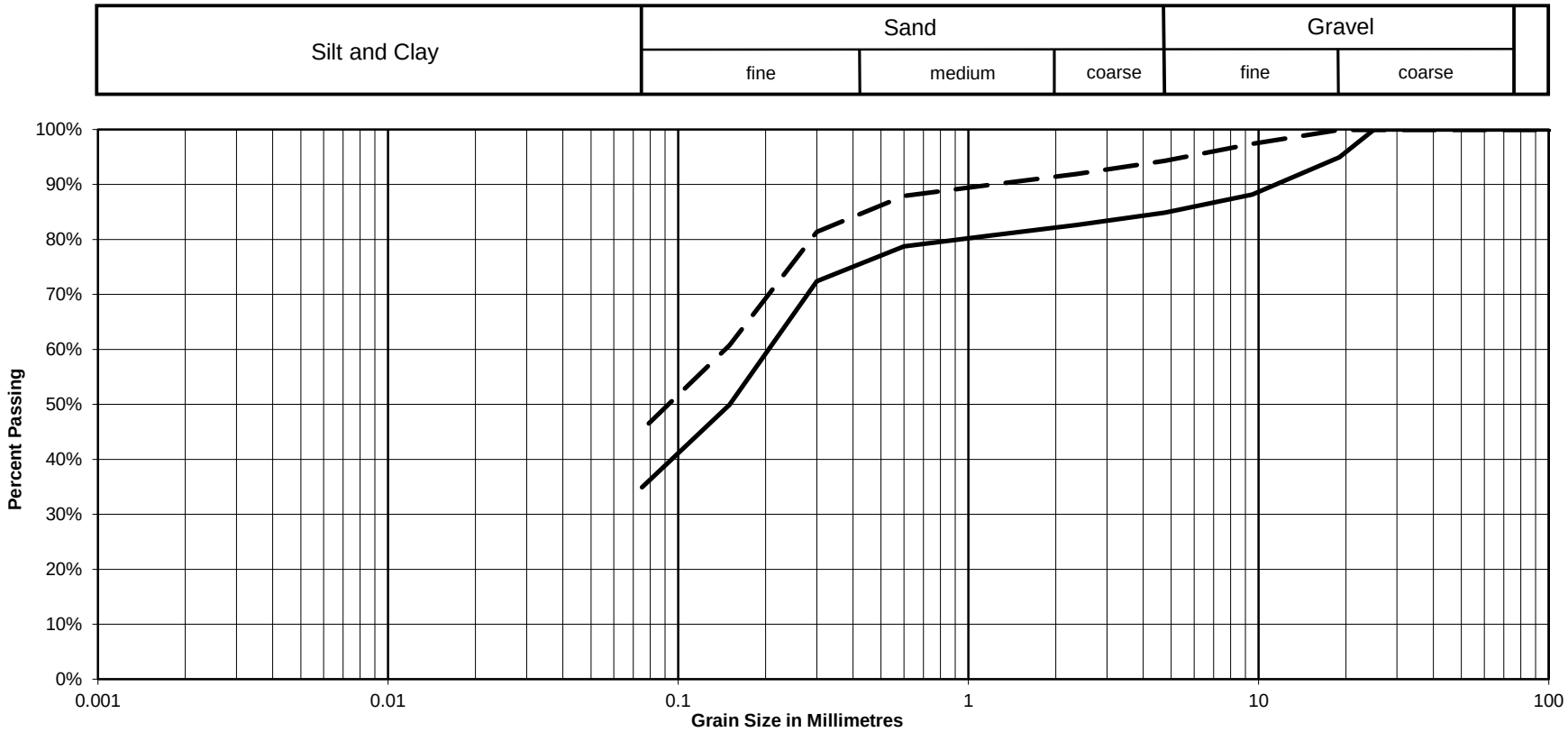
CLIENT PE-TIE

PROJECT Dingwells Mills Culvert Replacement

LOCATION Route 2, Dingwells Mills, Kings County, PE

Checked: **DJW**

GRAIN SIZE DISTRIBUTION



CURVE	BOREHOLE / TESTPIT	SAMPLE	DEPTH (m)	SOIL FRACTION			SOIL DESCRIPITION
				GRAVEL	SAND	SILT/CLAY	
———	BH04	SS04	2.92 to 3.60	15%	50%	35%	Silty SAND with Gravel
— — -	BH04	SS07	5.00 to 5.70	6%	49%	45%	Silty SAND

PROJECT No.: 203150

HGC

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219 Waverley Road, Suite 200
Dartmouth, NS B2X 2C3
http://harboursideengineering.ca

CLIENT PE-TIE
PROJECT Dingwells Mills Culvert Replacement
LOCATION Route 2, Dingwells Mills, Kings County, PE

APPENDIX C

Chemical Analyses

Table B1: Soil Metal Concentration

	RDL (mg/kg)	CCME Soil Quality Guidelines (mg/kg)				Concentration (mg/kg)					
		Agricultural	Residential /Parkland	Commercial	Industrial	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
Metals											
Acid Extractable Aluminum (Al)	100	-	-	-	-	6330	8730	8730	6530	6520	8540
Acid Extractable Antimony (Sb)	0.8	20	20	40	40	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Acid Extractable Arsenic (As)	1	12	12	12	12	3	4	4	4	5	4
Acid Extractable Barium (Ba)	2.0	750	500	2000	2000	20	31	62	32	46	73
Acid Extractable Beryllium (Be)	0.4	4	4	8	8	<0.4	0	1	<0.4	0	1
Acid Extractable Boron (B)	5	-	-	-	-	16	8	7	<5	5	6
Acid Extractable Cadmium (Cd)	0.5	1.4	10	22	22	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acid Extractable Chromium (Cr)	5	64	64	87	87	10	15	17	11	15	17
Acid Extractable Cobalt (Co)	0.5	40	50	300	300	4	7	7	5	6	8
Acid Extractable Copper (Cu)	1.0	63	63	91	91	6	7	7	6	6	8
Acid Extractable Iron (Fe)	500	-	-	-	-	11900	20500	19100	13200	15500	19600
Acid Extractable Lead (Pb)	1	70	140	260	600	9	5	5	7	7	5
Acid Extractable Lithium (Li)	0.5	-	-	-	-	14	24	23	17	18	23
Acid Extractable Manganese (Mn)	5.0	-	-	-	-	172	610	562	414	697	520
Acid Extractable Molybdenum (Mo)	0.5	5	10	40	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acid Extractable Nickel (Ni)	1	45	45	89	89	9	16	16	11	13	17
Acid Extractable Selenium (Se)	0.8	1	1	2.9	2.9	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Acid Extractable Silver (Ag)	0.5	20	20	40	40	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acid Extractable Strontium (Sr)	5	-	-	-	-	<5	6	10	<5	19	9
Acid Extractable Thallium (Tl)	0.5	1	1	1	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acid Extractable Tin (Sn)	1	5	50	300	300	<1	<1	<1	<1	<1	<1
Acid Extractable Uranium (U)	0.50	23	23	33	300	1	1	1	2	1	1
Acid Extractable Vanadium (V)	0.4	130	130	130	130	10	15	14	12	14	15
Acid Extractable Zinc (Zn)	5	200	200	360	360	28	32	33	26	27	34

Table B2: PHC Concentrations

	RDL (µg/kg)	Guidelines		Concentration					
		Tier 1 RBSL	Tier 1 ESLs	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
BTEX Concentration (µg/kg)									
Benzene	0.02	0.042	18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	0.08	0.035	75	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	0.05	0.043	55	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	0.05	0.73	95	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hydrocarbon Fraction Concentration (µg/g)									
F1 (C6-C10)	10	N/A	210	<10	<10	<10	<10	<10	<10
F2 (C10-C16 Hydrocarbons)	10	N/A	150	<10	<10	<10	<10	<10	<10
F3 (C16-C34 Hydrocarbons)	50	N/A	300	<50	<50	<50	55	<50	<50
F4 (C34-C50 Hydrocarbons)	50	N/A	2800	<50	<50	<50	128	74	<50

Table B3: PAH Concentration

		CCME Soil Quality Guidelines (mg/kg)				Concentration (mg/kg)					
	RDL (mg/kg)	Agricultural	Residential /Parkland	Commercial	Industrial	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
Non-Carcinogenic PAHs											
Acenaphthene	0.00671	-	-	-	-	<0.00671	<0.00671	<0.00671	<0.00671	<0.00671	<0.00671
Acenaphthylene	0.004	-	-	-	-	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Anthracene	0.03	2.5	2.5	32	32	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Fluoranthene	0.05	50	50	180	180	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	0.01	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	0.01	0.6	0.6	22	22	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perylene	0.05	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	0.03	0.1	5	50	50	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Pyrene	0.05	0.1	1	10	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1-Methylnaphthalene	0.05	-	-	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-Methylnaphthalene	0.01	-	-	-	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Carcinogenic PAHs											
Benzo(a)anthracene	0.01	0.1	1	10	10	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Benzo(a)pyrene	0.01	20	20	72	72	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Benzo(b)fluoranthene	0.05	0.1	1	10	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	0.01	-	-	-	-	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Benzo(b+j)fluoranthene	0.05	0.1	1	10	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	0.01	0.1	1	10	10						
Chrysene	0.01	-	-	-	-	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Dibenz(a,h)anthracene	0.006	0.1	1	10	10	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Indeno(1,2,3-cd)pyrene	0.01	0.1	1	10	10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

*Bold Indicates above CCME Soil Quality Guidelines concentration

AGAT Laboratories

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CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.
219 WAVERLY RD. SUITE 200
DARTMOUTH, NS B2X 2C3
902-405-4696
ATTENTION TO: Daniel Wheeler
PROJECT: 203150 Dingwells Mills
AGAT WORK ORDER: 21X700049
SOIL ANALYSIS REVIEWED BY: Marta Manka, Data Reporter
TRACE ORGANICS REVIEWED BY: Amy Hunter, Trace Organics Supervisor, B.Sc.
DATE REPORTED: Feb 05, 2021
PAGES (INCLUDING COVER): 19
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

*Notes

Disclaimer:

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Chloride (Soil)

DATE RECEIVED: 2021-01-15

DATE REPORTED: 2021-02-05

			SAMPLE DESCRIPTION:	BH03 SS04		BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
			SAMPLE TYPE:	Soil		Soil	Soil	Soil	Soil	Soil
			DATE SAMPLED:	2021-01-15 08:30		2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	**Unit**	**G / S**	**RDL**	**1956289**	**RDL**	**1956297**	**1956298**	**1956299**	**1956300**	**1956301**
Chloride (2:1)	µg/g		4	862	2	525	51	423	472	243

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By: Marta Manka

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Metals - Full Metal Scan in Soil

DATE RECEIVED: 2021-01-15

DATE REPORTED: 2021-02-05

SAMPLE DESCRIPTION:				BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	**Unit**	**G / S**	**RDL**	**1956289**	**1956297**	**1956298**	**1956299**	**1956300**	**1956301**
Aluminum	mg/kg		100	6330	8730	8730	6530	6520	8540
Antimony	mg/kg		0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	mg/kg		1	3	4	4	4	5	4
Barium	mg/kg		2.0	20.1	30.9	62.2	32.2	45.5	73.4
Beryllium	mg/kg		0.4	<0.4	0.4	0.5	<0.4	0.4	0.5
Boron	mg/kg		5	16	8	7	<5	5	6
Cadmium	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg		5	10	15	17	11	15	17
Cobalt	mg/kg		0.5	4.3	7.2	7.2	5.0	6.3	7.5
Copper	mg/kg		1.0	6.1	7.1	7.3	5.7	6.1	7.7
Iron	mg/kg		500	11900	20500	19100	13200	15500	19600
Lead	mg/kg		1	9	5	5	7	7	5
Lithium	mg/kg		0.5	14.4	23.6	23.4	16.5	17.9	23.0
Manganese	mg/kg		5.0	172	610	562	414	697	520
Molybdenum	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	mg/kg		1	9	16	16	11	13	17
Selenium	mg/kg		0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Strontium	mg/kg		5	<5	6	10	<5	19	9
Thallium	mg/kg		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tin	mg/kg		1	<1	<1	<1	<1	<1	<1
Uranium	mg/kg		0.50	0.78	0.61	0.69	2.30	0.88	0.63
Vanadium	mg/kg		0.4	10.1	14.5	14.1	12.1	14.1	14.8
Zinc	mg/kg		5	28	32	33	26	27	34

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1956289-1956301

Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Marta Manka

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

CCME Petroleum Hydrocarbon F1 - F4 in Soil - Field Preserved

DATE RECEIVED: 2021-01-15 **DATE REPORTED: 2021-02-05**

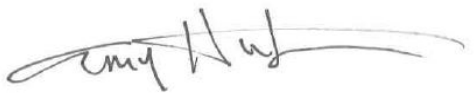
				SAMPLE DESCRIPTION:	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
				SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	**Unit**	**G / S**	**RDL**		**1956289**	**1956297**	**1956298**	**1956299**	**1956300**	**1956301**
Benzene	µg/g		0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g		0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Ethylbenzene	µg/g		0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g		0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
C6 - C10 (F1)	µg/g		10		<10	<10	<10	<10	<10	<10
C6 - C10 (F1 minus BTEX)	µg/g		10		<10	<10	<10	<10	<10	<10
>C10 - C16 (F2)	µg/g		10		<10	<10	<10	<10	<10	<10
>C16 - C34 (F3)	µg/g		50		<50	<50	<50	55	<50	<50
>C34 - C50 (F4)	µg/g		50		<50	<50	<50	128	74	<50
Gravimetric Heavy Hydrocarbons (F4G)	µg/g		50		N/A	N/A	N/A	N/A	N/A	N/A
Surrogate	**Unit**	**Acceptable Limits**								
o-terphenyl	%	50-140			113	113	114	112	106	121

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1956289-1956301 Results are based on sample dry weight.
Xylene(Total)and C6-C10(F1 minus BTEX) are calculated parameters. The calculated parameter is non-accredited. The component parameters of the calculation are accredited.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.
Quality Control Data is available upon request.

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Moisture

DATE RECEIVED: 2021-01-15

DATE REPORTED: 2021-02-05

			SAMPLE DESCRIPTION:	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
			SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil
			DATE SAMPLED:	2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	Unit	G / S	RDL	1956289	1956297	1956298	1956299	1956300	1956301
% Moisture	%		0.0	12	12	10	11	17	11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Polycyclic Aromatic Hydrocarbons in Soil

DATE RECEIVED: 2021-01-15

DATE REPORTED: 2021-02-05

		SAMPLE DESCRIPTION:		BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	**Unit**	**G / S**	**RDL**	**1956289**	**1956297**	**1956298**	**1956299**	**1956300**	**1956301**
1-Methylnaphthalene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-Methylnaphthalene	mg/kg		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Acenaphthene	mg/kg		0.00671	<0.00671	<0.00671	<0.00671	<0.00671	<0.00671	<0.00671
Acenaphthylene	mg/kg		0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
Acridine	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	mg/kg		0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Benzo(a)anthracene	mg/kg		0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Benzo(a)pyrene	mg/kg		0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Benzo(b)fluoranthene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(j+k)fluoranthene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(e)pyrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(ghi)perylene	mg/kg		0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Chrysene	mg/kg		0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Dibenzo(a,h)anthracene	mg/kg		0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Fluoranthene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	mg/kg		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3)pyrene	mg/kg		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Naphthalene	mg/kg		0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perylene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	mg/kg		0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Pyrene	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Quinoline	mg/kg		0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	**Unit**	**Acceptable Limits**							
Naphthalene-d8	%	50-140		93	87	87	88	86	88
Terphenyl-d14	%	50-140		108	102	107	102	103	103
Pyrene-d10 (%)	%	50-140		91	85	89	87	88	87

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Polycyclic Aromatic Hydrocarbons in Soil

DATE RECEIVED: 2021-01-15 **DATE REPORTED: 2021-02-05**

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1956289-1956301 Results are based on the dry weight of the soil.

Benzo(b)fluoranthene may include contributions from benzo(j)fluoranthene, if also present in the sample. Benzo(j+k)fluoranthene is not an accredited parameter.

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Soil - Field Preserved

DATE RECEIVED: 2021-01-15

DATE REPORTED: 2021-02-05

		SAMPLE DESCRIPTION:		BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	Unit	G / S	RDL	1956289	1956297	1956298	1956299	1956300	1956301
Chloromethane	ug/kg		100	<100	<100	<100	<100	<100	<100
Vinyl Chloride	ug/kg		20	<20	<20	<20	<20	<20	<20
Bromomethane	ug/kg		50	<50	<50	<50	<50	<50	<50
Chloroethane	ug/kg		100	<100	<100	<100	<100	<100	<100
Trichlorofluoromethane (FREON 11)	ug/kg		100	<100	<100	<100	<100	<100	<100
Acetone	ug/kg		500	<500	<500	<500	<500	<500	<500
1,1-Dichloroethylene	ug/kg		50	<50	<50	<50	<50	<50	<50
Methylene Chloride (Dichloromethane)	ug/kg		100	<100	<100	<100	<100	<100	<100
trans-1,2-Dichloroethylene	ug/kg		80	<80	<80	<80	<80	<80	<80
1,1-Dichloroethane	ug/kg		100	<100	<100	<100	<100	<100	<100
cis-1,2-Dichloroethylene	ug/kg		100	<100	<100	<100	<100	<100	<100
Chloroform	ug/kg		50	<50	<50	<50	<50	<50	<50
1,2-Dichloroethane	ug/kg		100	<100	<100	<100	<100	<100	<100
1,1,1-Trichloroethane	ug/kg		30	<30	<30	<30	<30	<30	<30
Carbon Tetrachloride	ug/kg		50	<50	<50	<50	<50	<50	<50
Benzene	ug/kg		6.8	<6.8	<6.8	<6.8	<6.8	<6.8	<6.8
1,2-Dichloropropane	ug/kg		50	<50	<50	<50	<50	<50	<50
Trichloroethylene	ug/kg		10	<10	<10	<10	<10	<10	<10
Bromodichloromethane	ug/kg		100	<100	<100	<100	<100	<100	<100
cis-1,3-Dichloropropene	ug/kg		100	<100	<100	<100	<100	<100	<100
trans-1,3-Dichloropropene	ug/kg		100	<100	<100	<100	<100	<100	<100
1,1,2-Trichloroethane	ug/kg		30	<30	<30	<30	<30	<30	<30
Toluene	ug/kg		80	<80	<80	<80	<80	<80	<80
2-Hexanone	ug/kg		500	<500	<500	<500	<500	<500	<500
Dibromochloromethane	ug/kg		100	<100	<100	<100	<100	<100	<100
1,2-Dibromoethane	ug/kg		50	<50	<50	<50	<50	<50	<50
Tetrachloroethylene	ug/kg		100	<100	<100	<100	<100	<100	<100
1,1,1,2-Tetrachloroethane	µg/kg		100	<100	<100	<100	<100	<100	<100
Chlorobenzene	ug/kg		50	<50	<50	<50	<50	<50	<50

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Volatile Organic Compounds in Soil - Field Preserved

DATE RECEIVED: 2021-01-15 **DATE REPORTED: 2021-02-05**

				SAMPLE DESCRIPTION:	BH03 SS04	BH04 SS02	BH01 SS10	BH02 SS03	BH02 SS06	BH01 SS06
				SAMPLE TYPE:	Soil	Soil	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2021-01-15 08:30	2021-01-15 08:45	2021-01-15 13:50	2021-01-15 15:00	2021-01-15 15:30	2021-01-15 13:13
Parameter	**Unit**	**G / S**	**RDL**		**1956289**	**1956297**	**1956298**	**1956299**	**1956300**	**1956301**
Ethylbenzene	ug/kg		18		<18	<18	<18	<18	<18	<18
m,p-Xylene	ug/kg		100		<100	<100	<100	<100	<100	<100
Bromoform	ug/kg		100		<100	<100	<100	<100	<100	<100
Styrene	ug/kg		100		<100	<100	<100	<100	<100	<100
1,1,2,2-Tetrachloroethane	ug/kg		50		<50	<50	<50	<50	<50	<50
o-Xylene	ug/kg		100		<100	<100	<100	<100	<100	<100
1,3-Dichlorobenzene	ug/kg		50		<50	<50	<50	<50	<50	<50
1,4-Dichlorobenzene	ug/kg		50		<50	<50	<50	<50	<50	<50
1,2-Dichlorobenzene	ug/kg		50		<50	<50	<50	<50	<50	<50
Surrogate	**Unit**	**Acceptable Limits**								
Toluene-d8	%	60-140			99	99	100	99	99	100
4-Bromofluorobenzene	%	60-140			96	94	94	90	94	91

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1956289-1956301 Results are based on the dry weight of the soil.

Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

AGAT Laboratories

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Quality Assurance

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Feb 05, 2021			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Chloride (Soil)															
Chloride (2:1)	1972125		11	11	0.0%	< 2	105%	70%	130%	106%	80%	120%	113%	70%	130%
Metals - Full Metal Scan in Soil															
Aluminum	1977515		4960	5860	16.6%	< 10	96%	70%	130%	114%	80%	120%	NA	70%	130%
Antimony	1977515		0.8	1.8	NA	< 0.8	100%	70%	130%	101%	80%	120%	78%	70%	130%
Arsenic	1977515		7	8	13.3%	< 1	97%	70%	130%	109%	80%	120%	115%	70%	130%
Barium	1977515		143	161	11.8%	< 2.0	110%	70%	130%	100%	80%	120%	92%	70%	130%
Beryllium	1977515		<0.4	<0.4	NA	< 0.4	103%	70%	130%	101%	80%	120%	103%	70%	130%
Boron	1977515		31	32	3.2%	< 5	71%	70%	130%	98%	80%	120%	110%	70%	130%
Cadmium	1977515		0.6	0.6	NA	< 0.5	97%	70%	130%	99%	80%	120%	99%	70%	130%
Chromium	1977515		14	19	NA	< 5	100%	70%	130%	100%	80%	120%	112%	70%	130%
Cobalt	1977515		3.2	3.8	17.1%	< 0.5	95%	70%	130%	99%	80%	120%	97%	70%	130%
Copper	1977515		63.3	66.9	5.5%	< 1.0	88%	70%	130%	102%	80%	120%	NA	70%	130%
Iron	1977515		9800	11600	16.8%	< 50	95%	70%	130%	126%	80%	120%	NA	70%	130%
Lead	1977515		66	64	3.1%	< 1	96%	70%	130%	98%	80%	120%	94%	70%	130%
Lithium	1977515		9.3	12.4	28.6%	< 0.5	100%	70%	130%	89%	80%	120%	97%	70%	130%
Manganese	1977515		901	1080	18.1%	< 5.0	94%	70%	130%	102%	80%	120%	NA	70%	130%
Molybdenum	1977515		1.6	2.3	NA	< 0.5	98%	70%	130%	99%	80%	120%	93%	70%	130%
Nickel	1977515		10	12	18.2%	< 1	96%	70%	130%	101%	80%	120%	97%	70%	130%
Selenium	1977515		<0.8	0.8	NA	< 0.8	98%	70%	130%	107%	80%	120%	117%	70%	130%
Silver	1977515		<0.5	<0.5	NA	< 0.5	97%	70%	130%	99%	80%	120%	84%	70%	130%
Strontium	1977515		250	261	4.3%	< 5	93%	70%	130%	94%	80%	120%	NA	70%	130%
Thallium	1977515		<0.5	<0.5	NA	< 0.5	96%	70%	130%	99%	80%	120%	91%	70%	130%
Tin	1977515		5	6	18.2%	< 1	97%	70%	130%	101%	80%	120%	124%	70%	130%
Uranium	1977515		1.08	1.23	NA	< 0.50	94%	70%	130%	100%	80%	120%	98%	70%	130%
Vanadium	1977515		6.4	7.3	13.1%	< 0.4	97%	70%	130%	97%	80%	120%	99%	70%	130%
Zinc	1977515		275	272	1.1%	< 5	97%	70%	130%	105%	80%	120%	121%	70%	130%

Comments: NA Signifies Not Applicable
Duplicate NA: results are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
More than 90% of the elements met acceptance limits and overall data quality is acceptable for use. For a multi-element scan up to 10% of analytes may exceed the quoted limits by up to 10% absolute.

Certified By: Marta Manka

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Quality Assurance

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Feb 05, 2021			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Polycyclic Aromatic Hydrocarbons in Soil															
1-Methylnaphthalene	1	1956409	< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	91%	50%	140%	88%	50%	140%
2-Methylnaphthalene	1	1956409	< 0.01	< 0.01	NA	< 0.01	102%	50%	140%	90%	50%	140%	87%	50%	140%
Acenaphthene	1	1956409	< 0.00671	< 0.00671	NA	< 0.00671	96%	50%	140%	86%	50%	140%	82%	50%	140%
Acenaphthylene	1	1956409	< 0.004	< 0.004	NA	< 0.004	81%	50%	140%	73%	50%	140%	71%	50%	140%
Acridine	1	1956409	< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	94%	50%	140%	102%	50%	140%
Anthracene	1	1956409	< 0.03	< 0.03	NA	< 0.03	78%	50%	140%	65%	50%	140%	65%	50%	140%
Benzo(a)anthracene	1	1956409	< 0.01	< 0.01	NA	< 0.01	74%	50%	140%	70%	50%	140%	69%	50%	140%
Benzo(a)pyrene	1	1956409	< 0.01	< 0.01	NA	< 0.01	73%	50%	140%	73%	50%	140%	73%	50%	140%
Benzo(b)fluoranthene	1	1956409	< 0.05	< 0.05	NA	< 0.05	130%	50%	140%	80%	50%	140%	73%	50%	140%
Benzo(j+k)fluoranthene	1	1956409	< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	90%	50%	140%	91%	50%	140%
Benzo(e)pyrene	1	1956409	< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	94%	50%	140%	88%	50%	140%
Benzo(ghi)perylene	1	1956409	< 0.01	< 0.01	NA	< 0.01	79%	50%	140%	77%	50%	140%	73%	50%	140%
Chrysene	1	1956409	< 0.01	< 0.01	NA	< 0.01	88%	50%	140%	85%	50%	140%	82%	50%	140%
Dibenzo(a,h)anthracene	1	1956409	< 0.006	< 0.006	NA	< 0.006	75%	50%	140%	69%	50%	140%	68%	50%	140%
Fluoranthene	1	1956409	< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	84%	50%	140%	82%	50%	140%
Fluorene	1	1956409	< 0.01	< 0.01	NA	< 0.01	91%	50%	140%	83%	50%	140%	81%	50%	140%
Indeno(1,2,3)pyrene	1	1956409	< 0.01	< 0.01	NA	< 0.01	65%	50%	140%	68%	50%	140%	66%	50%	140%
Naphthalene	1	1956409	< 0.01	< 0.01	NA	< 0.01	105%	50%	140%	90%	50%	140%	87%	50%	140%
Perylene	1	1956409	< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	96%	50%	140%	92%	50%	140%
Phenanthrene	1	1956409	< 0.03	< 0.03	NA	< 0.03	95%	50%	140%	87%	50%	140%	84%	50%	140%
Pyrene	1	1956409	< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	86%	50%	140%	83%	50%	140%
Quinoline	1	1956409	< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	125%	50%	140%	111%	50%	140%

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

CCME Petroleum Hydrocarbon F1 - F4 in Soil - Field Preserved															
Benzene	1	1956260	< 0.02	< 0.02	NA	< 0.02	94%	60%	140%	93%	60%	140%			
Toluene	1	1956260	< 0.08	< 0.08	NA	< 0.08	92%	60%	140%	91%	60%	140%			
Ethylbenzene	1	1956260	< 0.05	< 0.05	NA	< 0.05	86%	60%	140%	86%	60%	140%			
Xylenes (Total)	1	1956260	< 0.05	< 0.05	NA	< 0.05	85%	60%	140%	86%	60%	140%			
C6 - C10 (F1)	1	1956260	< 10	< 10	NA	< 10	108%	60%	140%	101%	60%	140%	NA	60%	140%
C6 - C10 (F1 minus BTEX)	1	1956260	< 10	< 10	NA	< 10	108%	60%	140%	101%	60%	140%	NA	60%	140%
>C10 - C16 (F2)	1	1932172	< 10	< 10	NA	< 10	89%	60%	140%	80%	60%	140%	73%	60%	140%
>C16 - C34 (F3)	1	1932172	182	165	NA	< 50	99%	60%	140%	80%	60%	140%	73%	60%	140%
>C34 - C50 (F4)	1	1932172	693	572	19.1%	< 50	96%	60%	140%	80%	60%	140%	73%	60%	140%

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Volatile Organic Compounds in Soil - Field Preserved															
Chloromethane	1956260		<100	<100	NA	< 100	144%	70%	130%	141%	60%	140%	140%	60%	140%

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Quality Assurance

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.
AGAT WORK ORDER: 21X700049
PROJECT: 203150 Dingwells Mills
ATTENTION TO: Daniel Wheeler
SAMPLING SITE:
SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Feb 05, 2021			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Vinyl Chloride	1956260		<20	<20	NA	< 20	103%	50%	140%	107%	60%	130%	99%	50%	140%
Bromomethane	1956260		<50	<50	NA	< 50	113%	50%	140%	110%	60%	130%	95%	50%	140%
Chloroethane	1956260		<100	<100	NA	< 100	112%	50%	140%	94%	60%	130%	109%	50%	140%
Trichlorofluoromethane (FREON 11)	1956260		<100	<100	NA	< 100	96%	50%	140%	118%	60%	130%	90%	50%	140%
Acetone	1956260		<500	<500	NA	< 500	115%	50%	140%	114%	50%	140%	118%	50%	140%
1,1-Dichloroethylene	1956260		<50	<50	NA	< 50	122%	50%	140%	111%	60%	130%	114%	50%	140%
Methylene Chloride (Dichloromethane)	1956260		<100	<100	NA	< 100	118%	50%	140%	118%	60%	130%	124%	50%	140%
trans-1,2-Dichloroethylene	1956260		<80	<80	NA	< 80	114%	50%	140%	125%	60%	130%	109%	50%	140%
1,1-Dichloroethane	1956260		<100	<100	NA	< 100	116%	50%	140%	121%	60%	130%	115%	50%	140%
cis-1,2-Dichloroethylene	1956260		<100	<100	NA	< 100	116%	50%	140%	119%	60%	130%	111%	50%	140%
Chloroform	1956260		<50	<50	NA	< 50	120%	50%	140%	156%	60%	130%	113%	50%	140%
1,2-Dichloroethane	1956260		<100	<100	NA	< 100	122%	50%	140%	118%	60%	130%	119%	50%	140%
1,1,1-Trichloroethane	1956260		<30	<30	NA	< 30	102%	50%	140%	101%	60%	130%	94%	50%	140%
Carbon Tetrachloride	1956260		<50	<50	NA	< 50	94%	50%	140%	105%	60%	130%	83%	50%	140%
Benzene	1956260		<6.8	<6.8	NA	< 6.8	111%	70%	130%	120%	60%	140%	106%	60%	140%
1,2-Dichloropropane	1956260		<50	<50	NA	< 50	119%	50%	140%	120%	60%	130%	113%	50%	140%
Trichloroethylene	1956260		<10	<10	NA	< 10	105%	50%	140%	117%	60%	130%	96%	50%	140%
Bromodichloromethane	1956260		<100	<100	NA	< 100	112%	50%	140%	105%	60%	130%	101%	50%	140%
cis-1,3-Dichloropropene	1956260		<100	<100	NA	< 100	108%	50%	140%	100%	60%	130%	99%	50%	140%
trans-1,3-Dichloropropene	1956260		<100	<100	NA	< 100	105%	50%	140%	95%	60%	130%	92%	50%	140%
1,1,2-Trichloroethane	1956260		<30	<30	NA	< 30	119%	50%	140%	117%	60%	130%	109%	50%	140%
Toluene	1956260		<80	<80	NA	< 80	102%	70%	130%	115%	60%	140%	92%	60%	140%
2-Hexanone	1956260		<500	<500	NA	< 500	112%	50%	140%	113%	50%	140%	118%	50%	140%
Dibromochloromethane	1956260		<100	<100	NA	< 100	112%	50%	140%	96%	60%	130%	92%	50%	140%
1,2-Dibromoethane	1956260		<50	<50	NA	< 50	115%	50%	140%	111%	60%	130%	108%	50%	140%
Tetrachloroethylene	1956260		<100	<100	NA	< 100	89%	50%	140%	116%	60%	130%	77%	50%	140%
1,1,1,2-Tetrachloroethane	1956260		<100	<100	NA	< 100	105%	50%	140%	102%	60%	130%	91%	50%	140%
Chlorobenzene	1956260		<50	<50	NA	< 50	101%	50%	140%	122%	60%	130%	92%	50%	140%
Ethylbenzene	1956260		<18	<18	NA	< 18	95%	70%	130%	116%	60%	140%	86%	60%	140%
m,p-Xylene	1956260		<100	<100	NA	< 100	93%	70%	130%	118%	60%	140%	85%	60%	140%
Bromoform	1956260		<100	<100	NA	< 100	104%	50%	140%	91%	60%	130%	85%	50%	140%
Styrene	1956260		<100	<100	NA	< 100	92%	50%	140%	106%	60%	130%	84%	50%	140%
1,1,2,2-Tetrachloroethane	1956260		<50	<50	NA	< 50	120%	50%	140%	118%	60%	130%	113%	50%	140%
o-Xylene	1956260		<100	<100	NA	< 100	101%	70%	130%	120%	60%	140%	94%	60%	140%
1,3-Dichlorobenzene	1956260		<50	<50	NA	< 50	94%	50%	140%	74%	60%	130%	81%	50%	140%
1,4-Dichlorobenzene	1956260		<50	<50	NA	< 50	97%	50%	140%	76%	60%	130%	82%	50%	140%
1,2-Dichlorobenzene	1956260		<50	<50	NA	< 50	103%	50%	140%	62%	60%	130%	83%	50%	140%

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Quality Assurance

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD.

AGAT WORK ORDER: 21X700049

PROJECT: 203150 Dingwells Mills

ATTENTION TO: Daniel Wheeler

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Feb 05, 2021			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: Reference Material and Blank Spike: Less than 10% of elements not within acceptance limits.

If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By:

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QA Violation

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD. **AGAT WORK ORDER: 21X700049**

PROJECT: 203150 Dingwells Mills **ATTENTION TO: Daniel Wheeler**

RPT Date: Feb 05, 2021

PARAMETER	Sample Id	Sample Description	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
Metals - Full Metal Scan in Soil											
Iron		BH03 SS04	95%	70%	130%	126%	80%	120%	NA	70%	130%

Comments: NA Signifies Not Applicable
Duplicate NA: results are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.
More than 90% of the elements met acceptance limits and overall data quality is acceptable for use. For a multi-element scan up to 10% of analytes may exceed the quoted limits by up to 10% absolute.

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QA Violation

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD. **AGAT WORK ORDER: 21X700049**

PROJECT: 203150 Dingwells Mills **ATTENTION TO: Daniel Wheeler**

RPT Date: Feb 05, 2021

PARAMETER	Sample Id	Sample Description	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
Volatile Organic Compounds in Soil - Field Preserved											
Chloromethane		BH03 SS04	144%	70%	130%	141%	60%	140%	140%	60%	140%
Chloroform		BH03 SS04	120%	50%	140%	156%	60%	130%	113%	50%	140%

Comments: Reference Material and Blank Spike: Less than 10% of elements not within acceptance limits.

If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

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Method Summary

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD. **AGAT WORK ORDER: 21X700049**

PROJECT: 203150 Dingwells Mills **ATTENTION TO: Daniel Wheeler**

SAMPLING SITE: **SAMPLED BY:**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Chloride (2:1)	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Aluminum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Iron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lithium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Manganese	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Strontium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Tin	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET 93 -6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS

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Method Summary

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD. **AGAT WORK ORDER: 21X700049**

PROJECT: 203150 Dingwells Mills **ATTENTION TO: Daniel Wheeler**

SAMPLING SITE: **SAMPLED BY:**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-120-5015	Atlantic RBCA Guidelines for Laboratories Tier 1	(P&T)GC/MS
Toluene	VOL-120-5015	Atlantic RBCA Guidelines for Laboratories Tier 1	(P&T)GC/MS
Ethylbenzene	VOL-120-5015	Atlantic RBCA Guidelines for Laboratories Tier 1	(P&T)GC/MS
Xylenes (Total)	VOL-120-5015	Atlantic RBCA Guidelines for Laboratories Tier 1	(P&T)GC/MS
C6 - C10 (F1)	VOL-120-5015	CCME CWS Tier 1	GC/MS/FID
C6 - C10 (F1 minus BTEX)	VOL-120-5015	CCME CWS Tier 1	GC/MS/FID
>C10 - C16 (F2)	ORG-120-5102	Based on CCME CWS Tier 1	GC/FID
>C16 - C34 (F3)	ORG-120-5102	Based on CCME CWS Tier 1	GC/FID
>C34 - C50 (F4)	ORG-120-5102	Based on CCME CWS Tier 1	GC/FID
Gravimetric Heavy Hydrocarbons (F4G)	ORG-120-5102	Based on CCME CWS Tier 1	GRAVIMETRIC
o-terphenyl	ORG-120-5102	CCME	GC/FID
% Moisture		Calculation	GRAVIMETRIC
1-Methylnaphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
2-Methylnaphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Acenaphthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Acenaphthylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Acridine	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(a)anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(a)pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(b)fluoranthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(j+k)fluoranthene	ORG-120-5119	EPA SW846/3541/3510/8270C	GC/MS
Benzo(e)pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Benzo(ghi)perylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Chrysene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Dibenzo(a,h)anthracene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Fluoranthene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Fluorene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Indeno(1,2,3)pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Naphthalene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Perylene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Phenanthrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Pyrene	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Quinoline	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Naphthalene-d8	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Terphenyl-d14	ORG-120-5104	EPA SW846/3541/3510/8270C	GC/MS
Pyrene-d10 (%)	ORG-120-5119	EPA SW846/3510/8270C	GC/MS
Chloromethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Vinyl Chloride	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Bromomethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Chloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Trichlorofluoromethane (FREON 11)	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Acetone	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,1-Dichloroethylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Methylene Chloride (Dichloromethane)	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
trans-1,2-Dichloroethylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS

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Method Summary

CLIENT NAME: HARBOURSIDE GEOTECHNICAL CONSULTANTS LTD. **AGAT WORK ORDER: 21X700049**

PROJECT: 203150 Dingwells Mills **ATTENTION TO: Daniel Wheeler**

SAMPLING SITE: **SAMPLED BY:**

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1-Dichloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
cis-1,2-Dichloroethylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Chloroform	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,2-Dichloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,1,1-Trichloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Carbon Tetrachloride	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Benzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,2-Dichloropropane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Trichloroethylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Bromodichloromethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
cis-1,3-Dichloropropene	VOL-120-5002	EPA SW846 5035/8260B	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,1,2-Trichloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Toluene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
2-Hexanone	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Dibromochloromethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,2-Dibromoethane	VOL-120-5002	EPA SW846 5235/8260B	GC/MS
Tetrachloroethylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,1,1,2-Tetrachloroethane	VOL-120- 5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Ethylbenzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
m,p-Xylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Bromoform	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
Styrene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,1,2,2-Tetrachloroethane	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
o-Xylene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,3-Dichlorobenzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,4-Dichlorobenzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
1,2-Dichlorobenzene	VOL-120-5002	EPA SW846 5235/8260B	GC/MS
Toluene-d8	VOL-120-5002	EPA SW846 5035/8260B	GC/MS
4-Bromofluorobenzene	VOL-120-5002	EPA SW846 5035/8260B	GC/MS

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Laboratory use Only
Arrival Condition: ☐ Good ☐ Poor (complete 'notes')
Arrival Temperature: 11.4 11.1 12.3
AGAT Job Number: 21X[illegible] 700049
Notes:

Drinking Water Sample (y/n): _____ Reg. No. _____
Waterworks Number: _____

Report To:
Company: Harbourside Geotechnical Consultants
Contact: Daniel Wheeler
Address: 219 Waverly Road, Darmouth NS
Phone: (902)-405-4696 FAX: (902)-405-4693
PO#:
AGAT Quotation:
Client Project #: 203150 Dingwells Mills

Invoice to: Same (Y/N) - Circle
Company:
Contact:
Address:
Phone: Fax:
PO#/Credit Card #:

Report Information
1. Name: Daniel Wheeler
Email: dwheeler@harboursideengineering.ca
2. Name: Riley Guest
Email: rguest@harboursideengineering.ca

Regulatory Requirements (Check):
☑ List Guidelines on Report ☐ Do Not List Guidelines on Report
☐ PIRI
Site Info (check all that apply):
☐ Teir 1 ☐ Res. ☐ Pot. ☐ Coarse
☐ Teir 2 ☐ Com ☐ N/Pot. ☐ Fine
☐ Gas ☐ Fuel ☐ Lube
☑ CCME ☐ CDWQ
☑ Ind ☐ NSDFOSP
☑ Com ☐ HRM 101
☑ Res/P Storm Water
☑ Ag ☐ HRM 101
☐ FWAL Waste Water
☐ Sediment
☐ Other

Report Format
☐ Single PDF sample per page
☐ Multiple PDF samples per page
☐ Excel Format Included

Turnaround Time (TAT) Business Days
Regular TAT:
☑ 5 - 7 days
Rush TAT:
☐ 1 day ☐ 2 days
☐ 3 - 4 days
Date Required:
Time Required: '21 JAN 15 2:21 pm

SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info, Sample Containment	Field Filtered/ Preserved	Standard Water Analysis +MS	Metals	(Circle-Total, Diss or Available)	Mercury	pH	Resisitivity	Chloride	Sulphate	Alkalinity	Total Phosphorus	Phenols	TPH/BTEX (PIRI) Teir 1	TPH/BTEX-Fractionation Teir 2	VOC	THM	PAH	PCB	Other : CCME-CWS TPH/BTEX	Hazardous (Y/N)	Lab Sample #
BH03 SS04	2021-01-11 8:30	sed./soi	6				X					X							X		X		X		
BH04 SS02	2021-01-12 8:45	sed./soi	6				X					X							X		X		X		
BH01 SS10	2021-01-11 13:50	sed./soi	6				X					X							X		X		X		
BH02 SS03	2021-01-11 15:00	sed./soi	6				X					X							X		X		X		
BH02 SS06	2021-01-11 15:30	Sed./soi	6				X					X							X		X		X		
BH01 SS06	2021-01-11 13:13	sed./soi	6				X					X							X		X		X		

Sample Relinquished By (print name & sign): Riley Guest
Date/Time:
Samples Received By (print name and sign):
Date/Time:
Special Instructions

Sample Relinquished By (print name & sign):
Date/Time:
Samples Received By (print name and sign):
Date/Time:

Page 1 of 1

APPENDIX D

Borehole Location Plan

DINGWELLS MILLS
CULVERT REPLACEMENT
BOREHOLE LOCATION PLAN

HARBOURSIDE
Geotechnical Consultants

LEGEND

BOREHOLE (BH)

Project No.: 203150

DD-MM-YYYY: 01-02-2021

0 15 30 60 m

0 62.5 125 250 ft

DATA SOURCES: IMAGERY OBTAINED FROM ESRI

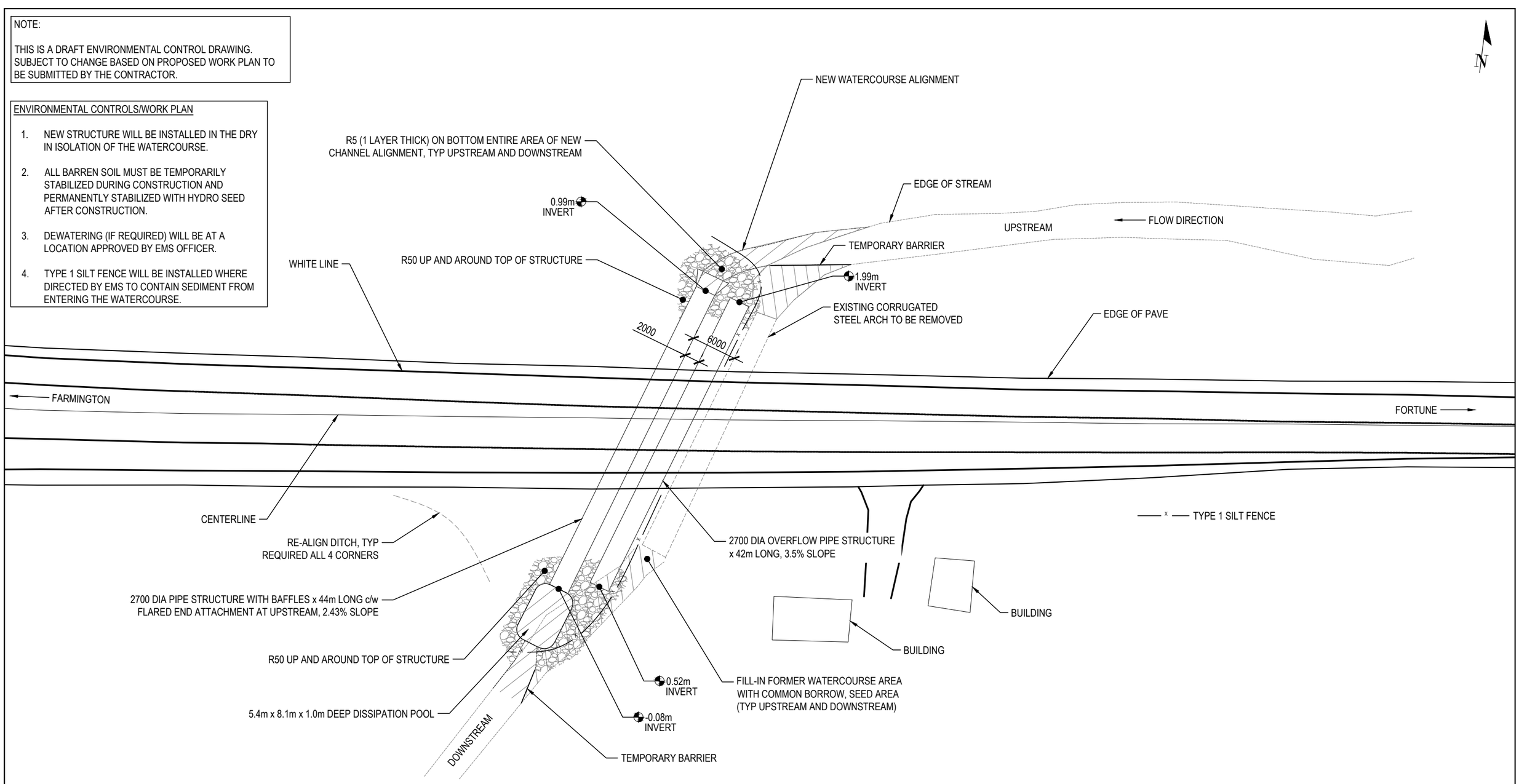
KEY PLAN

NOTE:

THIS IS A DRAFT ENVIRONMENTAL CONTROL DRAWING. SUBJECT TO CHANGE BASED ON PROPOSED WORK PLAN TO BE SUBMITTED BY THE CONTRACTOR.

ENVIRONMENTAL CONTROLS/WORK PLAN

1. NEW STRUCTURE WILL BE INSTALLED IN THE DRY IN ISOLATION OF THE WATERCOURSE.
2. ALL BARREN SOIL MUST BE TEMPORARILY STABILIZED DURING CONSTRUCTION AND PERMANENTLY STABILIZED WITH HYDRO SEED AFTER CONSTRUCTION.
3. DEWATERING (IF REQUIRED) WILL BE AT A LOCATION APPROVED BY EMS OFFICER.
4. TYPE 1 SILT FENCE WILL BE INSTALLED WHERE DIRECTED BY EMS TO CONTAIN SEDIMENT FROM ENTERING THE WATERCOURSE.



1 / E1 PLAN - NEW
1:500

FISH HABITAT AREA:

FORMER WATERCOURSE:	129.53m²
NEW WATERCOURSE:	112.18m²

Prince Edward Island CANADA

DEPT OF TRANSPORTATION, INFRASTRUCTURE, AND ENERGY

Tel 902 368 5100
Fax 902 368 5395
http://www.gov.pe.ca/

PO Box 2000
Charlottetown
Prince Edward Island
Canada C1A 7N8

ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH TIE's STANDARD SPECIFICATIONS AND ENVIRONMENTAL PROTECTION PLAN (EPP).

MAINTAIN ENVIRONMENTAL CONTROLS UNTIL VEGETATION HAS ESTABLISHED OR AS INSTRUCTED ON SITE.

ALL DRIVEWAY CULVERTS AND SIDE SLOPES SHALL BE MIN. 3H:1V

SURVEY BY:	T.I.E.	SCALE:	AS NOTED
DRAWN BY:	K. MACEACHERN	COUNTY:	-----
APPROVED BY:	N. LAWLESS		
PROJECT No.:	2021		

No.	REVISIONS	DATE
0	ISSUED FOR ENVIRO PERMIT	JUNE 7, 2021

STATIONING:

CONTROL SECTION:

JOB: DINGWELL MILLS STRUCTURE REPLACEMENT

SHEET NAME: ENVIRONMENTAL CONTROLS

SHEET No. E1 OF 5