



Department of Transportation, Infrastructure and Energy  
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**CAPITAL PROJECTS  
ADDENDUM NUMBER 2  
for  
CLYDE RIVER BRIDGE CROSSING - TCH EXTENSION  
(Scheduled Tender Closing 22 February, 2018)**

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**TO: All Bidders**

**FROM: Darrell Evans, P.Eng.  
A/Asst. Director**

**DATE: 9 February, 2018**

**SUBJECT: Schedule A - Errata  
Specifications - Errata  
Drawings - Errata**

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1. Please see attached Schedule 'A', Rev. 1, dated Feb. 9, 2018. Please remove the original Schedule 'A', dated Jan. 30<sup>th</sup>, 2018 and replace it with the attached.  
  
The change is required to add the clause regarding Bid Security (as indicated in Addendum No. 1) as well as to adjust the Insurance Requirements of Clause GC105.04 in the General Provisions and Contract Specifications.
2. See attached Specification Section 05 50 00, Metal Fabrications, dated February 2018. Please remove Section 05 50 00, Metal Fabrications, dated January 2018 and replace it with the attached. The change is required for the following edits:
  - a. Clause 1.4, Quality Assurance, Clause 1.4.3 shall read:
    - i. "All structural plate for bridge girders shall have welding performed by companies certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of CSA W47.1, Division 1."
  - b. Clause 1.4, Quality Assurance, add new Clause 1.4.6 as follows:
    - i. "All miscellaneous metals shall be permitted to have welding performed by companies certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of CSA W47.1, Division 2, as a minimum."
3. Attached is Drawing S03, Rev. 1, General Notes. Please remove the existing Drawing Sheet S03, Rev. 0 and replace it with the attached. The change is required to edit the following under Steel Notes:

- a. Note 1 a) shall read as follows: "WEBS, FLANGE PLATES, STIFFENERS, DIAPHRAGMS TO G40.21 - 350AT CAT 2."
- b. Note 1 c) shall read as follows: "HIGH STRENGTH BOLTS ASTM F3125 GRADE A325 TYPE 1, THREADS TO BE EXCLUDED FROM ALL SHEAR PLANES (U.N.O.)." A325 bolts shall NOT be galvanized.
4. Drawings S06, Detail 1/S04; the Wabo Compression Seal WA-500, by Watson Bowman, shall be considered as an acceptable alternate to the D.S. Brown CA-4500 compression seal.
5. Attached is Drawing S11, Rev. 1, Bearing Details - Sheet No. 2. Please remove the existing Drawing Sheet S11, Rev. 0 and replace it with the attached. The change is required to correct the leader in Sections A, B, C and D to the correct anchor bolt designation.

A signed copy of this addendum must be included with your bid submission on this project.

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Signature of Contractor

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**1. 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.

**2. ALTERNATE BIDS**

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

**3. VALUE ENGINEERING (VE)**

The Department of Transportation, Infrastructure & Energy (TIE) will entertain proposals brought forth by any bidder for Value Engineering (VE). The Department will review all proposals for technical merit and proposed cost savings. The Department will then advise whether or not the VE Proposal is feasible. The Department's decision shall be considered final.

Proposal(s) from any bidder shall be submitted with their tender submission, bound and clearly separated from the primary tender submission, complete with a cover letter (signed and dated) summarizing the overall concept of the proposal. The cover letter shall also clearly state the amount of cost savings indicated both in written and digit format.

Proposal(s) from any bidder shall contain a detailed breakdown of all related work activities complete with associated costs (credits and debits), with the net cost savings clearly indicated.

All submitted proposals shall be reviewed by TIE as part of TIE's evaluation in to order to determine the successful Contractor.

Any proposals deemed acceptable to TIE will be eligible for cost savings sharing of 50% for the Department and 50% for the Contractor. There will be no compensation for those proposals which are deemed unacceptable.

Note the 50/50 cost savings sharing shall **not** be applied to any credits to the Contract nor unused quantities. The cost savings sharing shall **ONLY** be applied to VE Proposals brought forth by the Contractor and agreed to with the Department.

All costs related to updating TIE and/or Consultant drawings as a result of an accepted proposal shall be covered by the Contractor, independent from the 50/50 cost split items.

**4. SITE VISIT**

The Department of Transportation, Infrastructure & Energy (TIE) 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

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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.

**5. SECTION 102.07 - BID AND PERFORMANCE SECURITY**

Bid Security shall be made out in the amount of \$750,000.

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

**6. SUBMISSIONS**

Prior to submission to TIE, 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 TIE 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 submitted via digital media as much as practically possible, unless otherwise noted and/or agreed to by TIE. Digital submissions shall be Portable Document Format (PDF), with multi-page and drawing file documents 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 TIE's drawing(s) to facilitate the preparation of a submission, the Contractor shall first remove from the drawing(s) all references connected to TIE (provincial logo, title block text, engineer's seal, etc).

**7. SECTION 102.13 - SCHEDULING OF THE WORK**

The number of working days stipulated for this Contract is two hundred and fifty (250) 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.

The project must be completed no later than August 24, 2019

All bidders shall supply a Preliminary Construction Schedule with his Tender Documents for review by TIE. Note that TIE's evaluation of submitted bids shall include reviewing the Preliminary Schedule including but not limited to the benefit(s) of earlier completion, bridge/roadway open to traffic (entire

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width), and overall project completion date. Note that the tender deadline dates indicated for any Phase(s), bridge/roadway open to traffic (entire width), and/or overall project completion are the latest acceptable dates, with earlier dates acceptable.

Prior to Contract award, the selected Bidder shall submit a detailed Final Construction Schedule to TIE for review. The Final Construction Schedule shall identify all primary work activities (eg excavation, demolition, pile driving, concrete foundations, rock placement, steel box girder supply and installation, deck, barriers, earthwork backfill, collision blocks, approach slabs, waterproofing, removal of temporary works, etc). The Final Schedule shall indicate applicable time lines and milestones for all work activities and Phases.

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

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

It is the expectation that the Earthworks General Contractor will conduct all necessary works in order to allow the bridge contractor access to this site. The general sequencing of the works is as follows:

- Construct access roads and earthen working platforms for centre pier (Earthworks contractor)
- Excavate for pier base construction (Earthworks contractor)
- Drive piles and construct cast-in-place concrete pier base (Bridge contractor)
- Construct pier shaft and hammerhead pier cap (Bridge contractor)
- re-align river bed (Earthworks contractor)
- Construct approach roads on the east end of the bridge (Earthworks contractor)
- Drive piles for east abutment and construct concrete abutment pile cap (Bridge contractor)
- Construct western approach roads to bridge structure (Earthworks contractor)
- Drive piles for west abutment and construct concrete abutment pile cap (Bridge contractor)
- Backfill abutments with Class 'A' material (Bridge contractor)
- Complete construction of bridge superstructure (Bridge contractor)
- Complete select borrow and granular base on the approaches (Earthworks contractor)
- Waterproof the bridge deck and place asphalt wearing surface (Earthworks contractor)

The above sequencing is not intended to be a succession of events as there are some items which could be worked on concurrently. The Bridge and Earthwork contractors are free to revise or modify the sequencing as they see fit in order to best achieve the desired results and to meet the budget and schedule.

**Bidders are advised that the financial scheduling shall be \$4.0 Million in Fiscal Year 2018/19. The remainder shall be processed during Fiscal Year 2019/20; which begins on April 1, 2019. It is anticipated that the site will be inactive during the winter months of 2018/2019.**

**8. SECTION 103.03 - EXTRA WORK**

The Cost of any extra work shall not include the costs of service vehicles or the wages of the supervisory personnel except under special circumstances authorized by the Engineer.

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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 TIE 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 daily, 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 TIE 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 TIE 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 TIE's option to pay for extra work via Time and Materials.

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

**NOTE: The work is being conducted within the limits of the TCH Extension Project, from the North River Roundabout to Clyde River. The earthworks are being constructed under separate contract with TIE. The successful Bridge Contractor shall liaise with the earthworks General Contractor and coordinate and schedule his works accordingly and as required. No compensation shall be entertained for any scheduling issues that may arise due to lack of correspondence between this bridge contractor and the earthworks contractor.**

**9. 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.

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**10. 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.

**11. 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 TIE. Reinstatement shall be reasonably to that condition prior to project start.

**12. 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 TIE upon request.

Any related permits applied for in advance by TIE on behalf of the successful Contractor are made solely in the interest of the project schedule. Any permits issued to TIE 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 TIE of both a Hazardous Waste Permit and a Pit Permit.

The Contractor shall develop and submit to TIE (for TIE's review and comment prior to the project's startup meeting with the Contractor) Environmental Control Drawing(s) indicating the type and extent of each environmental control. This drawing shall be developed based on the Contractor's proposed work methods and procedures, coincident with the work activities within the time frame of the project.

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

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considered incidental to the project with no additional compensation provided.

The type, location, and extent of all environmental controls shall be coordinated with TIE.

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 TIE) 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.

**13. SECTION 105.04 - INSURANCE REQUIREMENTS**

Please note that the insurance requirements on this project shall be set at **\$5,000,000 CGL** and **\$3,000,000 Automobile**. The contractor is responsible to ensure that all insurance is in place and that any additional insurance that he deems warranted for this project has been procured.

**14. 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 TIE a copy of all OH&S reports (independent of report content) related to this construction site. The Contractor shall also submit to TIE 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 TIE 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 TIE additional copies verifying renewal of good standing status throughout the duration of the project.

The Contractor shall fully complete and submit to TIE (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 TIE's discretion) those provided.

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.



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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 shall submit to TIE (prior to mobilizing on site) a written and signed document stating:

- a) all equipment to be used for this project has been and will be safety maintained and is safe for use;
- b) all workers have and will be safety trained to perform work activities for this project; and
- c) all personal protective equipment used for this project meets latest CSA Standards.

This document shall be applicable for all equipment and workers whether under the direct operation/direction of the Contractor or a Subcontractor. The Contractor shall also submit to TIE Safety Inspection Certificates of any cranes or motorized vehicles to be used on site or in TIE's storage yard.

The Contractor is responsible to ensure that all equipment can safely enter, manoeuvre within, and exit the site. The Contractor shall take measures to ensure trucks can safely enter, manoeuvre within, queue, 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.

The Contractor shall submit to TIE 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.

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

**15. SECTION 907 - VEHICLE CONFIGURATIONS AND RESTRICTIONS**

There is no existing traffic to contend with. The contractor shall, at ALL times, liaise and coordinate his work with the work of the roadway General Contractor. See Clause 7 above.

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

The unit price bid for this item shall include the transportation of the surplus material to a separate site designated by the Contractor to be later used as common borrow material for the roadbed construction for this project's site. The unit rate bid for this item shall include the excavation, loading, transportation, stockpiling, any environmental controls required, reloading, transportation, placement, and compaction of the material. Contractor to determine in conjunction with TIE representative the extent of excavation so to place any equipment and/or manoeuvre 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.

For the purpose of determining the volume of material excavated, The Contractor shall be responsible to perform a site survey of the excavated area and submit to the Department a digital file (either

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autocad or microstation file type) indicating 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 TIE's site survey benchmark. Otherwise, the quantity of excavated material shall be based on eight (8) cubic metres per tandem truck load and fourteen (14) cubic metres per trailer load.

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.

**17. 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 waste material off site. Contractor to determine in conjunction with TIE 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.

Note that this item also includes the removal of the temporary abutment's backfill and associated approach roads down to the permanent side embankment underside of new topsoil.

For the purpose of determining the volume of material excavated, The Contractor shall be responsible to perform a site survey of the excavated area and submit to the Department a digital file (either autocad or microstation file type) indicating 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 TIE's site survey benchmark. Otherwise, the quantity of excavated material shall be based on eight (8) cubic metres per tandem truck load and fourteen (14) cubic metres per trailer load.

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.

**18. SECTION 20709 - CLASS D GRAVEL**

This item includes the supply, placement, and compaction of Class 'D' granular backfill within the foundation areas as deemed required by TIE. Contractor shall determine and verify quantity of material required prior to ordering and site delivery.

**19. BID ITEM # 20728 - BACKFILL ABUTMENTS**

The unit bid price for this item shall include the supply and placement of Class 'A' granular backfill against the structure's abutments and corresponding wing walls. The granular backfill shall be compacted at 300mm lifts and shall encompass the space envelope as indicated on the drawings.

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Tampers or double drum rollers shall be the method of compaction within 900mm of the abutment wall. Contractor shall determine and verify quantity of material required prior to ordering and site delivery. There will be no additional compensation entertained for meeting the required 95% proctor density on the Class A backfill. Refer to attached Schedule 'F' and drawings for further details.

**20. 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. 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.

**21. SECTION 21309 - RANDOM RIP-RAP R250**

The unit bid price for this item shall include the supply and placement of random R250 rip rap as indicated on the drawings. 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 the TIE specification for the percent finer by mass for the 570mm size shall read 0%, not 40-55%.

**22. 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. Filter fabric shall be type N3 at all locations.

**23. SECTION 110112 - CAST-IN-PLACE CONCRETE**

The unit bid price for the above listed item shall be full compensation for the mix design for each mix and certification for each mix, delivery, supply, placement, curing, formwork, form liner, false work, accessories, all inserts as shown on the drawings, and all incidentals necessary to complete all concrete and grout work as indicated on the drawings. Refer to attached Schedule 'F' and drawings for further details. No additional compensation shall be provided. The design parameters shall include LASF and a Corrosion Inhibitor. NOTE: ALL CONCRETE SHALL BE DESIGNED AS HIGH PERFORMANCE CONCRETE AND THE DESIGNER SHALL INCLUDE SPECIFIC RECOMMENDED CURING METHODS FOR EACH MIX AND/OR MIX APPLICATION WITH HIS PROPOSED MIX DESIGN.

The mix proportions for concrete and grout (indicating mix contents and associated proportions) shall be submitted to TIE for general review. 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.

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Grout shall have a 28 day design compressive strength minimum 35 MPa.

Note that the Contractor shall determine and verify the quantity of concrete and grout required prior to ordering and site delivery.

This requirement shall also be for the following bid items:

1. Approach Slab Concrete (BID ITEM # 110117)
  1. Shall include the approach slabs at both ends of the bridge, including any and all inserts, as shown on the drawings. Curing shall be seven (7) day continuous wet cure.
2. Concrete Footings, Walls, Abutments and Piers (BID ITEM # 130822)
  1. Shall include abutment and pier caps, footings, walls, breastwalls/backwalls, wingwalls, wingwall haunches, curtain walls, bearing plinths, bearing seats, pier shafts, hammer-head pier cap and all other inserts as shown on the drawings. Curing shall be three (3) day continuous wet cure. Finish for the piers shall smooth steel form finish.
3. Bridge Deck, Curbs, and Parapet (BID ITEM # 130861)
  1. Shall include the concrete deck, collision blocks, and traffic barriers. Curing shall be fog misting immediately after placement and seven (7) day continuous wet cure. ANY PLASTIC OR DRYING SHRINKAGE CRACKS GREATER THAN 0.4 mm SHALL BE REPAIRED WITH AN APPROVED EPOXY INJECTION MATERIAL AT NO ADDITIONAL COST TO THE CONTRACT. This item includes the supply and installation of bond breaker and gap form for the barrier control joints. A307 rods shall be paid for under Item 130864, Miscellaneous Metals.

Forming and caulking of control joints shall be considered incidental to the work. The use of Duraforms or equivalent product shall not be used 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 both vertical faces (including all recessed and sloped surfaces) of the all collision blocks and traffic barriers.

Any defects such as but not limited to honeycombing, disintegration, spalling, cracking, stratification, segregation, cold joints, etc shall be repaired by the Contractor prior to acceptance by TIE. Determination of defect and extent shall be solely by TIE. The repair method for each type of defect shall be developed by the Contractor and submitted to TIE for review prior to commencing repairs. Repair methods shall address surface preparation / material removals, repair materials, method of placement, and curing measures. All costs associated with defect repair shall be at no additional charge to the Contract.

This item shall also include all costs associated with excavating, constructing, supplying, and installing environmental controls complete with their continued maintenance, clean out and disposal of waste material, decommissioning, removal of environmental controls, filling in, levelling out, and full

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reinstatement of washout pits to be used for cleaning the concrete trucks' chutes. The Contractor shall account for the quantity of pits required based on the location of concrete truck delivery relative to the site. The location of pit(s) shall be co-ordinated with a TIE representative. The Contractor shall arrange, obtain permission, and pay for any pits which may have to be located on adjacent privately owned land. No additional compensation shall be provided for any additional work and/or equipment related to washout pits.

This item shall also include all costs associated with the supply of all labour, materials, and equipment required to fill tie holes, grind smooth exposed top and leading edge of collision blocks, curbs, and the removal of any cement paste from the base of exposed vertical surfaces (ie curb, barrier, collision blocks, etc).

Note that any lubrication material used to prime the concrete pump line shall be not be permitted to be placed within nor left as part of the permanent structure. This item shall include all costs associated with the removal from within the concrete pour space all concrete pump line lubrication material. All lubrication material shall be disposed of in coordination with TIE's Environment Management Section (EMS).

This item shall also include all costs associated with the development and submission to TIE deck formwork drawings indicating items such as but not limited to member sizes and spacings, material grades, type of hardware, and hardware location relative to the protective cover zone.

This item shall also include all costs (including all environmental controls) associated with dewatering any areas of the site in order to perform any construction activity and/or if any area becomes contaminated with earth silt during any phase of the project. Cast-in-place footings are to be poured/placed in the dry. The location of dewater outfalls shall be co-ordinated with the Department. The Contractor shall arrange, obtain permission, and pay for any outfalls which may have to be located on adjacent privately owned land. No additional compensation shall be provided for any additional work and/or equipment related to dewatering.

This item shall also include all costs associated with the development and submission by the Contractor to TIE 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.

The unit price for these items shall also be full compensation for the provision of all labour, materials, energy source, and equipment required to supply heat to maintain enclosed air temperatures within criteria as indicated in CAN/CSA A23.1 latest edition. This applies to pre-pour, pour, and curing time periods.

**24. SECTION 130000 - CONCRETE REINFORCEMENT: GFRP**

1. Conc. Reinforcement: 10 mm Dia. (#3) GFRP (BID ITEM # 130929)

1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 10 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.

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2. Conc. Reinforcement: 13 mm Dia. (#4) GFRP (BID ITEM # 130913)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 13 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
3. Conc. Reinforcement: 16 mm Dia. (#5) GFRP (BID ITEM # 130914)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 16 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
4. Conc. Reinforcement: 19 mm Dia. (#6) GFRP (BID ITEM # 130915)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 19 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
5. Conc. Reinforcement: 22 mm Dia. (#7) GFRP (BID ITEM # 130927)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 22 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
6. Conc. Reinforcement: 25 mm Dia. (#8) GFRP (BID ITEM # 130916)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 25 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
7. Conc. Reinforcement: 32 mm Dia. (#9) GFRP (BID ITEM # 130930)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 32 mm diameter **straight glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
8. 16 mm Dia. GFRP Bent (BID ITEM # 130922)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 25 mm diameter **bent glass-fibre reinforced polymer (GFRP)** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.

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9. 19 mm Dia. GFRP Bent (BID ITEM # 130923)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 19 mm diameter ***bent glass-fibre reinforced polymer (GFRP)*** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
  
10. 22 mm Dia. GFRP Bent (BID ITEM # 130928)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 22 mm diameter ***bent glass-fibre reinforced polymer (GFRP)*** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
  
11. 25 mm Dia. GFRP Bent (BID ITEM # 130924)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 25 mm diameter ***bent glass-fibre reinforced polymer (GFRP)*** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
  
12. Conc. Reinforcement: 16 mm Dia. (#5) GFRP HEADED (BID ITEM # 130931)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 16 mm diameter ***straight glass-fibre reinforced polymer (GFRP) headed*** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.
  
13. Conc. Reinforcement: 19 mm Dia. (#6) GFRP HEADED (BID ITEM # 130932)
  1. The unit price bid price for the above listed item shall be full compensation for each **metre** of 19 mm diameter ***straight glass-fibre reinforced polymer (GFRP) headed*** concrete reinforcement required. Shop drawings shall be provided at no extra cost to the contract. Refer to attached Schedule 'F' and drawings.

Either five (5) sets of GFRP placement drawings, or digital GFRP placement drawings, indicating material grade, piece marks and associated bar size and spacing, lap locations and associated lengths, etc shall be submitted to TIE by the Contractor at no extra cost to the Contract. Also include directly on the placement drawing (not on a separate 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, and grand total length for each bar diameter size. Contractor responsible to review content of placement drawings for correctness prior to submitting to TIE. Refer to attached Schedule 'F' and drawings.

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. GFRP material shall also be stored covered and protected from sunlight.

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**25. BID ITEM # 130023 - MUD SLAB**

The unit price bid for the above listed item shall be full compensation for the supply and placement of concrete mud slabs that the Contractor may deem required for construction. The concrete shall have a 28 day compressive strength of 20 MPa with 4 to 6% air entrainment. Note that the Contractor shall determine and verify quantity of concrete required prior to ordering and site delivery.

**26. BID ITEM # 130826 - EXPANSION JOINTS**

The per metre bid price for the above listed item shall be full compensation for each metre of expansion joint (steel angles with anchors) supplied and installed. Submit to TIE for review, either five (5) sets, or one digital copy, of shop drawings at no extra cost to the Contract. This shall also include the supply and installation of all materials required for the compression seal type joint including lubricant adhesive. For the purpose of cost the length of expansion joint shall be along the deck from inside to inside of curb. Refer to Schedule 'F' and drawings.

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.

**27. BID ITEM # 130827 - BEARING PADS**

The per unit bid price for the above listed item shall be full compensation for each bearing pad supplied and installed. Bearing pad units shall be as indicated on project drawings or in project specification. This item shall include the supply and installation of all bearing anchor bolts and associated washers, nuts, masonry plates, bearing assemblies, side angles, and neoprene gaskets. Submit to TIE for review, either five (5) sets, or one digital copy, of shop drawings at no extra cost to the Contract. All bearing pad shop drawings shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI. Refer to Schedule 'F' and the drawings for further details.

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.

**28. BID ITEM # 130828 - DECK DRAINS**

The unit bid price for the above listed item shall be full compensation for each deck drain supplied, fabricated, hot dipped galvanized, and installed. The Contractor shall submit to TIE for review prior to fabrication, either five (5) sets of shop drawings, or digital shop drawings, (indicating member sizes, member grade, and bolt and weld details) at no additional cost to the Contract.

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.



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**29. BID ITEM # 130864 - MISCELLANEOUS METALS**

The unit bid price for the above listed item shall be full compensation for each kg of miscellaneous metals (barrier expansion joint covers, barrier dowels) fabricated, hot-dipped galvanized, supplied and installed. The Contractor shall submit to TIE for review prior to fabrication, either five (5) sets of shop drawings, or digital shop drawings, (indicating member sizes, member grade, and bolt and weld details) at no additional cost to the Contract.

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.

**30. 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.

This item shall also include allowance for permitting boat traffic to travel through the existing waterway below the concerned construction site. The Contractor shall not impede the flow of boat traffic at any time during this Contract.

Contractor shall provide a site trailer to be shared by the Contractor and Engineer. Trailer shall be equipped with electricity, lights, phone, fax, 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.

**31. BID ITEM # 130994 - DECK MEMBRANE DRAINS**

The unit bid price for the above listed item shall be full compensation for each deck membrane drain supplied, fabricated, hot dipped galvanized, and installed. The Contractor shall submit to TIE for review prior to fabrication, either five (5) sets of shop drawings, or digital shop drawings, (indicating member sizes, member grade, and bolt and weld details) at no additional cost to the Contract.

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.

**32. 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,

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surcharge layout, footing layout, abutment and pile layout, pile cutoff elevations, girder layout, bearing and plinth elevations, haunch heights, screed elevations, toe of slope layout, temporary approach road layout, edge of pavement layout, curb and gutter layout, catchbasin and storm pipe layout, dimensions, and all other measurements and layouts required to complete the work.

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 TIE for verification. The provision of Project Record Drawings shall be considered incidental to this item.

Contractor shall submit to TIE, at no additional cost to the Contract, a digital set of as-built drawings indicating plan locations (Northing and Easting Coordinates using the same grid system as used to locate the bridge piles), horizontal distances, and elevations (relative to project benchmarks) of primary points such as but not limited to: abutment corners, bearing seats, wingwall corners, collision blocks, approach slabs, and top of asphalt wearing surface (left side, right side, and centerline) at each abutment and at overall midspan. Also include in submission as-built top cover elevations as well as invert elevations of all storm lines and new catchbasins. The file format shall be AutoCAD Civil 3D, R 2013.

**33. BID ITEM # 135220 - STEEL PIPE PILES: SUPPLY**

The per metre bid price for the above listed item shall be full compensation for each metre of permanent steel pipe pile delivered to the site for intended use in the structure's foundation and shall include the supply, fabrication, installation of pile shoes on each pile's tip prior to driving; and the fabrication, supply, and installation of a pile cap plate assembly after final cut-off. Submit, either five (5) sets of shop drawings, or digital shop drawings (indicating member sizes, member grade, welded connections) to TIE for review at no additional cost to the Contract. Refer to attached Schedule 'F' and drawings.

Welding of top cap plates and tip shoes to be performed by company and welders certified with the Canadian Welding Bureau, CAN/CSA W47.1, Division 2. All welding to be performed per CAN/CSA W59 latest edition.

The unit price for this item shall also include all costs associated with the on-site storage of material supported/elevated such that it maintains its original non-deformed shape, as well as stored safely so it will remain in stored position.

The Contractor shall determine pile supply lengths for each abutment location based on the design drawing elevations and pile related details, elevation of bedrock, pile embedment into bedrock, and pile cutoff length at the top of pile.

The Contractor shall submit to TIE digital copies of mill certificates indicating heat numbers and corresponding chemical composition (components and amounts) for all pipe pile steel used for this project.

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**34. BID ITEM # 135221 - STEEL PIPE PILES: DRIVE**

The per metre bid price for the above listed item shall be full compensation for each metre of permanent steel pipe pile driven. The price shall include the provision of all labour, materials, and equipment to drive piles, including driving templates, hammers, leads, etc. Hammers supplied shall be of sufficient size and mass to produce the energy as specified. Contractor to co-ordinate and retain a qualified testing company to perform pile driving analysis at no extra cost to the contract and shall include a minimum of three (3) test piles. Submit to TIE copy of Pile Driving Analysis Report. Refer to attached Schedule 'F' and drawings. If a hammer supplied by the Contractor is insufficient to provide the energy required, then the Contractor shall supply a larger hammer at no extra cost to the Contract. Refer to Schedule 'F' and the drawings for further details.

Contractor shall submit to TIE for general review within reasonable time prior to pile driving the Contractor's proposed hammer energy information such as but not limited to hammer type, hammer weight or mass, and drop height.

This item also includes the preparation and submission to TIE a copy of the pile driving records complete with a plan view indicating pile piece marks corresponding with the driving records. This to be performed by the Contractor at no additional cost to the Contract.

This item also includes the handling and disposal off site of all pile cutoffs less than 3.0 metres in length, as well as the loading, transport to TIE's Charlottetown Bridge Yard, and unloading of all pile cutoffs greater than 3.0 metres in length.

This item does not include payment for hardship due to obstructions encountered during driving. Contractor to notify TIE immediately upon discovery of any obstructions. Obstructions encountered shall be removed from site sufficient to permit pile driving.

**35. BID ITEM # 136122 - SILANE SEALER**

The unit bid price for the above listed item shall be full compensation for the provision of all labour, materials, and equipment required for the supply and application of sealant to the entire surface area of: inside vertical face and across top horizontal surface of curbs, and the inside vertical faces (including all sloped and recessed areas) and across top horizontal surface of all collision blocks. 'Hydrozo 100' is an acceptable product or approved equal. Submit data sheet on proposed sealant to TIE for review prior to ordering sealant. Refer to manufacturer's instructions for application rates and method of application.

**36. BID ITEM # 136270 - STEEL COFFERDAM (PROVISIONAL)**

The lump sum price bid for the above listed item shall be full compensation for the design, supply, installation and de-commissioning of the steel sheet pile (SSP) wall cofferdam for the centre pier base. This shall include the provision of shop drawings, sealed and signed by a Professional Engineer, registered with Engineers P.E.I.; the supply and installation of SSP wall, including all connections, corner sections, wales, braces, temporary piles, and all other materials, labour and equipment required to complete the cofferdam. The SSP shall remain as stay-in-place formwork for the pier base footing and shall be cut off at the top of the footing after the pier shaft and hammer head pier cap are complete.

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Refer to Schedule 'F' and the drawings for further details. **This item is provisional and may not be required. The department reserves the right to remove this from the works at any time. No compensation for loss of profit associated with this item shall be entertained.**

**37. BID ITEM # 138116 - STEEL SUPERSTRUCTURE: FAB & ERECT**

The lump sum price for the above listed item shall be full compensation for the fabrication, shop fabrication and related erection and dismantling, shop -coating, transport and delivery to the job site, off-loading, any temporary site storage and related handling, and the supply and erection of the steel superstructure for the new structure. This item shall include fabrication of trapezoidal steel box girders, stiffeners, gusset plates, sole plates, diaphragms, braces, bolted connections, nelson studs, the supply and installation (tightening) of all bolts and nuts, openings, and all other incidentals required for the complete fabrication and erection of the superstructure to the satisfaction of the Engineer. Refer to Schedule 'F' and the drawings for further details.

The Contractor shall at no extra cost to the Contract submit to TIE for general review, either five (5) sets of, or digital copies of, structural steel shop drawings indicating material grades, protective coating type including extent and thickness, plan view layout complete with dimensions, cross section views as required, member sizes, piece marks, member lengths, shop fabrication and connection details (plate sizes, hole diameters & locations, weld types, size & length, bolt quantities & diameters, etc), splice locations, etc.. Submission shall account for TIE review prior to starting fabrication. Each shop drawing shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI. Contractor responsible to review content of shop drawings for correctness prior to submitting to TIE. Refer to attached Schedule 'F' and drawings. Refer also to Annex A10.1 of the Canadian Highway Bridge Design Code (CHBDC) regarding fabrication and erection details.

Flange and web shop welded splices shall not be coincident (ie not at same location relative to span).

Field bolt splices are acceptable provided:

- a) splice locations(s) are outside the middle third of the span. Two (2) splices maximum over span.
- b) connection design and associated costs by fabricator (or retained Engineer).
- c) connection detail to be indicated on submitted shop drawings.

Fabrication of structural steel members to be performed by company and welders certified with the Canadian Welding Bureau, CAN/CSA W47.1, Division 1, latest edition. All welding to be performed per CAN/CSA W59 latest edition. Bidders shall submit copies of certification to the department for their files. Companies shall also be certified bridge fabricators as defined by the Canadian Institute of Steel Construction (CISC).

The Contractor shall submit to TIE digital copies of mill certificates indicating heat numbers and corresponding chemical composition (components and amounts) for all superstructure steel used for this project.

Welding General: Refer to project specification.

Welding Inspection: Refer to project specification.

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The lump sum price shall include shop-coating the entire exterior faces of the girders prior to transport. This shall include any touch-ups required after erection and deck construction. Refer to Schedule 'F' and the project specifications for more details.

The lump sum price for this item shall also include all costs associated with the transport of the steel structure to the site including but not limited to coordination, related highway or bridge permits, escorts, road closures, traffic control personnel and related roadway signage, etc.

The lump sum price for this item shall also include all costs associated with performing an elevation survey along the top of the top flange of all of the as-installed girders at spaces indicated in the drawings (to coincide with the stations indicating screed elevations on the design drawings) along the girder length. The Contractor shall then determine the haunch height at these stations based on the elevation survey, deck thickness, and screed elevations. The Contractor shall submit to TIE at no additional cost the elevation survey results and the calculated haunch heights.

The Contractor is responsible to ensure enough available space on site shall be provided for beam installation procedures. Any temporary piers, 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 the design of any crane temporary suspended support systems, 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 girders.

If any falsework is required, then the Contractor shall submit to TIE, either five (5) sets of, or digital copies of, design drawings which bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI. No additional compensation will be provided for the Contractor's failure to include these provisions. Crane location and outrigger loads adjacent to new abutment and wingwalls must be approved by the Engineer prior to beam installation.

The lump sum price for this item shall also include all costs associated with the on-site storage of girders supported/elevated such that they maintain their original fabricated shape, as well as stored safely.

The Contractor shall at no extra cost to the Contract submit to TIE for general review, either five (5) sets of, or digital copies of, Lift Plan drawings indicating proposed method of beam installation including the sequence, plan view layout of crane locations and associated lifting capacities, weights and lifting points of members, size of any spreader beams, size of cables and/or straps complete with respective angle, capacity of shackles, outrigger locations, size and height of any timber blocking below outriggers, outrigger loads, outrigger bearing pressures, etc.. Submission shall account for TIE review prior to starting beam installation. Each Lift Plan drawing shall bear a P Eng stamp signed and dated by a professional engineer registered with Engineers PEI. Contractor responsible to review content of Lift Plan drawings for correctness prior to submitting to TIE.

The lump sum price for this item shall also be full compensation for the provision of all labour, materials, and equipment required to supply and install stainless steel bird protection spikes continuous across the entire width and entire length on the top surface of all exposed diaphragm bottom. Spikes to be 20 gauge as manufactured by 'Bird Control Products' located in Erie PA, or equal approved by TIE.

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**38. MEETINGS**

The Contractor shall make himself available for meetings with local utilities, local authorities, and TIE representatives for an initial start-up meeting prior to construction to discuss temporary utility locations, traffic management plans, 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 TIE, 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.

**39. SECURITY**

Security shall be considered incidental to the work and shall not be measured or paid for.

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 03 30 00 - Cast-in-Place Concrete
- .2 Section 05 12 33 - Structural Steel for Bridges
- .3 Section 07 95 63 - Bearing Assemblies
- .4 Section 09 97 13 - Steel Coating

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A53/A 53M-12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
  - .2 ASTM A269-15a, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  - .3 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .4 ASTM F3125/F3125M-15a, Standard Specification for High Strength Structural Steel Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi to 150 ksi Min. Tensile Strength.
  - .5 ASTM A123/A123M-17, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
  - .2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel.
  - .2 CAN/CSA-S16-14, Limit States Design of Steel Structures.
  - .3 CSA W47.1-09(R2014), Certification of Companies for Fusion Welding of Steel.
  - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-13, Welded Steel Construction (Metal Arc Welding) (Imperial Version).

- .4 The Environmental Choice Program
- .1 CCD-047a-98, Paints, Surface Coatings.
  - .2 CCD-048-98, Surface Coatings - Recycled Water-borne.

### 1.3 SUBMITTALS

- .1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with the PEITIE Department of Transportation, Infrastructure and Energy's General Provisions and Contract Specifications for Highway Construction.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with PEITIE Department of Transportation, Infrastructure and Energy's General Provisions and Contract Specifications for Highway Construction. Indicate VOC's:
    - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings
- .1 Submit shop drawings in accordance with the PEITIE Department of Transportation, Infrastructure and Energy's General Provisions and Contract Specifications for Highway Construction.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

### 1.4 QUALITY ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 All structural plate for bridge girders shall have welding performed by companies certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of CSA W47.1, Division 1.



- .4 Have fabrication performed by a CISC Quality Certified Fabricator for steel bridges. Provide a copy of the certificate upon request by the Engineer.
- .5 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .6 All miscellaneous metals shall be permitted to have welding performed by companies certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of CSA W47.1, Division 2, as a minimum.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- .1 Packing, Shipping, Handling and Unloading:  
.1 Deliver, store, handle and protect materials from damage.
- 1.6 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate and recycle waste materials in accordance with the PEITIE Department of Transportation, Infrastructure and Energy's General Provisions and Contract Specifications for Highway Construction.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- PART 2 - PRODUCTS
- 2.1 MATERIALS
- .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM F3125/F3125M.
- .5 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.
- 2.2 FABRICATION
- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

### 2.3 FINISHES

- .1 Galvanizing: hot dipped galvanizing with zinc coating 720 g/m<sup>2</sup> to ASTM A123/A123M.
- .2 Shop coat primer: to CAN/CGSB-1.40.

### 2.4 SHOP PAINTING

- .1 Apply one (1) shop coat of primer to metal items, with exception of galvanized or concrete encased items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

## PART 3 - EXECUTION

### 3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to the Engineer such as dowels, anchor clips, bar anchors, shear studs, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA S16.1, or weld.

- .7 Hand items over for casting into concrete to appropriate trades together with setting templates.
- .8 Touch-up field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding or damaged.

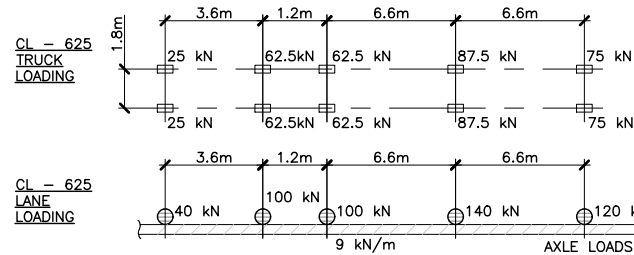
3.2 CLEANING

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

END OF SECTION

## GENERAL NOTES:

- GENERAL REQUIREMENTS GOVERNING DESIGN, MATERIALS, AND CONSTRUCTION ARE AS FOLLOWS:
  - LOADING CONSTRUCTION AND GENERAL DESIGN TO CSA-S6-14, WITH LATEST REVISIONS.
  - PRINCE EDWARD ISLAND DEPARTMENT OF TRANSPORTATION, INFRASTRUCTURE AND ENERGY (PEITIE) GENERAL PROVISION AND CONTRACT SPECIFICATIONS.
- ALL DIMENSIONS SHOWN IN MILLIMETRES.
- ALL ELEVATIONS SHOWN IN METRES.
- ALL SPECIFICATION NOTES TO REFLECT THE "LATEST EDITION" AT TIME OF TENDER.
- LIVE LOADS CL-625.



- FOUNDATION DESIGN BASED ON INFORMATION PROVIDED IN GEOTECHNICAL REPORT PREPARED BY JOOSE ENVIRONMENTAL CONSULTING INC. REPORT - PROJECT NUMBER JEO252, DATED SEPTEMBER 28, 2017. ADDITIONAL INFORMATION PROVIDED THROUGH EMAIL CORRESPONDENCE.
- EXISTING ALIGNMENT INFORMATION, SURVEY INFORMATION AND WATER LEVELS PROVIDED BY PIETIE.
- ANY DISCREPANCIES BETWEEN DRAWING AND FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- BARRIER DESIGNED FOR TL-4 IMPACT LOADING AS PER CSA-S6-14.
- COORDINATES ARE NAD83, AND ELEVATIONS ARE TO PEI GRID DATUM.
- APPLY WATERPROOFING MEMBRANE IN ACCORDANCE WITH S6-14.
- APPLY TWO COATS OF A SELF PENETRATING SILANE SEALER TO ALL EXPOSED CONCRETE SURFACES ON THE BRIDGE EXCEPT FOR: THE BRIDGE DECK DRIVING SURFACE, SOFFIT, APPROACH SLAB. SEALER SHALL BE APPLIED TO A DEPTH OF 600mm BELOW PROPOSED FINISHED GRADE. THE SEALER SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. CONCRETE SHALL BE MOISTENED FOR 7 DAYS AND AIR DRIED FOR AN ADDITIONAL 14 DAYS BEFORE APPLYING THE SEALER.
- PROVIDE SEDIMENT CONTROL MEASURES AS SPECIFIED IN THE PEITIE ENVIRONMENTAL PROTECTION PLAN.
- SUPPLY AND INSTALL ASPHALT SEALANT AT EACH OF THE APPROACH SLABS AT BOTH EAST AND WEST ABUTMENTS. THE SEALANT SHALL BE BERAM 195 LM LOW MODULUS HOT APPLIED JOINT SEALANT, OR APPROVED EQUAL.
- SUPPLY AND INSTALL COMPRESSION SEAL EXPANSION JOINTS, AT THE END OF APPROACH SLAB AT BOTH THE EAST AND WEST ABUTMENTS, AS DETAILED ON THE DRAWINGS, EXCEPT AS MODIFIED HEREIN. THE DIMENSIONS AND DETAILS OF THE EXPANSION JOINT SHALL CONFORM TO THAT STATED ON THE DRAWINGS, WITH THE COMPRESSION SEAL CONFORMING TO DS BROWN CA-4000 COMPRESSION SEALS, OR APPROVED EQUIVALENT. ALL EXPANSION JOINT COMPONENTS SHALL CONFORM TO THE REQUIREMENTS OF CSA-S6-14 CANADIAN HIGHWAY BRIDGE DESIGN CODE AND THE DETAIL ON THE TENDER DRAWINGS. THE DESIGN HIGHWAY LIVE LOAD SHALL BE CL625. INSTALLATION OF THE JOINTS SHALL BE UNDERTAKEN BASED ON THE MANUFACTURERS RECOMMENDATIONS, UTILIZING THE JOINT GAP TABLE PROVIDED ON THE TENDER DRAWINGS. THE CONTRACTOR SHALL SUBMIT "SHOP DRAWINGS" TO THE DEPARTMENT FOR APPROVAL PRIOR TO FABRICATION. THE SHOP DRAWINGS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER REGISTERS TO PRACTICE IN THE PROVINCE OF PRINCE EDWARD ISLAND. ALL EXPOSED STEEL SURFACES SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH CSA STANDARD G164. ALL MINOR DAMAGE TO THE GALVANIZING SHALL BE TOUCHED UP WITH INORGANIC ZINC PAINT (GALVICON OR EQUIVALENT).
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR THE BRIDGE ERECTION PROCEDURE AND SHALL ENSURE THE STABILITY OF ALL COMPONENTS THROUGHOUT CONSTRUCTION.

## CONCRETE NOTES:

- ALL EXPOSED CORNERS OF CONCRETE TO HAVE 25mm CHAMFERS.
- LOCATION OF CONSTRUCTION JOINTS AND SEQUENCE OF CONCRETE PLACEMENT TO BE APPROVED BY THE ENGINEER.
- ALL REINFORCEMENT TO BE INSPECTED BY THE ENGINEER PRIOR TO CLOSING FORMWORK OR PLACING CONCRETE.
- BACKFILL IMMEDIATELY BEHIND ABUTMENTS TO BE GRANULAR 'A' MATERIAL AS PER PEITIE GENERAL PROVISIONS AND CONTRACT SPECIFICATIONS.
- EACH PHASE OF WORK TO BE INSPECTED BY THE ENGINEER PRIOR TO PROCEEDING TO THE NEXT PHASE OF WORK.
- IF DEWATERING BEHIND COFFERDAMS/ENVIRONMENTAL CONTROLS IS NOT ACHIEVABLE, ALL CONCRETING UNDERWATER SHALL BE COMPLETED BY TREMIE METHOD (TYPICAL ABUTMENTS, PIERS AND WINGWALLS).
- COVER TO GFRP REINFORCING: 50mm UNLESS OTHERWISE NOTED.
- CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS - 45 MPa

## PILE NOTES:

- PILE MATERIAL:
  - STEEL PIPE PILES: 508 x 13 TO CSA/CSA G40.21-350W.
  - STEEL PLATES AND BAR STOCK TO G40.21 - LATEST EDITION, GRADE 350W.
  - WELDING MATERIAL TO CSA G40.1 - LATEST EDITION.
  - WELDING TO BE IN ACCORDANCE WITH CSA W59 - LATEST EDITION.
  - PILES ARE TO BE DRIVEN OPEN-ENDED AND FITTED WITH DRIVING SHOES.
- PILE "SET CRITERIA": (REFERENCE JOOSE ENVIRONMENTAL GEOTECHNICAL REPORT PROJECT NUMBER JEO252, DATED SEPTEMBER 28, 2017).
  - RATED HAMMER ENERGY OF 350 J/cm sq. OF STEEL CROSS SECTIONAL AREA.
  - PILES SHALL BE DRIVEN TO REFUSAL. REFUSAL SHALL BE CONSIDERED AS 10 BLOWS FOR THE LAST 25mm OF PILE PENETRATION.
  - 25% OF PILES AT EACH ABUTMENT AND PIER SHOULD BE RESTRUCK A MINIMUM OF 48 HOURS AFTER INITIAL DRIVING REFUSAL IS OBTAINED. IF RELAXATION OCCURS, ALL PILES SHOULD BE REDRIVEN TO THE REFUSAL CRITERIA AND THE CYCLE REPEATED UNTIL THE REFUSAL CRITERIA IS MAINTAINED DURING RE-STRIKE.
  - DRIVE SHOES SHALL BE USED TO PROTECT PILES DURING DRIVING.
  - REFERENCE SPECIAL PROVISIONS AND PEITIE GENERAL PROVISIONS AND CONTRACT SPECIFICATIONS FOR PDA TESTING REQUIREMENTS.
  - CONTRACTOR SHALL PROVIDE TO THE ENGINEER FULL DETAILS ON THE METHOD OF INSTALLATION AND EQUIPMENT PRIOR TO COMMENCING THE WORK.
  - REQUIRED MINIMUM PILE CAPACITIES AT ULTIMATE LIMIT STATES:
    - 508 x 13 PIPE PILES: 1482 kN COMPRESSION.

## STEEL NOTES:

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING C.S.A. STANDARDS AND A.S.T.M. STANDARDS:
  - WEBS, FLANGE PLATES, STIFFENERS, DIAPHRAGMS TO G40.21M - 350AT CAT 2.
  - ANGLES, HSS BRACES, AND MISC. PLATES TO G40.21M - 350W OR EQUIVALENT.
  - HIGH STRENGTH BOLTS ASTM F3125 GRADE A325 TYPE 1, THREADS TO BE EXCLUDED FROM ALL SHEAR PLANES (U.N.O.).
- ALL WELDING SHALL BE IN ACCORDANCE WITH C.S.A. STANDARD W59 LATEST EDITION.
- SHEAR STUD CONNECTORS SHALL BE MANUFACTURED OF C-1015, C-1017, OR C-1020 COLD DRAWN STEEL CONFORMING TO A.S.T.M. A-108-73.
- FABRICATE, DELIVER TO SITE AND ERECT STEELWORK IN ACCORDANCE WITH CSA-S6-14.
- COAT ALL STEEL IN ACCORDANCE WITH SPECIFICATIONS. PRIMER COAT ONLY ON ALL INSIDE SURFACES OF BOX. NO PAINT ON TOP SURFACES OF TOP FLANGES.
- GRIND ALL 25mm STIFFENERS TO BEAR AT BOTTOM, THEN WELD.
- ALL FAYING SURFACES AT BOLTED CONNECTIONS SHALL BE CLASS B, OR BETTER. ALL BOLTS BROUGHT TO SLIP CRITICAL CONDITION BY TURN OF NUT METHOD.
- AFTER GIRDERS HAVE BEEN ERECTED, A VERTICAL PROFILE SHALL BE COMPLETED FOR EACH FLANGE AND SUBMITTED TO THE ENGINEER FOR REVIEW.

## DECK AND BARRIER NOTES:

- CONCRETE MATERIALS AND METHODS OF CONSTRUCTION TO CSA - A23.1, AND METHODS OF TEST FOR CONCRETE TO CSA - A23.2;
- DECK SLAB AND CURBS HIGH PERFORMANCE CONCRETE 45 MPa, AIR CONTENT 6.5%, ±1.5%, W/C = 0.35 MAX.
- REINFORCING TO BE GFRP TO CSA S806/807.
- CONCRETE COVER TO REINFORCEMENT AS NOTED ON DRAWINGS.
- ALL EXPOSED CORNERS TO HAVE A 25mm CHAMFER.
- CONCRETE TO BE PLACED UNIFORMLY ACROSS THE WIDTH OF DECK.

## GFRP REINFORCING NOTES:

- CONCRETE COVER TO GFRP BARS AS FOLLOWS:
  - TOP OF DECK - 50mm
  - DECK SOFFIT - 35mm
  - ALL OTHER - 50mm U.N.O.
- REINFORCING SHALL BE GLASS FIBER REINFORCING POLYMER (GFRP) WITH A MINIMUM GUARANTEED TENSILE STRENGTH (T<sub>u</sub>) AND A MINIMUM TENSILE MODULUS OF ELASTICITY (E) AS FOLLOWS:

STRAIGHT BARS		
SIZE	f <sub>FRP</sub> (MPa)	E (GPa)
13M	1100	60
15M	1100	60
20M	1100	60
25M	1000	60
32M	900	60

BENT BARS		
SIZE	f <sub>FRP</sub> (MPa)	E (GPa)
13M	450	50
15M	450	50
20M	450	50
22M	450	50
25M	450	50

- SAW CUTS NOT PERMITTED.
- ALL WORK TO CONFORM TO TECHNICAL SPECIFICATIONS FOR GFRP PRODUCT.
- HEADED BAR PULL OUT STRENGTH:
  - 15M - 148kN
  - 20M - 182kN

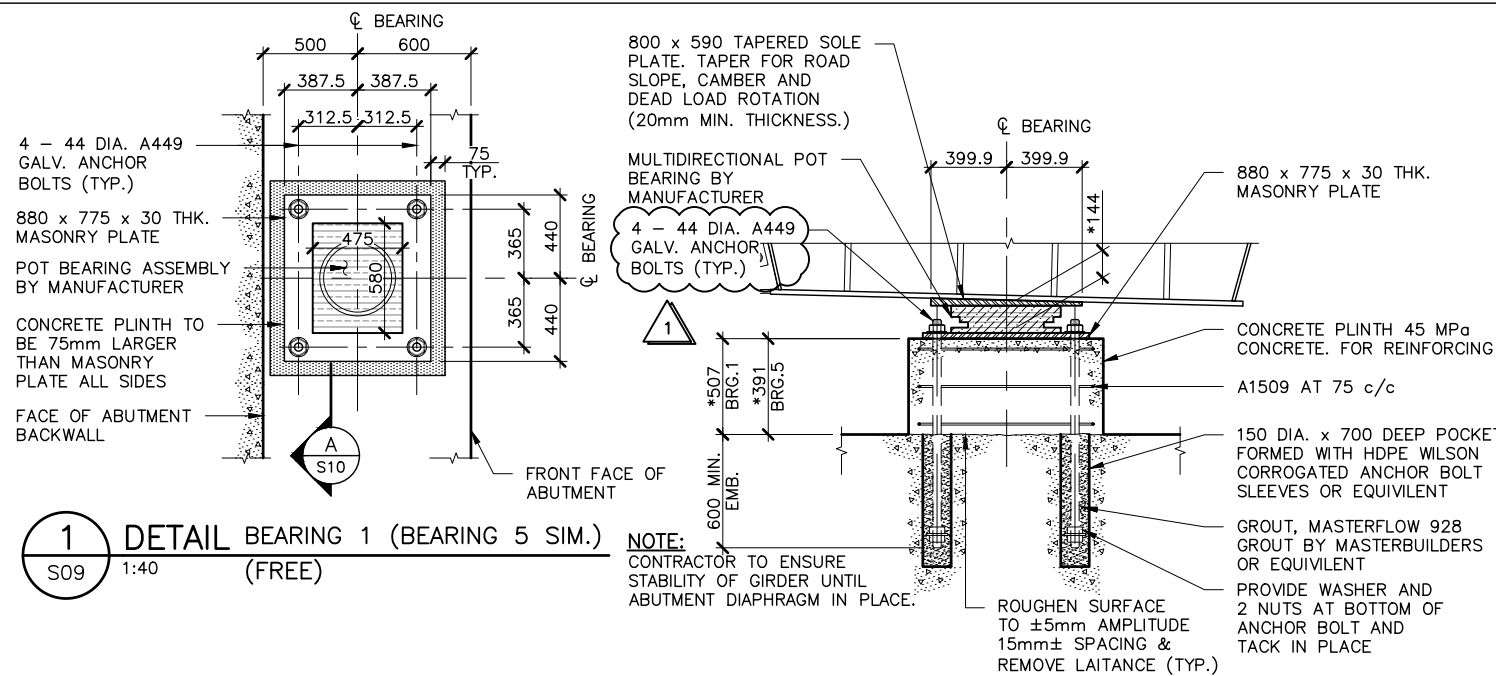
THE ASSOCIATION OF  
PROFESSIONAL ENGINEERS  
OF THE PROVINCE OF  
PRINCE EDWARD ISLAND  
VALID FOR THE YEAR 2017

*Colin Kijim*

COLIN KIJIM  
No. 1741

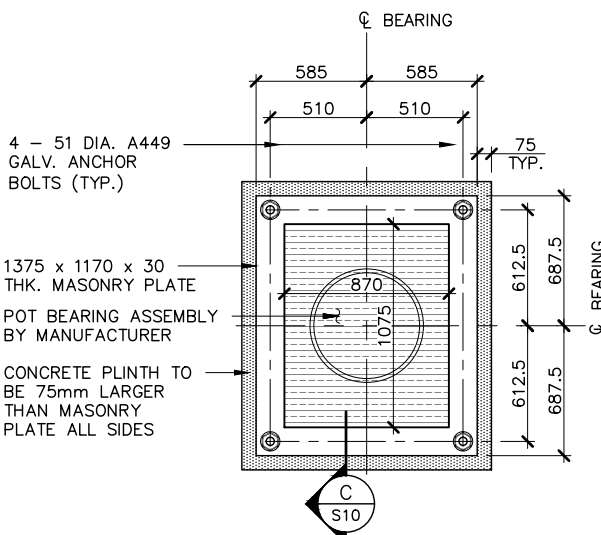
DATE: JAN. 26/18

LICENSED  
PROFESSIONAL ENGINEER  
PROVINCE OF  
PRINCE EDWARD ISLAND



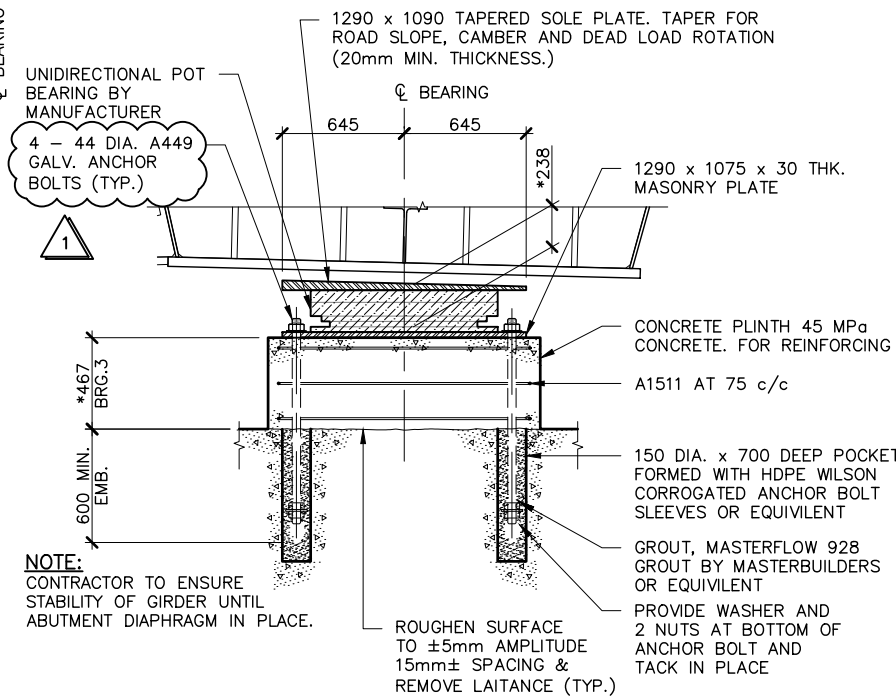
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S09 1:40 (FREE)

**A** SECTION BEARING 1 (BEARING 5 SIM.)  
S10 1:40 (FREE)



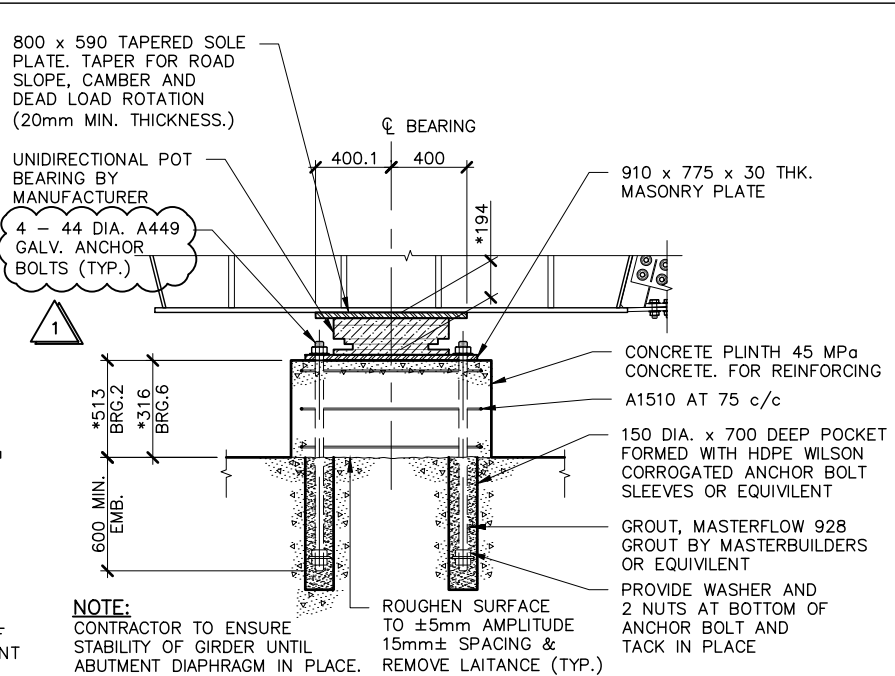
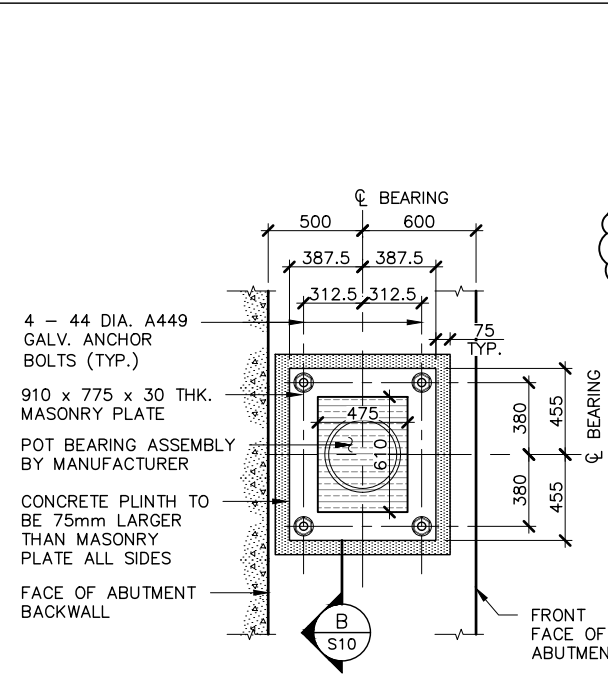
**3** DETAIL BEARING 3  
S09 1:40 (UNITRANSVERSE)

**C** SECTION BEARING 3  
S10 1:40 (UNITRANSVERSE)



**2** DETAIL BEARING 2 (BEARING 6 SIM.)  
S09 1:40 (UNILONGITUDINAL)

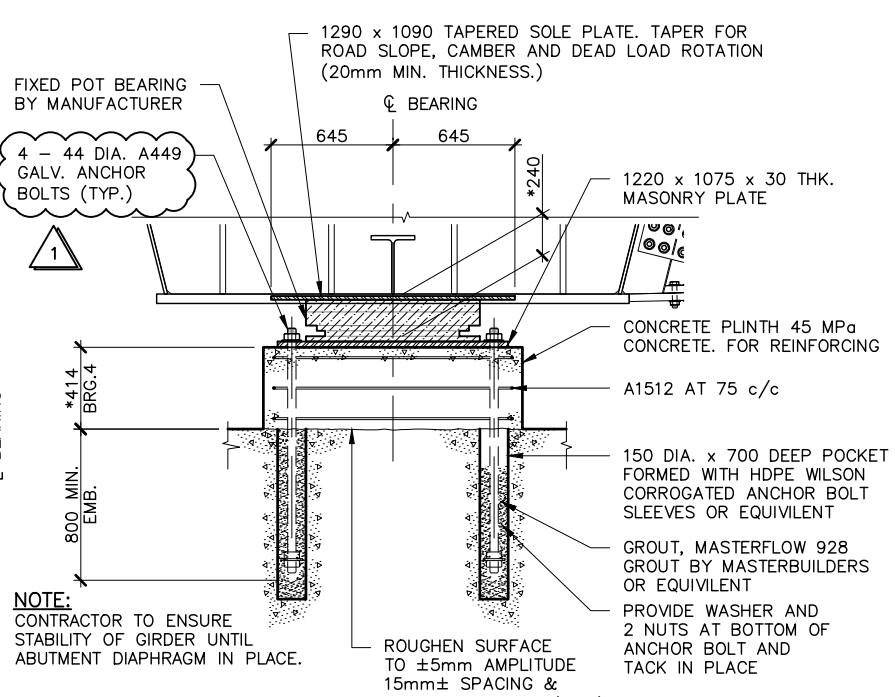
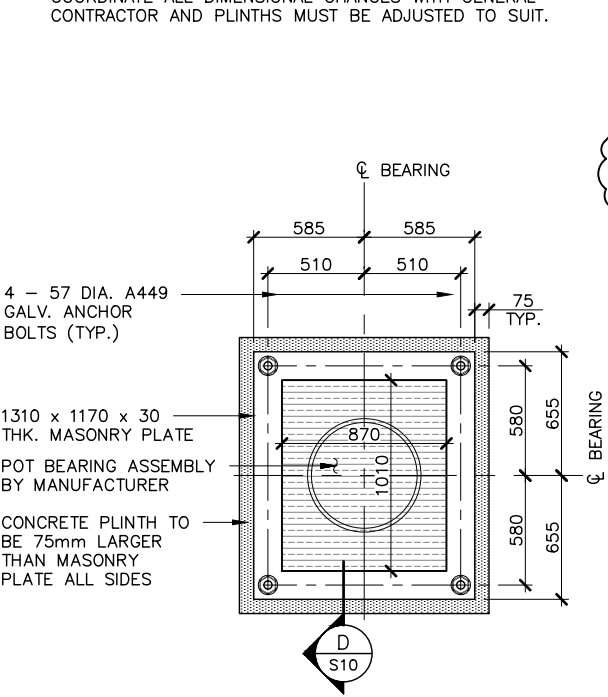
**B** SECTION BEARING 2 (BEARING 6 SIM.)  
S10 1:40 (UNILONGITUDINAL)



\* BEARING ASSEMBLY AND PLINTH HEIGHT WILL VARY BY BEARING MANUFACTURER. BEARING MANUFACTURER MUST COORDINATE ALL DIMENSIONAL CHANGES WITH GENERAL CONTRACTOR AND PLINTHS MUST BE ADJUSTED TO SUIT.

**4** DETAIL BEARING 4  
S09 1:40 (FIXED)

**D** SECTION BEARING 4  
S10 1:40 (FIXED)



THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF PRINCE EDWARD ISLAND VALID FOR THE YEAR 2017  
*Colin K. Jim*  
COLIN K. JIM  
NO. 1741  
DATE: JAN. 26/18  
LICENSED PROFESSIONAL ENGINEER  
PROVINCE OF PRINCE EDWARD ISLAND

NOTES: 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	No.	REVISIONS	DATE	BEARING DETAILS - SHEET No. 2	SHEET No.
DRAWN BY: J. D. P.	DATE: JULY 2017	0	ISSUED FOR TENDER	JAN.26/18		S11 OF
APPROVED BY: C. K. J.	DATE:	1	ISSUED FOR ADDENDUM No. 2	FEB.09/18	COUNTY: QUEENS CONTROL SECTION: SECTION	
PROJECT No.: 172623.00	FILE No.:				STATIONING:	

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