PROJECT TITLE WALLACEBURG, ONTARIO

URGENT REPAIRS AND ELECTRICAL CONTROLS REHABILITATION 2021

WALPOLE ISLAND SWING BRIDGE

PROJECT NUMBER R.051213.001

PROJECT DATE 2021-05-21

END OF SECTION

Structural Engineer:

Kyle Yusek, P.Eng., PMP

Mechanical Engineer:

Dan Faux, P.Eng.

Electrical Engineer:

Dennis Chadwick, P.Eng.

END OF SECTION

END OF SECTION

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 The Walpole Island Swing Bridge is located west of Wallaceburg, Ontario, on the eastern boundary of the Walpole First Nation and provides the only land-based access to Walpole Island. The bridge was constructed in 1968 and carries two lanes of traffic and two sidewalks over the Chenal Ecarté (Snye River), a navigable waterway linking Lake Huron to Lake St. Clair. The bridge has an overall width of 11.9 m and an overall length of 156.1 m. The bridge has a 66.4 m swing span and four fixed approach spans.

.2 Work of this Contract comprises the rehabilitation of the Walpole Island Swing Bridge. Rehabilitation measures are required to address mechanical repairs and electrical controls upgrades. All as indicated in the Contract Documents and/or Sections.

.3 Mechanical Engineering:
- .1 Wedge drive shaft and bevel gear guard.
- .2 Repair swing drive bevel gear safety cover.
- .3 Adjust balance wheel shims and live load bearing shims.
- .4 Tighten loose wedge bolts / components.
- .5 Supply and install new festoon system including new circular cable track.
- .6 Pivot bearing inspection.
- .7 Swing drive motor, brake, and couplings (2x).
- .8 Wedge drive motor and couplings (2x).
- .9 Swing and wedge drive cam limit switches (2x).
- .10 Miscellaneous mechanical item maintenance / repairs including servicing, cleaning, and lubrication as well as commissioning support.

.4 Electrical Engineering:
- .1 Centre pier junction box, safety switch and cable general repairs.
- .2 Supply and install new electrical equipment including motors, control desk, control panels, cabinets, and junction boxes.
- .3 Rework lighting panel wiring and inter-wiring.
- .4 Supply and install new submarine cabling and conduits.
- .5 Supply and install new marine navigation lighting system.
- .6 Repairs to existing street lighting system.
- .7 Miscellaneous electrical repairs as well as commissioning support.

.5 The Contractor shall utilize, to their fullest extent possible, "local content" such as local goods and services from the Walpole First Nation. A minimum of 10% of the total tender amount is to be allocated for "local content". The Contractor shall maintain monthly records of all local content allocated for that month and provide such information to the Departmental Representative at the time of monthly payment. Refer to Annex A for complete details of Local Content.

1.2 WORK SEQUENCE

.1 Comply with operational constraints, milestones, and completion dates. Work must be monitored and completed to meet the goals at the milestones and at the completion date.

.2 Construct bridge rehabilitation work as indicated in the Contract Documents to accommodate Owner's continued use of premises during construction.

.3 Electrical controls, cabinets, and related work within the Control Tower to accommodate continued use of premises during construction.

.4 During the navigation season, the Contractor shall notify the Canadian Coast Guard Vessel Traffic Centre Noteship Desk at 613-925-0666 at least 48 hours in advance of anytime that the bridge will not be fully operational, and again once the bridge has returned to full operating condition.

.5 Installation of the shaft guards, balance wheel and live load bearing shims, and electrical motors / controls rehabilitation (as well as other works to be identified by the Contractor) will require the swing span to be non-operational. The Contractor shall identify such dates in their construction schedule and undertake all required notifications once the Departmental Representative agrees to the dates identified.

.6 The bridge swing span shall remain operational at all times during the navigational season, and when not identified in the Contract or agreed to by the Departmental Representative.

.7 Milestone dates for work under this Contract are as follows:

.1 Prior to preparation of shop drawings and procurement of materials, the Contractor is to verify all site measurements required to complete the work. The Contractor is to notify the Departmental Representative in writing of any discrepancies between site measurements by the Contractor and the dimensions shown on the Contract Drawings and identify recommendations to permit installation.

.2 Shop drawings and product information requiring review shall be submitted within four (4) weeks of Contract Award.

.8 Maintain emergency access / control.

.9 Any temporary work(s) that are on, over or across the waterway shall, during all periods of reduced visibility, be marked with yellow flashing lights located on each end of the work(s) and on other locations on the works so that the lights are spaced not more than 30 m apart.

.10 At any time that the bridge is not fully operational during all periods of open water (navigational season), signs stating "Bridge Closed Ahead" and advising of the available clearance shall be placed and maintained 2.5 km and 5 km upstream, and 2.5 km downstream of the site.

.11 Signs advising of the dates that the bridge will not be operational shall be placed 2.5 km upstream and 2.5 km downstream of the site a minimum of 2 (two) weeks prior to the closure.

.12 Implement all conditions as stated in the Canadian Navigable Waters Act (CWNA).

1.3 CONTRACT METHOD

.1 Construct work under lump sum price contract.

1.4 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy of each document as follows:
- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda and amendments.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.
- .12 Environmental mitigation measures.

1.5 LUMP SUM WORK

.1 This Contract is prepared on the basis of a Contract lump sum price for all works as described on the Contract Drawings and in these specifications. The Contractor shall be responsible

for determining quantities to be supplied and removed to fully complete the Work, and no claims for adjusting the compensation for such work shall be considered unless the scope of Work is altered due to changed conditions or is significantly decreased or increased as directed by the Departmental Representative. At a single lump sum price, the following work shall be completed:

.1 Mobilization and Demobilization as deemed necessary by the Contractor.
.2 Access and Protection to carry out all the work indicated in the Contract Documents.
.3 All temporary traffic control requirements.
.4 All General Requirements of Division 1.
.5 All material testing by an independent agency (certified to carry out such testing), as indicated in the specifications.
.6 All Canadian Navigable Waters Act (CNWA) requirements as stated in the Contract Documents.
.7 Tasks of all sections designated as part of Contract lump sum.
.8 Connections to existing services.
.9 Providing construction fence and perimeter security measures around work area(s).
.10 Maintaining the work / storage area for the duration of the work.
.11 Environmental procedures, environmental mitigation, and environmental protection.
.12 Supply, installation, maintenance, relocation, and removal of temporary turbidity curtain.
.13 Heating and humidification.
.14 Removal of existing mechanical components as indicated.
.15 Refurbish existing mechanical components as indicated.
.16 Supply and installation of new mechanical components as indicated.
.17 Removal of existing electrical components as indicated.
.18 Refurbish existing electrical components as indicated.
.19 Supply and installation of new electrical components as indicated, including any excavation / trenching / directional boring as required.
.20 Temporary utilities.
.21 Commissioning.
.22 Topsoil placing and grading.
.23 Sodding.
.24 Progressive and final Site cleaning.
.25 Landscaping and site restoration.
.26 All other items not covered above but otherwise indicated in the Contract Documents.

.2 No separate payment will be made for the above-mentioned lump sum items.

.3 In the Contract Lump Sum price, all costs associated with the project specified in these documents, shown, inferred, or indicated on the drawings or necessary to complete the Work shall be included.

1.6 COST BREAKDOWN

.1 Within ten (10) days of notification of acceptance of bid furnish a cost breakdown by Section aggregating Contract Amount.

.1 Submit cost breakdown prices for the lump sum work. The submitted breakdown shall be subject to review and acceptance by the Departmental Representative prior to use in preparing progress payments.

.2 Within ten (10) days of acceptance of bid submit a list of subcontractors.

.3 No measurement for payment will be made for the Work or for any work incidental to completion of this Contract. Such work is considered to be incidental to the Contract and costs are to be included in the Contract Lump Sum.

1.7 CONTRACTOR USE OF PREMISES

.1 Contractor has unrestricted use of site until Substantial Performance. The only exceptions are:

.1 Work that is to be performed in the Control Tower, which shall be carried out to accommodate Owner's continued use of premises during construction.

.2 The Contractor shall permit passage of boat/vessel traffic during the navigational season. The swing span shall remain operational and shall "open every hour on the hour" (when required) from 7:00 AM to 11:00 PM daily (7 days a week) during the navigational season, except as approved by the Departmental Representative. Opening frequency data of the swing span from 2012 is attached in Annex B.

.3 The bridge is typically operated for the passage of marine traffic from approximately April 15th to December 1st each year (navigational season). The swing span may be non-operational during the navigational season from September 13th to December 1st, provided that all required signage/notifications as specified have been completed.

.4 During periods when the swing span is required to be fully operational, the Contractor shall clear any objects on the swing span which would result in an out-of-balance condition (including but not limited to equipment and materials) within ten (10) minutes' notice so that the swing span may be opened for navigation traffic.

.2 Contractor shall limit use of premises for Work, for storage, and for access, to allow:
   .1 Owner occupancy.
   .2 Public usage of the bridge (vehicular and pedestrian).
   .3 Public usage of "Bridge Road" (vehicular and pedestrian).
   .4 Permit passage of boat/vessel traffic. The swing span shall remain operational and shall "open every hour on the hour" (when required) during the navigational season, except as approved by the Departmental Representative.

.3 Coordinate use of premises under direction of Departmental Representative. Confine work, including temporary structures, plant, equipment, and materials to the minimum required to complete construction.

.4 Obtain and pay for use of laydown areas/yards, additional storage, or other work areas needed for operations under this Contract. Arrangements for areas on Walpole Island shall be made through the Walpole Island First Nation Department of Public Works.

.5 Remove or alter existing Work to prevent injury or damage to portions of existing Work to remain.

.6 Repair or replace portions of existing Work which have been altered during construction operations to match existing or adjoining Work, as directed by Departmental Representative.

.7 At completion of operations condition of existing Work: equal to or better than that which existed before new Work started.

.8 The Contractor shall not permit any tools, equipment, vehicles, temporary structures or parts thereof used or maintained for the purpose of building or placing a work in a navigable water to remain in such water after the completion of the project.

.9 Where a work or a portion of the work that is being constructed or maintained in navigable water causes debris or other material to accumulate on the bed or surface of such water, the Contractor shall immediately remove the debris or other material to the satisfaction of the Departmental Representative.

1.8 OWNER OCCUPANCY

.1 Owner will occupy the Control Tower during construction period for execution of normal bridge operations.

.2 The bridge is operated by the Walpole Island First Nation Department of Public Works Bridgemaster. The Contractor is

required to 'stand down' while the bridge is operated. The Bridgemaster will operate the bridge "every hour on the hour" (when required) during the navigational season, except as approved by the Departmental Representative. Opening frequency data of the swing span from 2012 is attached in Annex B. This data in Annex B is not guaranteed to be an accurate representation of expected usage (opening) of the swing span. The Contractor should make allowance for additional openings.

.3 Cooperate with Departmental Representative in scheduling operations to minimize conflict and to facilitate Owner usage.

.4 Lock out/tag out procedures are required to be developed in cooperation with the Contractor and Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 EXISTING SERVICES

.1 Prior to commencement of Work, arrange to locate underground utilities and service connections that may be affected by Work. Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.

.2 Submit schedule to and obtain approval from affected parties for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.3 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.4 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours' notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by utility companies and relevant authorities with minimum disturbance to pedestrian and vehicular traffic.

.5 Protect, relocate or maintain existing active services. Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.6 Repair existing services damaged during construction as directed by Departmental Representative and relevant utility authority at no additional cost to the Owner.

.7 Record locations of maintained, re-routed, and abandoned services.

.8 Construct barriers in accordance with Section 01 56 00.

1.2 TEMPORARY LANE CLOSURES

.1 Provide written notice to the Departmental Representative at least 24 hours in advance of any lane closures.
  .1 Close single lane as required from 09:30 to 16:30 hours.

.2 Maintain at least one traffic lane and one sidewalk at all times on the bridge.

.3 Maintain two (2) lanes on Bridge Road at all times or provide temporary traffic control using flag persons.

.4 Submit a written Traffic Control Plan for lane closures and lane reductions at least ten (10) business days prior to the request for lane closure or reduction.
Do not close or reduce lanes until Departmental Representative has reviewed Traffic Control Plan for closure or reduction.

.5 The Contractor shall provide all traffic control required to complete the work. Traffic control shall be in accordance with Ontario Traffic Manual (OTM) Book 7 (latest edition)

1.3 SCHEDULING OF WORK

.1 The swing span shall be considered to be non-operational (i.e. remain closed) during the non-navigational season. The Contractor is responsible for carrying out all work requiring the swing span to be non-operational during this period, as indicated in the Contract Drawings and/or as directed by the Departmental Representative. The non-navigational season may commence starting September 13, 2021, subject to the required notifications / signage.

The swing span shall remain operational at all times during the months of July and August. No lock out of the equipment will be permitted during this period.

.2 The Contractor is allotted an additional ten (10) non-consecutive days for the swing span to be non-operational, as approved by the Departmental Representative.

.3 Additional closures will be reviewed by the Departmental Representative upon written request from the Contractor.

The Contractor shall notify the Departmental Representative, in writing, twelve (12) days in advance of

.4 when the swing span is planned to be non-operational. No work shall commence until the Contractor has received approval to proceed from the Departmental Representative for the planned work period. The Contractor shall erect all notice signs to navigation as shown on the drawing and contact the Canadian Coast Guard Vessel Traffic Centre

.5 Noteship Desk ten (10) days prior, as noted in Section 01 11 00, during the navigational season.

.6 No work shall be carried out to the swing span (day and night) during the Wallaceburg Antique Motor and Boating

Outing (WAMBO), which is tentatively scheduled annually for August 13-15 (inclusive). These dates may be subject to change.

1.4 Special Requirements

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

PART 2 - PRODUCTS

.1 Not used.

PART 3 - EXECUTION

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 The provisions of OPSS 404 and OPSS.MUNI 539 shall apply to this item except as amended or extended herein or in other Sections. Remove and replace the term "Contract Administrator" with "Departmental Representative" in the referenced OPSS specification.

.2 The existing Control Tower is not available for use, storage, or staging, by the Contractor, at any time during this Contract.

.3 Access and protection may not be suspended from the swing span when the bridge is considered "operational" as additional or unbalanced load may damage the bridge span or render it inoperable.

.4 No access and protection may be constructed in such a manner to restrict the operation of any mechanical components of the swing span or physically restrict the rotation of the swing span or any component of the swing span.

1.2 OUTLINE OF WORK

.1 Provide safe and adequate access, scaffolding, work platforms, containment systems and staging, on and around the structures to do the all Work indicated in the Contract Documents. The Contractor shall:

- .1 Ensure a safe working environment.
- .2 Facilitate progress of Work in an efficient manner.
- .3 Eliminate debris from falling to the waterway or Bridge Road below.
- .4 Protect areas or features adjacent to the Work during procedures which may damage those areas or features.
- .5 Protect Work and products against dampness and cold.
- .6 Prevent moisture condensation on surfaces.
- .7 Provide ambient temperatures and humidity levels for storage, application, installation and curing of materials.
- .8 Allow inspection of the work.

.2 Provide supplementary heating and ventilating when working in the Control Tower.

.3 The work involves both works on and off site. The work must be completed in environmental conditions that allow maximum quality of work and protection for the natural environment.

.4 All access shall conform with the most current Laws, Regulations, or Statutes that apply to this type of work.

.5 The requirements of this section apply to all other sections of the specification and anywhere dust and/or cold weather protection is required, to provide an appropriate environment to complete the work as required to achieve the best quality of the finished product. This section is especially important to all demolition and coating operations.

.6 Be responsible for all re-grading of existing roads, fencing, guard rails, landscaping and access routes to suit the Contractor’s purposes for site access. The Contractor shall also be responsible for the restoration of all existing roads, fencing, guard rails and landscaping, including sodding of disturbed areas, to pre-construction conditions or better. Any damage to trees or other property caused by the Contractor’s site access shall be corrected to the Departmental Representative’s satisfaction at the Contractor’s expense.

.7 Design, construct and maintain temporary "access to" and "egress from" work areas including, but not limited to, stairs, runways, ramps or ladders, scaffolding, containment systems and staging, work platforms independent of finished surfaces.

.8 Provide safe and adequate access to the Departmental Representative for inspection and measurement of all areas of the substructure and superstructure.

.9 Prevent all debris, cutwater, or other deleterious material from falling, flowing or otherwise finding its way into nearby waterways, roadways, and lands.

.10 Protect the surrounding environment and properties, the public, vehicular and pedestrian traffic in a manner acceptable to the Departmental Representative’s satisfaction at each stage of the work.

.11 Supply and apply water and/or dust suppressants for dust control when directed by the Departmental Representative. The design of the debris platforms shall allow for the weight of wet or saturated material. When mud or other debris are tracked onto surrounding roadways the Contractor shall immediately clean the roadways to the satisfaction of the Departmental Representative.

.12 Safely remove and dispose of all staging, access,

containment and protection systems, scaffolds and platforms outside of the right-of-way upon completion of the work.

.13 Typical locations and areas of work are shown directly or implied through reference or detail to associated working areas on the drawings. The Contractor shall provide access and protection to carry out work in these areas. The actual locations and extent of concrete repairs at abutments and piers will be determined on site by the Departmental Representative.

.14 Maintain access to all commercial, institutional, and private entrances at all times.

.15 Provide a safe and direct path for users of the Control Tower.

1.3 REFERENCES

.1 Ontario Provincial Standard Specification (OPSS)
  .1 OPSS.MUNI 404, November 2017, Construction Specification for Support Systems.
  .2 OPSS.MUNI 539, November 2014, Construction Specification for Temporary Protection Systems.

1.4 SITE BARRIERS

.1 Site barriers must be sufficient to protect public and exclude them from the work area.

1.5 SCAFFOLDING

.1 Provide all scaffolding, ladders, access, and lifting equipment to carry out the work. Field measure to ensure proper fit. Transition area from the ladder(s) or structure to the scaffolding shall be clear of obstructions and cross bracing so people and materials can easily enter.

.2 Carry out all work in accordance with the Occupational Health and Safety Act and the Site-Specific Safety Plan. Make all changes required by Ministry of Labour, Training, and Skills Development officials and address all concerns of the Departmental Representative.

.3 Make regular inspections of scaffolding as the work progresses.

.4 Make no holes in the structural steel to attach scaffold. Remove all anchors installed in the concrete as part of the scaffolding and housing work. Ensure all holes are filled to

the satisfaction of the Departmental Representative as scaffolding is dismantled.

1.6 LIGHTING

.1 In all areas of work ensure sufficient and good lighting is provided to complete and inspect the work.

.2 Especially during nighttime work or in dark areas, provide additional lighting in work areas and to Public ways to compensate for the lack of natural lighting.

.3 Provide for the use of the Departmental Representative additional work lights for inspection.

1.7 SUBMISSIONS

.1 Submit to the Departmental Representative for review, a detailed proposal for carrying out removal, rehabilitation, and replacement for each applicable work item a minimum of one (1) week prior to the commencement of any removals. Those proposals shall outline the removal and restoration techniques, sequence of operations and shall detail and dimension the Contractor’s proposed staging, temporary supports/shoring, access, protection and containment systems. The Contractor shall also submit details on the proposed temporary drainage system.

.2 Submissions for access platforms shall bear the seal and signature of a Professional Engineer licensed in the Province of Ontario, who shall be responsible for the detailed design and subsequent inspection of the protection system as installed on site, and shall certify in writing its compliance with the design requirements.

.3 Six (6) sets of working drawings and documents shall be submitted to the Departmental Representative for review of access and protection schemes. Work shall not proceed until the Departmental Representative has reviewed the drawings and provided written authorization for the Contractor to proceed with the work.

.4 The Departmental Representative’s approval shall not release the Contractor from liability for any damage or any consequence as a result of inadequate protection design.

1.8 MEASUREMENT AND PAYMENT

.1 Payment will be made on a pro-rated basis for this item based on breakdown of price submitted following tender close

for the lump sum item. Payments will be made on a lump sum basis and such payment shall be full compensation of all design, labour, equipment and materials necessary to complete the work.

PART 2 - PRODUCTS

2.1 GENERAL

.1 In accordance with OPSS.MUNI 404 and OPSS.MUNI 539 except as amended or extended herein or in other Sections. Remove and replace the term "Contract Administrator" with "Departmental Representative" in the above referenced OPSS specification.

2.2 MATERIALS

.1 The following alternatives are acceptable:
- .1 New materials; or,
- .2 Used, salvaged or recycled materials, in good condition, subject to the approval of the Departmental Representative; or,
- .3 Prefabricated, portable components in a good, safe condition, approved by the Departmental Representative as to type, materials and detail.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Inspecting and testing by inspection firms and/or testing laboratories designated by Departmental Representative. This does not replace testing that the Contractor is required to perform.

1.2 RELATED REQUIREMENTS

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative.

1.3 APPOINTMENT AND PAYMENT

.1 Departmental Representative will appoint and pay for services of testing laboratory except as follows:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
- .4 Mill tests and certificates of compliance.
- .5 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
- .6 Testing specified to be completed by the Contractor to verify the quality control of the coating system.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay the costs for additional tests or inspections as required by the Departmental Representative to verify acceptability of corrected work.

1.4 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:
- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good any Work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Departmental Representative 48 hours minimum in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

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

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

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

1.2 PRECONSTRUCTION MEETING

.1 Within five (5) days after Award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and engineers will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum two (2) days before meeting.

.4 Agenda to include:

- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work: in accordance with Section 01 32 16.
- .3 Schedule of submission of shop drawings, samples, mock-ups, colour chips. Submit submittals in accordance with Section 01 33 00.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.

.5 Delivery schedule of specified equipment.
.6 Site security in accordance with Section 01 56 00.
.7 Health and safety in accordance with Section 01 35 29.
.8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
.9 Record drawings and specifications in accordance with Section 01 33 00.
.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.
.11 Monthly progress claims, administrative procedures, photographs, hold backs.
.12 Appointment of inspection and testing agencies or firms.
.13 Insurances, transcript of policies.
.14 Subcontractors and suppliers.
.15 Quality control/quality assurance.
.16 Maintenance manuals in accordance with Section 01 78 00.

1.3 PROGRESS MEETINGS

.1 During course of Work attend progress meetings every second week. Attend additional scheduled meetings as required.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 5 days after meeting.

.4 Notify parties minimum 7 days prior to meetings.

.5 Agenda to include the following:
.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for effect on construction schedule and on completion date.
.12 Quality control/quality assurance.
.13 Status of submittals.
.14 Environmental issues.
.15 Health and safety issues.

.16 Traffic issues.
.17 Other business.

.6 The Contractor shall meet with the Departmental Representative to go through a commissioning process, which involves three (3) successive 'startup' and 'shutdown' operations, to check, inspect, and test the operation of the bridge.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five (5) day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain

within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of Completion as defined times of completion are of essence of this contract.

.5 Refer to Section 01 14 00 for scheduling of work restrictions.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

.2 Submit to Departmental Representative within five (5) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Include mandatory project milestones in the Project Schedule.
- .1 Award of Contract.
- .2 Commencement of Work.
- .3 The Contractor will be required to complete all work, including all site restorations, clean up, and rectify any and all deficiencies no later than 25 calendar weeks from the commencement of construction.
- .4 All days requesting non-operation of the bridge to marine traffic.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within five (5) working days.

.3 Revise impractical schedule and resubmit within five (5) working days.

.4 Accepted revised schedule will become Master Plan and be used

as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

- .1 Award.
- .2 Submission and return dates for shop Drawings, samples, etc.
- .3 Permits.
- .4 Mobilization.
- .5 Excavation.
- .6 Backfill.
- .7 Modify wedge drive shaft guards.
- .8 Repair swing drive bevel gear safety cover.
- .9 Tighten loose wedge bolts/components.
- .10 Adjust balance wheel and live load bearing shims.
- .11 Remove existing festoon system and install new circular cable track.
- .12 Remove existing motors and install new motor/encoder assemblies.
- .13 Cleaning and lubrication of mechanical components.
- .14 Order and deliver new electrical equipment including motors and assemble cabinets.
- .15 Assemble new cabinets.
- .16 Remove existing lighting panel, transformer, motor control panel, and operator control desk in tower.
- .17 Install new equipment in tower.
- .18 Rework lighting panel wiring and inter-wiring between new cabinets in the tower.
- .19 Remove existing submarine cables and conduits and replace with new.
- .20 Final terminations.
- .21 Marine navigation lighting, street lights, and traffic lights.
- .22 Electrical safety inspection.
- .23 Other supplied equipment long delivery / lead items.
- .24 Material testing and commissioning.
- .25 All periods when the swing span will be non-operational.
- .26 Demobilization.

1.7 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule every two (2) weeks reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress

to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed. The Contractor must anticipate normal to severe winter conditions. Only extreme one in 50-year weather events will be considered for adjustments to schedule.

.3 No progress payment will be made until the construction progress schedule is approved and no subsequent payment will be made without an updated schedule.

.4 Distribute copies of approved schedule to:
- .1 Job site office.
- .2 Subcontractors.
- .3 Other concerned parties as directed.

.5 Instruct recipients to report to Contractor within 5 days, any problems anticipated by timetable shown in schedule.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certification and transcripts.

.4 Fees and permits.

1.2 ADMINISTRATIVE

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

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

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

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

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

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

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

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

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

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

.11 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, MS Word, MS Excel, MS Project, and Autocad dwg files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit drawings shall stamped and signed by a Professional Engineer, registered or licensed in Ontario, Canada, submit same with contact information for the information for the Contractor’s engineer.

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

.4 Allow 5 working days for Departmental Representative's review of each submission.

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

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

.7 Accompany submissions with transmittal letter, containing:
- .1 Date.
- .2 Project title and number.

.3 Contractor's name and address.
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

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

.9 After Departmental Representative's review, distribute copies.

.10 Submit three (3) hard copies and one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit three (3) hard copies and one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit three (3) hard copies and one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within three (3) years of date of contract award for project.

.13 Submit three (3) hard copies and one (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

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

.14 Submit three (3) hard copies and one (1) electronic copy of manufacturer’s instructions for requirements requested in specification Sections and as requested by Departmental Representative.

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

.15 Submit three (3) hard copies and one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

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

.17 Submit three hard copies and one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.18 Delete information not applicable to project.

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

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

.21 The review of shop drawings by Public Works and Government

Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative's business address.

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

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

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

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

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

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Safety and Insurance Board Experience Report.

.2 Submit transcription of insurance immediately after award of

Contract.

1.6 FEES, PERMITS AND CERTIFICATES

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates and permits required.

.3 Furnish certificates and permits.

1.7 CORRESPONDENCE

.1 All correspondence shall conform to a standard such that is easily identifiable and referenced.

.2 Each submittal shall be numbered and shall include a title page describing the date and version of the submittal.

.3 Electronic submissions shall:

.1 All have a title format that identifies the project, the nature of the submittal, the number of the submittal and the contents of the submittal such that they are easy to electronically sort and identify. The titles will be similar in form to "Project R.051213.001 Walpole Island Swing Bridge: Shop Drawing X – Location";

.2 The format of electronic submissions shall be pdf.

.3 The electronic mail submissions shall be divided into sections such that the file size of each submission is less than 5 megabytes.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Ministry of Transportation Ontario (MTO)
- .1 Ontario Traffic Manual (OTM) Book 7 - Temporary Conditions.
- .2 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990 and R.R.O. 213/91.

1.2 DESCRIPTION OF WORK

.1 The Contractor shall provide traffic control persons, signs, temporary concrete barriers, modified temporary concrete barriers, temporary traffic signals with platforms, energy attenuators, TC-54 barrels, barricades and all other required traffic control devices on the Walpole Island Swing Bridge, Dufferin Avenue, Tecumseh Road, Bridge Road, all other surrounding roads, waterways, and in all areas affected by the construction (pathways, sidewalks, parking lots and along the waterway) as required to complete the Work indicated in the Contract Documents and as directed on-site by the Departmental Representative.

.2 The Contractor shall provide all requirements to carry out construction as indicated on the Contract Documents and in accordance with OTM.

.3 The Contractor shall provide traffic control persons, blocker trucks, and crash trucks, as required. The Contractor shall provide and maintain signs and barricades as required by Book 7 (Temporary Conditions) of the Ontario Traffic Manual (OTM) and as directed by the Departmental Representative.

.4 The supply of a mechanical sweeper, to remove dirt or debris from areas of the roadway which will be open to traffic following the various construction procedures.

.5 The removal, salvage, and reinstatement of permanent signs, and the installation of new signs as required to facilitate the work unless specifically covered by a separate tender item.

.6 Install and maintain all signs, notices, and flashing beacons to notify navigational marine traffic if the work. These are described elsewhere in the Contract Documents. Contact the Coast Guard for all periods during which the bridge will not be open to navigational (marine) traffic.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals in accordance with Section 01 33 00.

.2 The Contractor shall prepare Traffic Control Plan (TCP) for vehicles, cyclists and pedestrians in accordance with MTO OTM's. The TCP to be signed and sealed by Professional Engineer, registered or licensed in the Province of Ontario.

.3 The Contractor shall have a copy of the location specific, traffic control plan for the protection of workers and the public on site at all times, as per the Ministry of Labour regulations.

.4 Submit TCP to Departmental Representative ten (10) days in advance of proposed changes to traffic management.

.5 Do not commence any works until Departmental Representative has reviewed and approved the TCP.

.6 Departmental Representative will accept submission of TCP and review it to identify errors, omissions, or improvements as it relates to maintaining public safety and mobility.

.1 Review of TCP by Departmental Representative makes no representation that document is accurate, complete or compliant with applicable legislation. Errors, omissions or deficiencies within TCP remain sole responsibility of Contractor. The Contractor shall have no claim for delay of the project or costs incurred as a result of an incomplete application.

.2 Address all comments and resubmit TCP.

.7 Review and modify TCP for errors, omissions, deficiencies, or new hazards and revise and resubmit TCP.

.8 Detail specific traffic control layout necessary for completion of work including vehicular, pedestrian and cyclist movement, required to allow Contractor to fulfill conditions of Contract taking into account organized, systematic safe conduct of the project and to meet Contract requirements. This includes, as applicable, detours, advanced project signs, staging sequences, work, public and emergency vehicles access and egress, public access and separation from hazardous areas, temporary barriers and fences, removal of existing pavement markings and selection of appropriate typical layouts and devices for traffic control.

.9 TCP to include, and not necessarily be limited to:
- .1 Monitoring and repair.
- .2 Traffic control signs (regulatory, warning and temporary).
- .3 Traffic control delineation.
- .4 Traffic control vehicles.
- .5 Portable temporary traffic signals (PTTS) including timing.
- .6 Contract specific work restrictions including operational constraints.
- .7 Lane closures and detours.
- .8 Nighttime requirements.
- .9 Construction vehicle access and egress.
- .10 Public access and egress.
- .11 Pedestrian, cyclist and vehicular safety including barriers, temporary concrete barriers and barricades.
- .12 Emergency Vehicle Access.
- .13 Removal of existing and provision of temporary pavement markings.
- .14 Any other traffic control measures.

1.4 PROTECTION OF PUBLIC TRAFFIC

.1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

.2 When working on travelled way:
- .1 Place equipment in position to present minimum of interference and hazard to travelling public.
- .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
- .3 Do not leave equipment on travelled way overnight.

.3 Keep travelled way graded, free of potholes and of sufficient width for required number of lanes of traffic.
- .1 Provide minimum traffic lane widths as indicated.

.4 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exists that meet approval of Departmental Representative.

.5 The Contractor is advised that during the implementation of traffic control it may be necessary to make field revisions to the alignments of the detours to accommodate actual site conditions. No additional payments resulting from these modifications will be considered.

.6 Installation and maintenance of signing and barricades, temporary concrete barriers, etc., at ground level, under and adjacent to the work to alert and protect the general public from falling debris or other construction hazards and to advise of changed conditions. The costs of the work described above shall be included in this item.

1.5 INFORMATIONAL AND WARNING SIGNS

.1 Supply, install and maintain signs, flashing warning signs, and other devices required to indicate construction activities or temporary and unusual conditions resulting from Work which requires road or waterway user response.

.2 Supply and erect signs, delineators, barricades and miscellaneous warning devices in accordance with TCP.

.3 Meet with Departmental Representative prior to commencement of Work to prepare list of required signs and other devices. Incorporate requirements into TCP. If the situation on site changes, revise and resubmit TCP to Departmental Representative.

.4 Navigable Water

.1 Signs stating "Construction Ahead" shall be placed an maintained approximately 1-1.5 km upstream and 1-1.5 downstream of the work.

.2 Any temporary works(s) that are on, over or across th waterway shall, during all periods of reduced visibility, be marked with yellow flashing lights located on each end of the work(s) and on other locations on the works so that the lights are spaced not more than 30 m apart.

.3 During the navigational season, the Contractor must notify the Canadian Coast Guard Vessel Traffic Centre Noteship desk at 613-925-0666 at least 48 hours in advance of anytime that the bridge will not be fully operational, and again once the bridge has returned t full operating condition. The Contractor must provide the Departmental Representative of proof that this requirement has been fulfilled prior to commencement the work and immediately upon the completion of the work.

.4 Anytime that the bridge is not fully operational duri the navigational season (April 15th to December 1st), signs stating "Bridge Closed Ahead" and advising of a the available clearance shall be placed and maintaine 2.5 and 5.0 km upstream and 2.5 km downstream of the site.

.5 Signs advising of the dates the bridge will be not operational shall be placed 2.5 km upstream and 2.5 km downstream of the site a minimum of 2 weeks prior to the closure date.

.5 Continually maintain traffic control devices.

.1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

.2 Remove or cover signs which do not apply to conditions existing from day to day.

1.6 CONTROL OF PUBLIC TRAFFIC

.1 Provide competent flag persons, trained and properly equipped:

.1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.

.2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.

.3 Where temporary protection is required while other traffic control devices are being erected or taken down.

.4 For emergency protection when other traffic control devices are not readily available.

.5 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

.2 The use of pay duty police shall, when deemed necessary by the Departmental Representative during the work, be considered incidental to all related items of work and no separate measurement or payment will be made.

1.7 OPERATIONAL REQUIREMENTS

.1 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken in accordance with TCP and as reviewed by Departmental Representative to protect and control public traffic.

1.8 MEASUREMENT AND PAYMENT

.1 The lump sum price shall include all costs for traffic contro persons, signs, crash trucks, delineators and all other traf control devices to be used on the job for whatever purpose required by the terms of the contract and in accordance with directions to be given to the Contractor by the Departmental Representative. Daily moving of these devices shall be the responsibility of the Contractor and no additional payment sh be made for these operations. Movement of the devices betwee various stages shall be the responsibility of the Contractor form part of the work of this Section. The Contractor shall ensure that sufficient devices are readily available to sati all these requirements.

.2 Payment shall be made on a pro-rata basis of the lump sum pr for this work and shall include payment for all labour, equip and materials necessary to complete the work.

PART 2 - PRODUCTS

2.1 SIGNAGE

.1 Provide signs for traffic control (including platforms), information, instruction, use of equipment, public safety, etc., in English or by use of commonly-understood graphic symbols.

.2 Do not erect advertising signage.

PART 3 - EXECUTION

3.1 GENERAL

.1 The Contractor shall independently verify all traffic requirements indicated in the Contract Documents, such that they comply with OTM Book 7. The Contractor shall be responsible for all requirements in accordance with OTM Book 7, regardless of whether or not they are indicated in the Contract Documents.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Province of Ontario:
- .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
- .2 O. Reg. 490/09, Designated Substances.
- .3 Workplace Safety and Insurance Act, 1997.
- .4 Other municipal, provincial, and federal statutes having jurisdiction.

.2 Canadian Standards Association (CSA): Canada
- .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

.3 National Building Code 2015 (NBC):
- .1 NBC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.4 National Fire Code 2015 (NFC):
- .1 NFC 2015, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.

1.2 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00.

.2 Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
- .1 Results of site-specific safety hazard assessment.
- .2 Results of safety and health risk or hazard analysis for site tasks and operations.
- .3 Contractor’s and Sub-contractor’s Safety Communication Plan.
- .4 Measures and controls to be implemented to address identified safety hazards and risks.
- .5 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Emergency Response Plan requirements and procedures, which is included in Annex C.

.3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative

within five (5) days after receipt of comments from Departmental Representative.

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

.5 Submit names of personnel and alternates responsible for site safety and health.

.6 Submit records of Contractor's Health and Safety meetings when requested.

.7 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative monthly.

.8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.

.9 Submit copies of incident, near miss and accident reports, and/or confirmation monthly that no incidents have occurred.

.10 Submit WHMIS Safety Data Sheets (SDS).

.11 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.

1.3 FILING OF NOTICE

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

1.4 WORK PERMIT

.1 All permits required to complete the Work (such as but not limited to building and electrical permits) shall be obtained by the Contractor and submitted to the Departmental Representative at least ten working days prior to commencement of the Work. The Contractor is responsible for coordinating any and all inspections, and paying any fees associated with the permit(s).

1.5 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

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

1.7 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

1.8 PROJECT/SITE CONDITIONS

.1 Work at site will involve control of the site, work near water and work in the vicinity of a swing bridge. The Owner will operate the bridge every hour on the hour between 07:00 hours and 23:00 hour (as required). Lockout-Tagout procedure will be required to complete the rehabilitation works.

.2 Known and obvious hazards include but are not limited to:
- .1 Silica in concrete
- .2 Bird guano on structure.
- .3 Mechanical systems.
- .4 Rusted metals from structure.
- .5 Work near water.
- .6 Work near utilities, including overhead utilities.
- .7 Work on the roadway.
- .8 Working at heights.
- .9 Heavy and moving equipment.
- .10 High voltage cables.

1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

.3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.11 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.

1.12 UNFORESEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety coordinator and follow procedures in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:

- .1 Have site-related working experience specific to activities associated with abatement of lead and asbestos containing materials.
- .2 Have working knowledge of occupational safety and health regulations.
- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work and report directly to and be under direction site supervisor.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.
- .1 Contractor's Safety Policy.
- .2 Constructor's Name.
- .3 Notice of Project.
- .4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members.
- .5 Ministry of Labour Orders and reports.
- .6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
- .7 Address and phone number of nearest Ministry of Labour office.
- .8 Material Safety Data Sheets.
- .9 Written Emergency Response Plan.
- .10 Site Specific Safety Plan.
- .11 Copy of valid certificate of first aid personnel on duty.
- .12 WSIB "In Case of Injury At Work" poster.
- .13 Location of toilet and cleanup facilities.
- .14 Any special handling or procedures specific to the site.

1.15 CORRECTION OF NON-COMPLIANCE

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

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

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

1.16 BLASTING

.1 Blasting or other use of explosives is not permitted.

1.17 POWDER ACTUATED DEVICES

.1 Use power actuated devices only after receipt of written permission from Departmental Representative.

1.18 WORK STOPPAGE

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

considerations for Work.

.2 Assign responsibility and obligation to stop or start Work when, at Health and Safety Coordinator's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Definitions:
- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .3 Environmental Review Report: The Contractor shall meet all requirements as outlined in the *"AANDC Simple Environmental Review Report"*.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets. Include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit 2 copies of WHMIS SDS.

.3 Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.

.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.6 Include in Environmental Protection Plan:
- .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
- .2 Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from site.
- .3 Name(s) and qualifications of person(s) responsible for training site personnel.
- .4 Descriptions of environmental protection personnel

training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

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

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

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

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

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

.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.13 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering

of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.15 Fire protection plan including emergency response procedures, instructions, and reports to be used in event of fire.

.16 PWGSC Environmental Mitigation Measures and Report Form, as provided by Departmental Representative. The Contractor shall be responsible for documenting that the mitigation measures in this Form have been implemented as applicable throughout the duration of this project. A copy of the completed Mitigation Measure Report form shall be forwarded to the Departmental Representative upon completion of the project.

.7 Comply with and submit a copy of the PWGSC environmental mitigation measures and report form.

1.4 FIRES

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

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

.4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

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

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

.1 Construction equipment to be operated on land only.

.2 Do not use waterway beds for borrow material.

.3 Waterways to be kept free of excavated fill, waste material and debris.

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

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

.6 Implement all conditions as stated in the Canadian Navigable Waters Act (CWNA).

1.8 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

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

.1 Provide temporary enclosures where required to carry out the work or as directed by Departmental Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing

dust and debris. Provide dust control for temporary roads.

1.9 NOISE CONTROL

.1 Minimize the noise levels from construction activities by using proper muffling devices, in addition to appropriate timing and location of these activities to reduce or minimize the effects of noise on nearby residents, recreationists, and wildlife.

1.10 SPILL CONTAINMENT

.1 The Contractor shall have a spill containment kit on site and available at all times.

.2 During all operations, such as refueling and paint transfer, the operations shall be completed within a secondary containment system capable of preventing release of spills or leaks into the environment.

1.11 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

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

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

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Mill tests.

.3 Equipment and system adjustment and balance.

1.2 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work as described in Section 01 29 83, above and beyond those required of the Contractor. Cost of such services will be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing,

appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for re-testing and re-inspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.7 REPORTS

.1 Submit four copies of inspection and test reports to Departmental Representative when the Contractor is required to provide reports.

.2 Provide copies to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.8 MILL TESTS

.1 Submit mill test certificates as for all steel. Mill certificate dates shall reasonably match the dates that steel is supplied as well as illustrating that the steel meets the requirements of the specification.

1.9 EQUIPMENT AND SYSTEMS

.1 Submit testing, adjustment and balancing reports for mechanical and electrical systems that is signed and sealed by a Licensed Professional Engineer in the Province of Ontario.

.2 Submit Commissioning Documentation in accordance with Section 01 91 13.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-1.189-2000, Exterior Alkyd Primer for Wood.
- .2 CAN/CGSB-1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)
- .1 CSA A23.1-19/A23.2-19, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CSA 0121-17, Douglas Fir Plywood.
- .3 CSA Z797-18, Code of practice for Access Scaffold.
- .4 CAN/CSA-Z321-96(R2006), Signs and Symbols for the Occupational Environment, withdrawn but still available from CSA, CCOHS, and Techstreet.

.3 U.S. Environmental Protection Agency (EPA)/ Office of Water
- .1 EPA 833-R-06-004, May 2007, Developing Your Stormwater Pollution Prevention Plan - A Guide for Construction Sites.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

1.4 INSTALLATION AND REMOVAL

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

.2 Identify areas which must be graveled to prevent tracking of mud, as approved by the Departmental Representative.

.3 Indicate use of supplemental or other staging area, as approved by the Departmental Representative.

.4 Provide construction facilities to execute work expeditiously, as approved by the Departmental Representative.

.5 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Scaffolding in accordance with CSA Z797.

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

1.6 HOISTING

.1 If the Contractor requires the use of hoists/crane to complete the work indicated in the Contract Documents, the following requirements shall be met:

.1 Provide, operate and maintain hoists/cranes required for moving of workers, materials and equipment.

.2 Hoists/cranes shall be operated by qualified operator.

1.7 SITE STORAGE/LOADING

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

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.8 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work, as approved by the Departmental Representative.

.2 Provide and maintain adequate access to project site.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.9 OFFICES

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

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

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

.4 Departmental Representative's Site office.

.1 Provide temporary office for Departmental Representative, one (1) week prior to the commencement of the work on site. There is to be safe "off street" parking for two (2) vehicles for the Departmental Representative in use at the field office.

.2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4-50% opening windows and one lockable door.

.3 Insulate building and provide heating system to maintain 22° C inside temperature at -20° C outside temperature.

.4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.

.5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures with 10% upward light component.

.6 Provide private washroom facilities adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.

.7 Equip office with 1 x 2 m table, 6 chairs, 6 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.

.8 The main telephone line shall have “Call Answering” feature and shall be for the use of the Departmental Representative only. The fax machine, which is to be provided by the Contractor for the sole use of the Departmental Representative, shall have a separate line and shall be such as to use plain paper and not thermal paper.

.9 The office shall have one (1) telephone line for the land telephone.

.10 The office shall be equipped with wireless internet access.

.11 In addition, the office shall be equipped with a plain paper photocopier / scanner capable of producing 8½” x 11” and 8½” x 14” copies. The Contractor shall provide adequate supplies of toner cartridges for the duration of the project for the photocopier/scanner.

.12 Maintain in clean condition.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

materials.

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

1.11 SANITARY FACILITIES

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

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

1.12 CONSTRUCTION SIGNAGE

.1 Provide and erect, within two (2) weeks before access to site, four sets of Project and Contractor Identification Signs comprising framing and 1200 x 2400 mm signboards as detailed by Departmental Representative and as described below.

.1 Framework and battens: SPF, pressure treated minimum 89 x 89 mm.

.2 Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.

.3 Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB-1.189.

.4 Fasteners: hot-dip galvanized steel nails and carriage bolts.

.5 Vinyl sign face: printed project identification, self-adhesive, vinyl film overlay.

.6 Project Identification Sign shall be in accordance with the Canada Federal Identity Program (FIP) Manual. Contractor Identification Sign shall be in accordance with Manual of Uniform Traffic Control Devices for Canada (MUTCD) TC-75.

.2 Locate project and Contractor identification signs as directed by Departmental Representative.

.3 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

.4 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

.5 No other signs or advertisements, other than warning signs, are permitted on site.

.6 Construction sign shall be of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.

.7 Signs shall state the project title, address range, type of service, completion date, and contract number, as provided by Departmental Representative.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Maintain and protect traffic on affected roads during construction period as indicated in the Contract Documents.

.2 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, automatic traffic lighting, and erection and maintenance of adequate warning, danger, and direction signs

.3 Protect travelling public from damage to person and property.

.4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.6 Construct access and haul roads if necessary, as approved by the Departmental Representative, as follows:
- .1 Constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .2 Location, grade, width, and alignment of construction and hauling roads are subject to approval by Departmental Representative.
- .3 Remove, upon completion of work, haul roads designated by Departmental Representative.
- .4 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

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

.8 Dust control: adequate to ensure safe operation at all times.

.9 Provide snow removal during period of Work.

1.16 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 GENERAL

.1 The exact location of the four (4) sets of signs shall be determined on-site by the Departmental Representative prior to the commencement of the construction. Tentative locations of the signs are:
.1 One (1) on Dufferin Avenue east of the structure.
.2 One (1) on Tecumseh Road west of the structure.
.3 One (1) on Bridge Road north of the structure.
.4 One (1) on Bridge Road south of the structure.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Barriers.

.2 Environmental Controls.

.3 Traffic Controls.

.4 Fire Routes.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-1.189-2000, Exterior Alkyd Primer for Wood.
- .2 CAN/CGSB-1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA):
- .1 CSA-O121-17, Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around work areas such as, but not limited to, deep excavations, open stairways, openings of floors and windows, openings due to removal of existing railings/barrier walls, working near the swing span when it is in its open position to permit waterway traffic below, and so on.

1.5 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, temporary concrete barriers, TC-54 barrels, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.6 FIRE ROUTES

.1 Maintain access including overhead clearances for use by emergency response vehicles.

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 The Contractor shall be responsible for damage incurred.

1.8 PROTECTION OF BUILDING FINISHES (CONTROL TOWER)

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule three (3) days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Quality of Work, coordination and fastenings.

.4 Existing facilities.

1.2 REFERENCES

.1 Within text of specifications, reference may be made to reference standards.

.2 Conform to these standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.4 The cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.5 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.3 QUALITY

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

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout bridge/tower building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

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

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.6 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every

precaution necessary to prevent spontaneous combustion.

.7 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.8 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

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

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.9 CO-ORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

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

.2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No.304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of the structure. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.15 EXISTING UTILITIES

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Progressive cleaning.

.2 Final cleaning.

1.2 PROJECT CLEANLINESS

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

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.3 Clear snow and ice from access to bridge site, and remove from site.

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

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

.6 Provide and use clearly marked separate bins for recycling. Refer to Section 01 74 20.

.7 Remove waste material and debris from site at end of each working day.

.8 Dispose of waste materials and debris off site.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 CONSTRUCTION & DEMOLITION WASTE

.1 Carefully deconstruct and source separate materials/equipment and divert, from D&C waste destined for landfill to maximum extent possible. Target for this project is 60% diversion from landfill. Reuse, recycle, compost, anaerobic digest or sell material for reuse except where indicated otherwise. On site sales are not permitted.

.2 Source separate waste and maintain waste audits in accordance with the Environmental Protection Act, Ontario Regulation 102/94 and Ontario Regulation 103/94.
- .1 Provide facilities for collection, handling and storage of source separated wastes.
- .2 Source separate the following waste:
  - .1 Brick and portland cement concrete.
  - .2 Corrugated cardboard.
  - .3 Wood, not including painted or treated wood or laminated wood.
  - .4 Gypsum board, unpainted.
  - .5 Steel.

.3 Submit a waste reduction workplan indicating the materials and quantities of material that will be recycled and diverted from landfill. Indicate how material being removed from the site will be reused, recycled, composted or anaerobically digested.

.4 Submit proof that all waste is being disposed of at a licensed land fill site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the waste must be supplied to Departmental Representative prior to removal of waste from the demolition site.

1.2 WASTE PROCESSING SITES

.1 Province of: Ontario.
- .1 Ministry of Environment and Energy, 135 St. Clair Avenue West, Toronto, ON, M4V 1P5.
- .2 Telephone: 800-565-4923 or 416-323-4321.
- .3 Fax: 416-323-4682.

.2 Recycling Council of Ontario: 215 Spadina Avenue, #225, Toronto, ON, M5T 2C7.
- .1 Telephone: 416-657-2797
- .2 Fax: 416-960-8053
- .3 Email: rco@rco.on.ca.

.4 Internet: http://www.rco.on.ca/.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment.

Province	Address	General	Fax
Ontario	Ministry of the Environment, Conservation, and Parks 135 St. Clair Ave. West Toronto, ON | M4V 1P5	(416)323-4321 (800)565-4923	(416)323-4682
	Environment and Climate Change Canada Toronto	(416)734-4494	

END OF SECTION

PART 1 - GENERAL

1.1 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
- .2 Request Departmental Representative's Inspection.

.2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:
- .1 Work has been completed and inspected for compliance with Contract Documents.
- .2 Defects have been corrected and deficiencies have been completed.
- .3 Equipment and systems have been tested, adjusted and balanced, and are fully operational.
- .4 Certificates required have been submitted.
- .5 Commissioning of the bridge has been completed.
- .6 Operation of systems have been demonstrated to Owner's personnel.
- .7 Work is complete and ready for final inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

.5 Due to the changes that will be made, the Contractor shall illustrate the operation of the bridge to the Control Tower staff (Bridgemaster) in a training session not to exceed four (4) hours and one (1) follow up session not to exceed two (2) hours. Training to include demonstrations by instructors to:
- .1 Use the installed equipment and systems.
- .2 Review of system layout, equipment, components, and controls.
- .3 Equipment and system start-up, operation, monitoring, servicing, maintenance, and shut-down procedure.

.4 System operating sequences, including step-by-step direction for starting up, shut down, switches, adjustment of control settings, and emergency procedures.
.5 Trouble-shooting diagnosis.
.6 Review of documentation.
.7 Submission of three (3) copies of a training document containing all of the above.

.6 The Contractor shall provide three (3) individual start up, operation, and shut-down demonstration for the Control Tower staff (Bridgemaster) and Departmental Representative for the following items:
.1 All electrical requirements indicated in the Contract Documents such as, but not limited to, the new generator, traffic gates, and traffic signals.
.2 All mechanical requirements indicated in the Contract Documents.

1.2 CLEANING

.1 In accordance with Section 01 74 11.

.2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 20.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final site survey.

1.2 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Departmental Representative's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of maintenance manuals and commissioning documentation in English.

.5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged nor defective, and of same quality and manufacture as products provided in Work.

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.3 FORMAT

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

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

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

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

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

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

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

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

.9 Provide 1:1 scaled CAD files in dxf format on USB drive.

1.4 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;
- .1 Date of submission; names,
- .2 Addresses, and telephone numbers of Consultants and Contractor with name of responsible parties;
- .3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:
- .1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

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

.4 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.

1.5 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy

of:
.1 Contract Drawings.
.2 Specifications.
.3 Amendments and addenda.
.4 Change Orders and other modifications to the Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

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

.6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work. Submit files on USB compatible with PWGSC encryption requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

.7 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".

1.6 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual.

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

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

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

.1 Field changes of dimension and detail.
.2 Changes made by change orders.
.3 Details not on original Contract Drawings.
.4 References to related shop drawings and modifications.
.5 Location of internal utilities and appurtenances referenced to visible and accessible features.

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

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

1.7 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

1.8 STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

1.9 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by

subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

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

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

.6 Co-execute submittals when required.

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 PRICE AND PAYMENT PROCEDURES

.1 All work and material required under this section shall be included in the lump sum amount.

1.2 SUMMARY

.1 Section Includes:
- .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.

.2 Acronyms:
- .1 Cx - Commissioning.
- .2 PV - Performance Verification.

1.3 GENERAL

.1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed and functional. Objectives:
- .1 Verify installed equipment, systems and integrated systems operate in accordance with Contract Documents and design criteria and intent.
- .2 Ensure appropriate documentation is compiled.
- .3 Effectively train operators.

.2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
- .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
- .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

1.4 COMMISSIONING OVERVIEW

.1 Cx to be included in the Contractor's lump sum cost breakdown.

.2 Cx activities supplement field quality and testing procedures described in relevant technical sections.

1.5 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the non-functional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.

1.6 COMMISSIONING SCHEDULE

.1 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
.1 Repairs, retesting, re-commissioning, re-verification.
.2 Training.

1.7 STARTING AND TESTING

.1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment and personnel.

1.8 WITNESSING OF STARTING AND TESTING

.1 Provide 14 days' notice prior to commencement.

.2 Departmental Representative to witness Cx.

.3 Contractor to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.9 PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting Cx.

.2 Correct deficiencies and obtain approval from Departmental Representative.

1.10 START OF COMMISSIONING

.1 Notify Departmental Representative at least five days prior to start of Cx.

1.11 COMMISSIONING PERFORMANCE VERIFICATION

.1 Carry out Cx:
  .1 Under actual operating conditions, over entire operating range, in all modes.
  .2 On independent systems and interacting systems.

.2 Cx procedures to be repeatable and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

1.12 WITNESSING COMMISSIONING

.1 Departmental Representative and Contractor to witness activities and verify results.

1.13 EXTRAPOLATION OF RESULTS

.1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.14 EXTENT OF VERIFICATION

.1 Perform additional commissioning as required until results are acceptable to Departmental Representative.

1.15 DEFICIENCIES, FAULTS, DEFECTS

.1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.

.2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.16 COMPLETION OF COMMISSIONING

.1 Upon completion, leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx to be considered complete when deliverables have been submitted and accepted by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 GENERAL EXECUTION

.1 The work to be completed as part of this specification is to demonstrate that all the bridge electrical and mechanical system have been correctly installed and function properly.

.2 The Contractor shall provide all test equipment, safety equipment, personnel and monitoring devices necessary to show each piece of equipment has been installed, operates properly, is in proper operating condition, and integrated into the bridge control system. This work shall be coordinated with the traffic signal supplier, traffic gate supplier, and all other component suppliers and the installing Contractor.

.3 The Contractor shall be present during all test operations.

3.2 STAGE 1 - CONTRACTOR'S FIELD TESTING

.1 The Contractor shall adjust, calibrate and test all equipment, place the integrated system in service, and test the integrated system using approved test procedures.

.2 The Contractor shall demonstrate that the completed system functions properly by performing at least five complete bridge operations without failure or any adjustments. (A complete bridge operation shall be defined as starting with the automated traffic signals, operating all traffic control equipment to stop traffic, retracting the end locks, retracting the end wedges, bringing the span to the fully open limit switch, bringing the span to the fully centered position, extending the end wedges, operating all traffic control equipment to allow traffic to proceed under automated traffic signal control.

.3 Complete the demonstration of system functions in a way that will not interfere with use of the adjacent waterway.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

.1 The provisions of OPSS 902 November 2019 shall apply to this item except as amended or extended herein or in other Sections. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

1.2 DESCRIPTION OF THE WORK

.1 As part of the work for this tender item the Contractor shall:

.1 Carry out all required excavation to complete all work as may be shown on the Contract Drawings, described in the Contract Documents, or otherwise be determined to be necessary to complete all work as directed by the Departmental Representative. This includes all excavation (even that which must be completed by hand or by using hydro-vacuum techniques due to proximity to structure or adjacent utilities).

.2 Excavation required for new submarine cables and conduits as indicated in the Contract Documents.

.3 Reinstatement of native materials and compaction of the same material at the conclusion of the repairs.

.4 Obtaining all necessary locates for utilities and any other costs incurred as a result of the excavation adjacent to these utilities (such as having utility representative on site during the work) shall be borne by the Contractor.

.5 Any boulders, rubble, concrete, asphalt (buried or exposed), etc. encountered during excavation shall be treated as earth. Suspected/visible areas are shown on the Contract Drawings.

.6 Dispose of all surplus material (or material not suitable for reuse) off site in accordance with 01 74 20.

1.3 - REFERENCES

.1 Ontario Provincial Standard Specification (OPSS)

.1 OPSS 902, November 2010, Construction Specification for Excavation and Backfilling - Structures.

1.4 MEASUREMENT AND PAYMENT

.1 No measurement for payment will be made for excavated materials. Payment shall be included in the Contract Lump Sum price.

.2 Payment at the Contract Amount shall be full compensation for all labour, Equipment, and Material required to do the work.

PART 2 – PRODUCTS

.1 Not used.

PART 3 – EXECUTION

3.1 GENERAL

.1 Carry out in accordance with OPSS 902. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 National Building Code of Canada 2015 (NBC)
  .1 National Building Code of Canada (NBC 2015), Division B, Part 8 - Safety Measures at Construction and Demolition Sites (2015) and with local authority having jurisdiction.

.2 CSA International
  .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

1.3 SITE CONDITIONS

.1 Review "Designated Substance Survey” report included in Annex D and take precautions to protect the environment.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Inspect site with Departmental Representative and verify extent and location of items designated for removal, disposal and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

3.2 PROTECTION

.1 Protection of In-Place Conditions:
  .1 Prevent movement or damage to the control tower, services, utilities, and parts of the Control Tower to remain in place. Provide bracing and shoring as required.
  .2 Keep noise, dust, and inconvenience to occupants to minimum.
  .3 Protect building systems, services and equipment.
  .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
  .5 Do Work in accordance with Section 01 35 29.

.2 Demolition/Removal:

.1 Remove items as indicated in the contract documents.

3.3 RESTORATION

.1 Restore existing equipment/area outside areas of demolition to conditions that existed prior to commencement of work.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11.

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

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

END OF SECTION

1 GENERAL

1.01 SUMMARY

.1 The following mechanical equipment on the Walpole Island Swing Bridge shall be either serviced or replaced as indicated below:

.1 Service – Pivot bearing.

.2 Service – Balance wheels (8) and live load bearings (2).

.3 Service – Identified mechanical components.

.4 Service – Wedge and swing drive shaft guarding.

.5 Service – Swing drive bevel gear guarding.

.6 Replace – Swing drive motors (2), motor mounts (2), brakes with integral couplings (2) and brake mounts (2).

.7 Replace – Wedge drive motors (2), motor couplings (2) and motor mounts (2).

.8 Replace – Swing drive cam limit switch assembly, gearbox and chain.

.9 Replace – Wedge drive cam limit switch assembly, gearbox and chain.

.10 Replace – Circular electrical trolley track carrier.

.11 Replace – Motor and brake electrical Disconnects (as indicated on Drawings).

.12 Replace – Centre pier and span junction boxes (as indicated on Drawings).

.13 Replace – Submarine cables and conduit, buried cables and mounted conduit (as indicated on Drawings).

.14 Replace – Marine lighting and all associated conduit and cable (as indicated on Drawings).

1.02 RELATED REQUIREMENTS

.1 Section 26 05 01, Electrical

.2 Section 01 35 29, Health and Safety Requirements

1.03 REFERENCE STANDARDS

.1 ASTM

.1 ASTM A240/A240M [20a], Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

.2 ASTM A325/A325M [14], Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi (830 MPa) Minimum Tensile Strength

.3 ASTM F436/F436M [19], Standard Specification for Hardened Steel Washers Inch and Metric Dimensions

.4 ASTM A563/A563M [15/07(2013)], Standard Specification for Carbon and Alloy Steel Nuts

.5 ASTM A153/A153M [16a], Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

.6 ASTM D5864 [18], Standard Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components

.2 CSA Group

.1 CSA W59 [18], Welded Steel Construction

.2 CSA W47.1 [19], Certification of Companies for Fusion Welding of Steel

1.04 DEFINITIONS

.1 Abandon: Leave in place without removal. Loose objects or ends shall be removed.

.2 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.

.3 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.

.4 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by Federal Hazardous Products Act (RSC 1985) including latest amendments.

.5 Remove: Planned deconstruction and disassembly of items from existing construction taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.

.6 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

.7 Remove and Salvage: Detach items from existing construction and deliver them to Departmental Representative ready for reuse.

.8 Replace: Remove items and install new items in their place, adjusting mounting brackets and locations as required.

.9 Reuse: Existing to Remain and confirmed in proper working order.

.10 Service: Perform routine maintenance or repair work on indicated items.

1.05 DRAWINGS

.1 The following drawings are provided to assist the Contractor with identifying the work to be completed.

.1 Mechanical Layout – Drawing No. M01.

.2 Pivot Bearing Service Details – Drawing No. M02.

.3 Balance Wheel and Live Load Bearing Service Details – Drawing No. M03.

.4 Mechanical Component Service Details – East and West Wedges – Drawing No. M04.

.5 Mechanical Component Service Details – Centre Pier Components – Drawing No. M05.

.6 Drive Shaft and Bevel Gear Guarding Repair Details – Drawing No. M06.

.7 Swing Drive Motor, Brake & Coupling Arrangement & Details – Drawing No. M07.

.8 Wedge Drive Motor & Coupling Arrangement & Details – Drawing No. M08.

.9 Swing and Wedge Drive Cam Limit Switch Arrangement & Details – Drawing No. M09.

.10 Circular Cable Carrier Arrangement & Details – Drawing No. M10.

.11 Control Tower Layout – Drawing No. M11.

.12 Conduit, Junction Box and Marine Lighting Layout – Drawing No. M12.

.2 It is the contractor’s responsibility to verify all dimensions, details and elevations of the existing structure that are relevant to the work shown on the drawings prior to commencement of the work. Any discrepancies shall be reported to the Departmental Representative and the proposed adjustment of the work required to match the existing structure shall be submitted for approval.

.3 The contractor shall assist the Departmental Representative with confirming installation details and/or measurements of the existing system during disassembly. The Departmental Representative shall, if required, provide updated drawings based on this detail to the Contractor which may include, but is not limited to, details of fabricated components, mounting locations or integration components.

.4 The Contractor shall submit a list and specification details of all proposed purchased components, as well as the modifications required to fabricated components and installation assemblies to use these components, to the Departmental Representative for approval prior to purchase of any component.

.5 All fabricated weldments shall be stress relieved prior to final machining.

1.06 SITE CONDITIONS

.1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition at time of site examination before tendering.

.2 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in Work; immediately notify Departmental Representative if materials suspected of containing hazardous substances are encountered and perform following activities:

.1 Hazardous substances will be as defined in Hazardous Products Act.

.2 Stop work in area of suspected hazardous substances.

.3 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.

.4 Hazardous substances will be removed by Departmental Representative under a separate contract or as a change to Work.

.5 Proceed only after written instructions have been received from the Departmental Representative.

1.07 SALVAGE AND DEBRIS MATERIAL

.1 Demolished and removed items become Contractor's property and will be removed from Project site; except for items indicated as being reused, salvaged, or otherwise indicated to remain Departmental Representative's property.

.2 Carefully remove materials and items designated for salvage or to be reused and store in a manner to prevent damage or devaluation of materials.

2 PRODUCTS

2.01 MATERIALS

.1 All stainless steel shall be ASTM A240/A240M Type 316 Stainless Steel unless otherwise specified.

.2 All cap screws, nuts, washers and threaded rod shall be ASTM A240/A240M Type 316 Stainless Steel unless otherwise specified.

.3 All shims shall be ASTM A240/A240M Type 316 Stainless Steel.

3 DEMOLITION, REMOVAL AND COORDINATION

3.01 PREPARATION

.1 Protection of Existing Systems to Remain: Protect systems and components indicated to remain in place during selective demolition operations and as follows:

.1 Prevent movement and install bracing to prevent settlement or damage of adjacent services and parts of existing buildings scheduled to remain.

.2 Prevent debris from blocking drainage inlets.

.3 Protect mechanical systems that will remain in operation.

.2 Protection of Building Occupants: Sequence demolition work so that interference with the use of the building by the Departmental Representative and users is minimized and as follows:

.1 Prevent debris from endangering safe access to and egress from occupied buildings.

.2 Notify Departmental Representative and cease operations where safety of occupants appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

3.02 EXECUTION

.1 Coordinate requirements of this Section as follows:

.1 Disconnect electrical circuits and panel feeders; maintain electrical service and main distribution panel as is, ready for subsequent Work.

.2 Remove existing luminaires, electrical devices and equipment including associated conduits, boxes, wiring, and similar items as unless noted.

.3 Perform demolition work in a neat and workmanlike manner:

.4 Remove tools or equipment after completion of work, and leave site clean and ready for subsequent renovation work.

.5 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.

.6 Place weatherproof blank cover plates on exterior outlet boxes remaining after demolition and removal activities.

.7 Grind off conduits not indicated for reuse and make flush with surface of concrete where conduits are cast into concrete; seal open ends of conduit with silicone sealant and leave in place.

.8 Seal open ends of conduit with silicone sealant and leave in place where they are inaccessible or cannot be removed without damaging adjacent construction.

.9 Refer to Drawing M01 for details reference for the components to be removed.

.2 Pivot Bearing

.1 Refer to Section 4.01 for details reference for the pivot bearing inspection. During the inspection of the pivot bearing, the existing thermal blanket shall be removed and later reinstalled. The banding strap that holds the thermal blanket in place shall be removed. Following completion of the inspection and any required repairs, the thermal blanket shall be reinstalled. The Contractor shall ensure the blanket is fully functional following installation.

.2 All inspection work on the pivot bearing shall not require closure of the bridge to vehicular traffic, nor limit the ability to swing the bridge. Coordination with the control tower shall be maintained so that the bridge can be swung safely at any point during the inspection or remedy work.

.3 Balance Wheels and Live Load Bearings

.1 Refer to Section 4.02 for details reference for the balance wheel and live load bearing adjustment. The existing shims for all balance wheels and live load bearings shall be removed. Any existing bolt, washers or nut that is removed during the work shall be replaced with equivalent ASTM A325/A325M bolt, F436/F436M washer and A563/A563M nut, Hot-Dipped Galvanized according to ASTM A153/153M.

.2 Whenever jacks are in place and carrying load, the bridge shall be closed to vehicular traffic. Limited pedestrian and/or bicycle traffic shall be permitted at the Contractors discretion, except for during raising or lowering of the span with the jacks. All four end wedges shall be fully driven at all times when any traffic passes across the bridge.

.4 Mechanical Component Service

.1 Refer to Section 4.03 for details reference for the mechanical component service. Existing excess grease and oil shall be removed.

.2 All mechanical component service shall not require complete closure of the bridge to vehicular traffic except for during the indicated cycling of the components. Coordination with the control tower shall be maintained so that the bridge can be swung safely at any point during the service.

.5 Drive Shaft and Bevel Gear Guarding

.1 Refer to Section 4.04 for details reference for the drive shaft and bevel gear guarding service. All existing guarding closure hardware shall be removed. Damaged hinges from the existing bevel gear guard that is being repaired shall be removed.

.2 All modifications shall not require closure of the bridge to vehicular traffic. Coordination with the control tower shall be maintained so that the bridge can be swung safely at any point during the modifications.

.6 Swing Drive Motor, Brake & Couplings

.1 Refer to Section 4.05 for details reference for the swing drive motor, brake & coupling replacement. All existing swing drive motors,

brakes, couplings, disconnects and any cable and conduit between the span mounted junction boxes, motor & brake disconnects and the motors and brakes shall be removed.

.2 Removal and replacement of the identified components shall not require complete closure of the bridge to vehicular traffic except during the commissioning.

.7 Wedge Drive Motor & Couplings

.1 Refer to Section 4.06 for details reference for the wedge drive motor & coupling replacement. All existing wedge drive motors, brakes, couplings, disconnects and any cable and conduit between the span mounted junction boxes, motor & brake disconnects and the motors and brakes shall be removed.

.2 Removal and replacement of the identified components shall not require complete closure of the bridge to vehicular traffic except for during the commissioning.

.8 Swing & Wedge Drive Cam Limit Switch Assemblies

.1 Refer to Section 4.07 for details reference for the swing & wedge drive cam limit switch assemblies. All existing cam limit switch assemblies, sprockets, gearboxes, chains and mounting hardware, as well as any cable and conduit between limit switch assemblies the span mounted junction boxes shall be removed. Any guarding shall be removed and may be reinstalled at the Contractors discretion provided the guarding meets all required safety standards. If the guarding is not reinstalled, the Contractor shall replace with appropriate guarding meeting all safety standards.

.2 Removal and replacement of the identified components shall not require closure of the bridge to vehicular traffic except for during the commissioning.

.9 Circular Cable Carrier

.1 Refer to Section 4.08 for details reference for the circular cable carrier replacement. All existing cable trolleys, track, mounting brackets, pier mounted junction boxes, span mounted junction boxes and cable and conduit between pier mounted submarine cable junction boxes and span mounted junction boxes shall be removed.

.2 Removal and replacement of the identified components shall not require complete closure of the bridge to vehicular traffic except for during the commissioning.

.10 Control Tower Layout

.1 Refer to Section 4.09 for details reference for the control tower layout. The existing drive control cabinet and all internal components shall be removed. Any submarine cables shall be pulled back through the conduit to the edge of the tower footing, cut external to the tower and removed.

.2 The operators console and all internal components shall be removed. Cables routed into the console shall be pulled back to the source and removed. In floor conduit shall be reused as practicable. Wall mounted conduit shall be removed. The generator control display and housing shall be removed and reinstalled.

.3 The existing traffic control box and all internal components shall be removed. Cables routing to locations within the control tower shall be pulled back to the source and removed. In floor conduit shall be

reused as practicable. Wall mounted conduit shall be removed. Cables and conduit routed external to the control tower shall be reused.

.4 The existing 208Y/120 Panel board and all internal components shall be removed. The associated transformer shall be removed. Cable between the transformer and panel board shall be pulled back to the source and removed. In floor conduit shall be reused as practicable. Wall mounted conduit shall be removed.

.5 The existing source feed from the hydro pole, including main disconnect shall be reused.

.6 The existing washroom wall shall be partially demolished to permit installation of a new access door. Concrete block shall be cut and removed to suit new door and frame. Cut edges shall be repaired and repainted to match the existing wall.

.7 The existing washroom door and frame shall be removed. The wall shall be braced to prevent shifting prior to installation of new concrete block.

.8 The existing hot water tank shall be removed and reinstalled as identified on the Drawings. Plumbing and electrical connections not being reused shall be removed.

.9 Where practicable, components to be disposed of shall be removed via the main staircase. Larger components may be removed via other means approved by the Departmental Representative in advance.

.11 Conduit, Junction Box & Marine Lighting Layout

.1 Refer to Section 4.10 for details reference for conduit, junction box & marine lighting layout.

.2 The existing submarine cables shall be abandoned. Cables shall be cut at the entrance to the underwater or underground conduit termination. Submarine cables in conduits in the Control Tower and Piers shall be pulled back through the conduit and removed.

.3 The existing submarine cable from the Pivot Pier to the East Rest Pier shall be abandoned, including cable in the conduit on the Pivot Pier.

.4 All cable, conduit and junction boxes on the bridge swing span shall be removed.

.5 All marine lighting fixtures shall be removed including 4 span mounted passage lights, 4 pier mounted passage lights and 4 navigation lights. All cable, conduit and junction boxes associated with the marine lighting shall be removed.

.6 All existing cables and conduits associated with the traffic lights, gates, and roadway lights shall be reused, with the exception of the submarine cable runs that shall be abandoned and the span mounted roadway light that shall have conduit and cable removed and replaced.

.7 The existing East Rest Pier submarine cable junction box shall be reused.

.8 Removal and replacement of the identified components shall not require complete closure of the bridge to vehicular traffic except for during the commissioning.

.12 The Contractor shall provide traffic control if closure of a single lane of traffic is required to assist with removal of any component.

.13 The Contractor shall provide a schedule to the Departmental Representative for approval prior to commencement of any work indicating periods of vehicular traffic restriction and/or limitation to the ability to swing the

bridge. The Contractor shall coordinate this work with any other work that requires traffic and/or swing restrictions to minimize the duration.

4 INSTALLATION DETAILS

4.01 PIVOT BEARING

.1 Refer to Drawing No. M02 for details reference. The existing pivot bearing shows signs of an oil leak and shall be inspected to determine its continued serviceability. This inspection shall consist of no less than the following steps:

.1 Removal of the existing thermal blanket without damage to the blanket or any associated components.

.1 Examination of the pivot bearing for potential source of oil leak, including but not limited to steps identified on Drawing No. M02.

.2 Creation of a report to the Departmental Representative on suspected source of oil leak including images of overall bearing and details of potential serviceability concerns or oil leak sources, serviceability of bearing for intended use, potential remedies if required and a firm price quote to complete additional remedy work.

.3 Replacement of the thermal blanket and securing in place using ASTM A240/A240M Type 316 Stainless Steel Banding and Clamps.

.4 Confirmation of proper operation of thermal blanket.

4.02 BALANCE WHEELS AND LIVE LOAD BEARINGS

.1 Refer to Drawing No. M03 for details reference. The existing balance wheels and live load bearings shall be adjusted to reduce dead load carried when span is closed.

.2 All existing shims shall be removed and reinstalled with new shims made from ASTM A240/A240M Type 316 steel. It is the Contractors responsibility to determine the required number of shims and fabricate prior to commencement of the shim adjustment procedure.

.3 All existing hardware that is removed during the adjustment shall be replaced with equivalent ASTM A325/A325M Hot-Dipped Galvanized.

.4 The Contractor shall submit a proposed procedure to adjust the wheels and bearings without detrimentally affecting the ability of the bridge to swing and allow passage of vehicles and watercraft. The following procedure may be used as a reference:

.1 Retract East and West wedges.

.2 Measure minimum vertical clearance between rest pier and span wedge guide.

.3 Extend wedges.

.4 Measure all balance wheel shim thicknesses.

.5 Lift span at appropriate jacking points to remove load from balance wheels.

.6 Adjust all balance wheel shims and live load bearing shims until all balance wheels clear balance rail by 1 – 2 mm when the span is in the neutral position (ie not lifted via jacks) and wedges are driven,

ensuring variation between minimum and maximum clearance does not exceed 0.5mm.

.7 Adjust live load bearing shims until clearance between span and pier bearing seats is 0.1 - 0.2 mm when the wedges are retracted and balance wheels have been adjusted and span in neutral position (ie. not lifted via jacks).

.8 Retract East and West wedges and confirm vertical clearance. Report deviation as well as any balance wheel shim thickness deviation to the Departmental Representative for potential adjustment of wedge shims and maximum insertion point.

4.03 MECHANICAL COMPONENT SERVICE

.1 Refer to Drawings No. M04 & M05 for details reference. The mechanical components of the swing and wedge drive systems shall be serviced to ensure proper operation.

.2 Locations identified to be lubricated with EP Grease shall be lubricated as follows:

.1 Contractor shall propose to the Departmental Representative for approval a suitable environmentally acceptable degreaser and NLGI 2 Extreme Pressure Grease with the following properties:

.1 Rust and oxidation inhibitors.

.2 Extreme pressure and tackiness additives.

.3 Biodegradability > 60% according to ASTM D-5864.

.4 Pass on EPA LC50 Acute Toxicity test.

.2 Grease nipple or zerk shall be cleaned using degreaser.

.3 Open sliding interfaces such as wedge base and guide angles shall be cleaned of existing grease using approved degreaser.

.4 Excess grease around pivot points and sliding interfaces shall be cleaned of existing grease using approved degreaser.

.5 Any grease point that has a nipple-style grease fitting shall be replaced with a Giant Button-Head style grease fitting made from 303 Stainless Steel or equivalent material.

.6 Grease shall be added until excess grease appears from rotating or sliding interface without appearance of any water or air bubbles.

.7 Any grease point that does not accept grease shall have grease fitting replaced. If grease will still not be accepted, Contractor shall propose potential remedies to the Departmental Representative along with a firm price quote to complete additional work.

.8 Sliding or pivoting interface shall be operated through a minimum of 2 complete cycles.

.9 Grease shall be added to confirm complete lubrication until excess grease appears from rotating or sliding interface without appearance of any water or air bubbles.

.10 Open sliding interfaces shall be inspected and additional grease shall be added until 100% coverage is achieved.

.11 Excess grease shall be wiped from any interface not in sliding or rotating contact and from grease fitting.

.12 Excess grease shall be captured and disposed of according to applicable federal, provincial and local regulations.

.3 Locations identified to be lubricated with Open Gear Grease shall be lubricated as follows:

.1 Contractor shall propose to the Departmental Representative for approval a suitable environmentally acceptable degreaser and NLGI 0 Open Gear Grease with the following properties:

.1 Designed for use in open gearing.

.2 Contains no diluents, heavy metals or ozone depleting substances.

.3 Biodegradability > 60% according to ASTM D-5864.

.4 Pass on EPA LC50 Acute Toxicity test.

.2 Existing grease and loose rust and paint shall be removed from all gear tooth flanks, roots, tips and gear end faces using degreaser.

.3 Gear tooth flanks shall be painted with approved grease using suitable brush until 100% coverage is achieved.

.4 Gears shall be operated through a minimum of 2 complete cycles and inspected to ensure 100% flank coverage.

.5 Excess grease shall be wiped from tooth roots, tips and gear end faces.

.6 Excess grease shall be captured and disposed of according to applicable federal, provincial and local regulations.

.4 Locations identified to be lubricated with Penetrating lubricant shall be lubricated as follows:

.1 Contractor shall propose to the Departmental Representative for approval a suitable Synthetic Ester based environmentally acceptable penetrating lubricant designed for use for the intended application with the following properties:

.1 Contains no heavy metals or ozone depleting substances.

.2 Biodegradability > 60% according to ASTM D-5864

.3 Pass on EPA LC50 Acute Toxicity test.

.2 Interface to be lubricated shall be cleaned of any loose rust, dirt or paint.

.3 Sliding or pivoting interface shall be sprayed with lubricant until 100% coverage is achieved.

.4 Interface shall be operated through a minimum of 2 complete cycles.

.5 Interface shall be sprayed again with lubricant to ensure 100% coverage.

.6 Excess lubricant shall be wiped from any interface not in sliding or rotating contact.

.7 Excess lubricant shall be captured and disposed of according to applicable federal, provincial and local regulations.

.5 A loose bolt was noted on the West Rest Pier South Wedge Mount.

.1 Contractor shall remove bolt and replace with equivalent ASTM A325/A325M Hot-Dipped Galvanized.

.2 Contractor shall torque equivalent bolts (32) on all 4 wedge mounts to recommended bolt torque.

.6 Contractor shall draw a sample of the oil from the pivot bearing and swing and wedge drive gearboxes, representative of the bulk oil within the system (ie not drawn from a drain port). Sample shall be sent to a testing facility approved by the Departmental Representative.

.1 Oil shall be tested as a minimum for:

.1 Viscosity

.2 Water (%)
.3 Oxidation
.4 Total Acid Number
.5 Contaminants (%)
.6 Additive and Contaminant Metals (ppm)
.7 Wear Metals (ppm)
.8 Particle Count

.2 Contractor shall review the results of the oil analysis and propose to the Departmental Representative any remedial actions required along with a firm price quote to complete additional work.

.3 Contactor shall propose to the Departmental Representative for approval suitable AGMA 6 EP Gear Oil if required.

4.04 DRIVE SHAFT AND BEVEL GEAR GUARDING

.1 Refer to Drawing No. M06 for installation and details reference. Recently installed shaft guarding shall be repaired and/or modified.

.2 Existing wedge shaft guard G6 above Swing Pier

.1 Existing guard interferes with span structure and is jammed in the open position. Guard shall be shortened according to Drawing No. M06 to eliminate interference.

.2 New wedge motor will have electrical box mounted opposite guard. Existing guard has been cut out for clearance from existing motor electrical box. Existing guard shall be repaired by welding in place same thickness material as existing guard to cover hole and painted to match.

.3 Wedge and Swing Drive shaft guards (7)

.1 Existing guard bolts (M12) and associated hardware used to hold shaft guards closed shall be removed. This includes loose hardware sitting on top of gearboxes, structure or other locations above the swing pier.

.2 Stud holes shall be drilled (46), mounting studs (23) and nuts (23) welded and captive screw assemblies (23) installed according to Drawing No. M06.

.4 Bevel Gear Guard

.1 Damaged hinges from East bevel gear guard shall be removed.

.2 New hinges shall be welded onto cover plate and complete assembly welded in place according to Drawing No. M06.

.3 Stud holes shall be drilled (4), mounting studs (4) and nuts (4) welded and captive screw assemblies (4) installed according to Drawing No. M06.

.5 All guarding shall be openable a minimum of 90 degrees without physical interference with any other equipment.

.6 All mounting studs shall be designed with shoulder so that threads do not engage in upper guard half when spun during loosening or tightening.

.7 All studs shall be properly aligned so that no lateral force is required to be applied to upper half of guarding to align and secure when tightening.

.8 All mounting studs shall be fully tightened prior to completion of work.

4.05 SWING DRIVE MOTOR, ENCODER, BRAKE & COUPLING

.1 Refer to Drawing No. M07 for installation and details reference. Existing swing drive motors, brakes and couplings to the existing gearbox shall be replaced with new motors (2), brakes (2) and couplings (2).

.2 Refer to Specification Section 26 05 01, Electrical for details applicable to the motor specifications.

.3 The encoders (2) shall be multiturn absolute encoders and include the following features:

- .1 Mountable on a 12mm shaft.
- .2 27 Bit resolution with Profinet IO with RT / IRT.
- .3 100 Mbit/s transmission rate.
- .4 10-30 VDC Operating Voltage.
- .5 < 4W maximum power consumption.
- .6 Diagnostic LED.
- .7 IP64.
- .8 Integral torque stop to prevent body rotation.

.4 The brakes (2) shall be magnetic drum style brakes and include the following features:

- .1 Spring applied, 230 VAC electromagnetically released.
- .2 Thruster style drum brake capable of producing a minimum of 60 lbf-ft continuous retarding torque when applied.
- .3 Calibrated external adjustable torque spring.
- .4 Removable brake shoes without dismantling the drum.
- .5 Weatherproof encapsulated magnetic coil.
- .6 Cast steel or iron body painted in epoxy paint.
- .7 Stainless steel pivot pins.
- .8 Self lubricating bushings.
- .9 Internal DC rectifier.
- .10 CSA approved.

.5 The motors shall be connected to the existing gearbox via flexible couplings and include the following features:

- .1 Allows for minimum angular misalignment of 1.5 Degrees and axial misalignment of 2.5 mm to reduce shaft bearing loading.
- .2 Integrally connected to brake drum via disc, elastomer or similar maintenance free flexible connection.
- .3 Drum shall be mounted on gearbox shaft via keyed shaft connection.
- .4 Flexible coupling half shall be mounted on motor shaft via keyed shaft connection.
- .5 Transmit peak motor and braking torques continuously, including any shock or transient loads.
- .6 Designed to operate at a speed equal to or greater than the maximum motor speed.
- .7 Maintenance free design not requiring greasing or adjustments following installation.
- .8 Resistant to harsh environmental conditions.

.6 Motors shall be aligned to gearbox input shaft within 1.5 Degrees angular and 2.5 mm axial misalignment.

.7 Contractor shall verify all dimensions of the existing motor and brake mounting plates and gearbox prior to commencement of the work. Any discrepancies shall be reported to the Departmental Representative and the proposed adjustment of the work required to match the existing structure shall be submitted for approval.

.8 Stainless steel machine shims shall be used to align motors and brakes.

.9 Motor and brake locations, once properly aligned, shall be held in place via welded alignment bars to prevent shifting of motors.

4.06 WEDGE DRIVE MOTOR & COUPLING

.1 Refer to Drawing No. M08 for installation and details reference. Existing wedge drive motors, brakes and couplings to the existing gearbox shall be replaced with new motors (2), brakes (2) and couplings (2).

.2 Refer to Specification Section 26 05 01, Electrical for details applicable to the motor specifications.

.3 The encoders (2) shall be multiturn absolute encoders and include the following features:

.1 Mountable on a 12mm shaft.

.2 27 Bit resolution with Profinet IO with RT / IRT.

.3 100 Mbit/s transmission rate.

.4 10-30 VDC Operating Voltage.

.5 < 4W maximum power consumption.

.6 Diagnostic LED.

.7 IP64.

.8 Integral torque stop to prevent body rotation.

.4 The brakes (2) shall be built on-style spring applied, electromagnetically released. Refer to Specification section 26 05 01, Electrical for details applicable to the brake specifications.

.5 The motors shall be connected to the existing gearbox via flexible couplings and include the following features:

.1 Allows for angular misalignment of up to 1.5 degrees, parallel misalignment of up to 2.0 mm and axial misalignment of up to 2.5 mm to reduce shaft bearing loading.

.2 Transmit peak motor and braking torques continuously, including any shock or transient loads.

.3 Operate at a speed equal to or greater than the maximum motor operating speed.

.4 Maintenance free design not requiring greasing or adjustments following installation.

.5 Resistant to harsh environmental conditions.

.6 Motors shall be aligned to gearbox input shaft to within 1.5 Degrees angular, 2.0 mm parallel and 2.5 mm maximum axial misalignment.

.7 Contractor shall verify all dimensions of the existing motor mounting plates and gearbox prior to commencement of the work. Any discrepancies shall be reported to the Departmental Representative and the proposed

adjustment of the work required to match the existing structure shall be submitted for approval.

.8 Stainless steel machine shims shall be used to align motor.

.9 Motor location, one properly aligned, shall be held in place via welded alignment bars to prevent shifting of motor.

.10 Existing coupling guards shall be adjusted and reused to protect new couplings.

4.07 SWING AND WEDGE DRIVE CAM LIMIT SWITCHES

.1 Refer to Drawing No. M09 for installation and details reference. The existing swing and wedge drive cam limit switch arrangements shall be replaced with new cam limit switch arrangements with the following features:

.1 Integral gear reducer.

.2 Adjustable cam positions set during commissioning.

.3 Zero backlash.

.4 Stainless Steel – NEMA 4X enclosure.

.5 DPDT switches.

.6 8 independent circuits.

.7 Lifetime sealed ball bearings.

.8 50:1 straight drive internal gear reducer.

.2 The Wedge Drive cam limit switch arrangement shall be chain driven off the existing wedge drive shaft.

.3 The Swing Drive cam limit switch arrangement shall be chain driven off the existing swing drive bevel pinion.

.4 The chain drive shall have the following features:

.9 #40-SS AISI Stainless Steel roller chain adjusted to chain slack of 10- 15mm.

.10 ASTM A240/A240M Type 316 Stainless Steel drive sprockets with 1:1 ratio.

.11 Guarded using existing or newly installed guarding.

4.08 CIRCULAR CABLE CARRIER

.1 Refer to Drawing No. M10 for installation and details reference. The circular trolley cable carrier shall be replaced with a new cable track carrier with the following features:

.1 Stainless Steel AISI Type 316 construction.

.2 Nylon cable separators.

.3 Bolted joint connections.

.4 Nylon or PTFE side mounted glides to support carrier in tray.

.5 Stainless Steel AISI Type 316 end mounting.

.6 Shall permit 160 degrees of rotation between the closed and open over travel positions without damage to the carrier or cables.

.7 Allow for 5 degrees of rotation over travel past the closed and open over travel positions without damage to the carrier or cables.

.8 Split tray design with the following features:

.1 ASTM A240/A240M Type 316 Stainless Steel construction.

.2 Fixed outer half mounted on pier or pivot ring spiders.

.3 Rotating inner half connected to span structure.

.4 Vertical walls to guide carrier through entire rotation extents.

.5 Adjustable ASTM A204/A240M Type 316 Stainless Steel shims to align fixed and rotating tray halves.

.6 Stationary end support, integrally mounted on fixed tray half.

.2 Two AISI Type 316 Stainless Steel junction boxes aligned with submarine cable conduits shall be installed with the following features:

.1 Refer to Specification Section 26 05 01 for details regarding the junction box requirements.

.2 One junction box shall contain all 5-24 VDC cables and connections.

.3 One junction box shall contain all 120-600 VAC cables and connections.

.4 Mounted back-to-back to allow for access.

.5 Terminations within the junction boxes shall be minimized where practicable.

.6 Sealed with neoprene or other suitable method to prevent ingress of water or dirt.

.7 Mounted on ASTM A240/A240M C-channel to enclose the submarine cable conduit entrances.

.3 Ladder Tray style cable carrier shall be installed between the junction boxes and support between junction boxes and cable carrier with the following features:

.1 Stainless Steel Type 316 construction.

.2 75mm NEMA VE 1.

.3 610mm width.

.4 152mm maximum rail spacing.

.5 Vented bottom.

.6 90 deg vertical inside bend with 305mm bend radius.

.7 3 of mounting brackets designed to handle a minimum of 4.11 kN side load, mounted to the concrete pier with suitable AISI Type 316 Stainless Steel concrete anchors.

.8 AISI Type 316 Stainless Steel Cable support clamps manufactured by the same manufacturer as the ladder tray.

.9 Separation between high and low voltage cables in tray shall be as much as practicable.

.4 Uni-strut style support bracket shall be installed to support cables exiting the ladder tray and entering the cable tray.

.5 Cables from carrier shall be routed to two AISI Type 316 Stainless Steel junction boxes mounted on the span pivot beam East side with the following features:

.1 Refer to Specification Section 26 05 01 for details regarding the junction box requirements.

.2 One junction box shall contain all 5-24 VDC cables and connections.

.3 One junction box shall contain all 120-600 VAC cables and connections.

.4 Mounted in location of existing junction boxes on side of Pivot beam.

.5 Terminations within the junction boxes shall be minimized where practicable.

4.09 CONTROL TOWER LAYOUT

.1 Refer to Drawing No. M11 for installation and details reference. The existing motor drive panels, operators control panel, 208Y/120 panel, transformer and traffic control panels in the Control Tower shall be replaced. Refer to Specification Section 26 01 01, Electrical for details regarding required features.

.2 An elevated platform shall be fabricated as identified in Drawing No. M11 with the following features:

.1 Minimum C150x12 structure, welded construction, painted flat black.

.2 Minimum 3mm Galvanized steel diamond tread plate, removable where cable is routed below for access.

.3 Supports weight of Swing and Wedge drive cabinets, traffic control panel and all internal equipment.

.4 Rigidly secured to concrete floor with suitable anchors.

.5 Rigidly secured to Swing and Wedge drive cabinets and traffic control panel.

.6 Exposed horizontal surfaces entirely covered minimum 6mm thick non-slip ribbed electric shock protection mat with minimum ASTM dielectric test voltage of 20,000 VAC.

.3 The area in front of any electrical panel board or cabinet shall be covered with a minimum 6mm thick x 914mm wide non-slip ribbed electric shock protection mat with minimum ASTM dielectric test voltage of 20,000 VAC.

.4 A removable false wall, painted flat black, shall be installed below the 208Y/120 Panel board to prevent access to cable behind but permit future access to cables.

.5 The existing washroom door shall be blocked using similar concrete block as existing. The new concrete block shall be tied into the existing block to prevent shifting and cracking at the transition. Once complete, the newly installed concrete block shall be painted to match the existing block on both sides of the wall.

.6 The hot water tank shall be reinstalled in the location identified on Drawing No. M11. The plumbing and electrical connections shall be re-connected, tested and certified for use.

4.10 CONDUIT, JUNCTION BOX AND MARINE LIGHTING LAYOUT

.1 Refer to Drawing No. M12, Specification Section 26 05 01, Electrical and Document Set 1911-8-A-200 for installation and details reference.

.2 Marine Lighting

.1 New marine lighting shall be installed for navigation and passage lighting.

.2 Navigation lighting shall have the following features:

.1 Designed for use as a marine signal light for marking movable bridge swing spans.

.2 Cast Aluminum housing suitable for marine environment.

.3 Rain tight construction and fully gasketed.

.4 Access for lamp service.

.5 360 degree green light lens.

.6 180 degree red light lens.

.7 205mm lens outside diameter.

.8 Operates on 120 VAC.

.9 2 of 100W bulbs, operator controlled, red and green.

.10 Integral cast junction box with gasketed cover access, made of the same material as the fixture assembly and matching the light base footprint.

.11 Mounted on a suitable AISI Type 316 Stainless Steel mounting bracket to the existing locations of navigation lighting.

.3 Passage lighting shall have the following features:

.1 Designed for use in a marine environment.

.2 Housing body shall be of precision die cast aluminum construction with durable powder coat finish.

.3 All components shall be corrosion resistant.

.4 Rain tight and equipped with a retained gasket.

.5 Thermal tempered shock-resistant glass lens.

.6 Adjustable head rotation.

.7 12VDC LED array.

.8 Integral 120 VAC step transformer and rectifier.

.9 Minimum 50,00h lamp life.

.3 Submarine Cables

.1 Existing submarine cables between the control tower and the centre pier shall be abandoned.

.2 Condition of the existing conduit shall be reported to the Departmental Representative. If practicable, new submarine cables shall be run through existing conduit down the control tower to the base of the control tower footing, and from the centre pier to the base of the centre pier footing. New conduit shall be run between to the control tower footing and the centre pier footing.

.3 If required, new PVC conduit shall be run inside the control tower to the control tower footing through the existing conduit raceway where practicable.

.4 All conduit runs between the control tower and the centre pier shall be separated into two separate conduits. One conduit shall be for low voltage DC (24 VDC or less). A separate conduit shall be for high voltage (120-600 VAC). Spacing between low and high voltage conduits shall be a minimum of 100mm.

.5 Existing submarine cable between the centre pier and East rest pier shall be disconnected at the centre pier and East rest pier and be terminated within junction boxes.

.6 New submarine cable shall be run between the control tower and the East Rest pier. One conduit shall be run as indicated on Drawing No. M12.

.7 Submarine cable shall be run on the riverbed as shown on Drawing No. M12. Cables shall be covered with a suitable precast concrete channel, continuous along the channel bottom.

.4 Centre Pier and Swing Span

.1 New cable and conduit shall be run between the two span-mounted junction boxes identified in Section 4.08 and the swing and wedge

drive motor, brake and heater disconnects, as well as the existing roadway light.

.2 New cable and conduit shall be run between the swing and wedge drive motor, brake and heater disconnects and the respective motor, brake or heater.

.3 Four passage lights as identified in Section 4.10.2 shall be mounted on the span ends as shown in Drawing No. M12. New conduit and cable shall be run from each of the lights back to the span junction box.

.5 East Rest Pier

.1 The existing junction box on the East rest pier shall be reused.

.2 The existing cable to the existing traffic lights, traffic gates and street lighting shall be reused. New submarine cable shall be connected to the existing cable within the existing junction box.

.3 A new weatherproof receptacle shall be mounted to the side of the existing junction box and connected within the box to the submarine cable.

.4 Two passage lights as identified in Section 4.10.2 shall be mounted on the pier as shown in Drawing No. M12. New conduit and cable shall be run from each of the lights back to the existing junction box.

.5 Two navigation lights as identified in Section 4.10.2 shall be mounted on the abutment as shown in Drawing No. M12. New conduit and cable shall be run from each of the lights back to the existing junction box.

.6 West Rest Pier

.1 A new junction box shall be mounted on the West rest pier as shown in Drawing No. M12.

.2 New conduit and cable shall be run from the control tower 208Y/120 panel to the junction box.

.3 A new weatherproof receptacle shall be mounted to the side of the junction box and connected within the box.

.4 Two passage lights as identified in Section 4.10.2 shall be mounted on the pier as shown in Drawing No. M12. New conduit and cable shall be run from each of the lights back to the existing junction box.

.5 Two navigation lights as identified in Section 4.10.2 shall be mounted on the abutment as shown in Drawing No. M12. New conduit and cable shall be run from each of the lights back to the existing junction box.

5 GENERAL REQUIREMENTS

5.01 EXAMINATION

.1 Verification of Existing Conditions: Visit site, thoroughly examine and become familiar with conditions that may affect the work of this Section before tendering the Bid; Departmental Representative will not consider claims for extras for work or materials necessary for proper execution and completion of the contract that could have been determined by a site visit.

5.02 EXECUTION

.1 The work specified in the "INSTALLATION DETAILS" section must be performed by a licensed Millwright or by a person who is under the direct supervision

of a licensed Millwright. The Contractor is expected to perform the necessary risk assessments on site and take measures to complete the work safely. Contractor to have workplace safety procedures in place as per OH&SA, other relevant regulations and in accordance with Section 01 35 29, Health and Safety Requirements.

.2 It is critical that all drawings be checked by the contractor before manufacture to confirm that all components and assemblies meet the relevant specifications and the interface of all components, and interface with the existing structure, is correct.

.3 All mechanical equipment, other than Stainless Steel and electrical components, to be painted as per the contract.

.4 Mill specification sheets are to be provided for all steel used in the manufacture of mechanical components.

.5 Welding shall be made in accordance with CSA W59 and shall be performed by a welder qualified under CSA W47.1.

.6 All mounting bolts to be torqued to manufacturer’s recommended torque.

5.03 OPERATION AND MAINTENANCE MANUAL

.1 The contractor shall assist the Departmental Representative in assembling an Operation and Maintenance Manual by providing manufacturers data for the selected purchased components to include:

.1 Maintenance, Inspection and Lubrication - procedures and frequency.

.2 Manufacturer’s Data Sheets & Instruction Manuals.

.2 The Final Certificate of Acceptance will not be issued until the information submitted is approved by the Departmental Representative

5.04 CLOSEOUT ACTIVITIES

.1 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre) except where explicitly noted otherwise for materials being salvaged for re use in new construction.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 26 05 28, Grounding

.2 Section 13 10 00, Mechanical

.3 Section 01 35 29, Health and Safety Requirements

.4 Section 01 45 00, Quality Control

1.02 REFERENCE STANDARDS

.1 The work shall be installed to comply with the latest issue of all applicable codes and standards.

.2 OESC.

.1 C22.1 ON-18 [2018], Ontario Electrical Safety Code, 27th edition.

.3 Canadian Standards Association.

.1 CSA C22.2 No.14-18 [2018], Industrial Control Equipment

.4 NFPA.

.1 NFPA 1 [2021], Fire Code.

.5 Ontario Regulations.

.1 O. Reg. 332/12: [December 16, 2020], Ontario Building Code under Building Code Act, 1992, S.O. 1992, c. 23.

.2 Ministry of Labour, Training and Skills Development.

.6 ISO.

.1 ISO 27001:2013 [2013], Information Technology - Security Techniques - Information Security Management Systems – Requirements.

.7 Municipal Regulations.

.1 Applicable Municipal Regulations.

.8 Utility Regulations.

.1 Applicable Utility Regulations and Requirements.

.9 Institute of Electrical and Electronics (IEEE.

.1 IEEE 100, [2000], The Authoritative Dictionary of IEEE Standards Terms.

1.03 DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE 100-2000.

1.04 SCOPE

.1 The Contractor is to replace/upgrade the swing bridge power distribution and control system. It is the intent of this specification section to describe the scope of this work effort. "Electrical Documentation" references within this section will refer to electrical documentation drawing set no. 1911-8-A-200 also referenced as drawings E01 to E457.

.2 A new programmable logic controller (PLC) and variable frequency drive (VFD) control system will power and control the swing bridge movements (span and wedges), control of vehicle traffic equipment and marine navigation lights, and control of street and marine passage lighting. Speed and position control of the bridge wedges and span is comprised of two redundant control methods. The first is an encoder position monitoring system, one for each motor, and the second is a common rotary cam limit switch position detection system used to validate the encoder positions and to be used in event of encoder detection system or PLC failure. The control system monitors the wedges and span position and motor torque to accurately control the acceleration, deceleration, speed and to limit torque of the wedges and span motors. Please refer to concept section of the Electrical Documentation for a more in-depth description of the control design.

.3 At the control tower, relocate the existing 200Amp Main Service Safety Switch ***=E+4E-3DS1.*** Supply and install new raceway, fittings, and hardware to support routing of the existing incoming service cable to the new switch position. Refer to drawing M11 for equipment location details.

.4 At the control tower, supply, install and wire a new 600V, 3 phase, 4 wire splitter trough ***=E+4E-SPLIT1*** as defined in the Electrical Documentation. Splitter shall be provided with a padlock with custom key system common to all electrical cabinets, no universal key system is permitted. Refer to drawing M11 for equipment location details.

.5 At the control tower, supply and replace the 30kVA transformer ***=E+4E-4TR1*** and associated fusible disconnect switch ***=E+4E-3DS1*** as defined in the Electrical Documentation. Refer to drawing M11 for equipment location details.

.6 At the control tower, supply and replace the motor control panel with new span and wedges variable frequency drive panels ***+1E*** and ***+2E*** as defined in the Electrical Documentation. Drive Panels shall be furnished with all components, wire/cabling, labelling and installation hardware as detailed in the Electrical Documentation. Drive panel assemblies shall be CSA approved or inspected and approved by an Ontario Electrical Safety Code recognized product approval entity. Refer to drawing M11 for equipment location details.

.7 At the control tower, supply and replace the operator console with new console ***+3E*** as defined in the Electrical Documentation. Control console shall be furnished with all components, wire/cabling, labelling and installation hardware as detailed in

the Electrical Documentation. Control Console shall be CSA approved or inspected and approved by an Ontario Electrical Safety Code recognized product approval entity. Refer to drawing M11 for equipment location details.

.8 At the control tower, and only if required, disconnect and remove the Deep-Sea generator display module and reinstall and reconnect once the new control console +3E is in place. This display module is part of the recent generator upgrade, located on the backside of the existing control console, and is required to remain in service.

.9 At the control tower, supply and install new Traffic Control Panel ***+6E*** as defined in the Electrical Documentation. Traffic Control Panel shall be furnished with all components, wire/cabling, labelling, and installation hardware as detailed in the Electrical Documentation. Traffic Control Panel shall be CSA approved or inspected and approved by an Ontario Electrical Safety Code recognized product approval entity. Refer to drawing M11 for equipment location details.

.10 At the control tower, supply and install new raceways, wire and cable, and wire and cable labelling to interconnect control tower electrical equipment and cabinets as defined in the Electrical Documentation. Existing raceways can be reused wherever practical providing they are in good condition and meet the project installation and specification requirements. Cable raceways shall separate signal levels i.e., 24Vdc or communications cables shall ***NOT*** be permitted to run in the same conduit or raceway as 120-600Vac circuits. All raceways, cable, wire, installation materials and installation methods shall comply with the Ontario electrical safety code in addition to the requirements identified in Part 2 "Product" of this specification and the Electrical Documentation. Refer to drawing M11 for equipment location details.

.11 At the control tower, supply and replace the 208Y/120V 3 phase panel board ***+5E*** as defined in the Electrical Documentation. Conduit and wire/cable to existing circuits will require re-work or replacement to accommodate the panel board's new location. Refer to drawing M11 for equipment locations and details.

.12 At the control tower, ensure all new and existing electrically powered equipment is properly sealed and grounded, including but not limited to, the circuit breaker opening in the overhead air conditioner.

.13 At the control tower, for all electrical equipment, supply and install signage, labels, and paint where appropriate to indicate electrical equipment clearance requirements as identified in the Ontario Electrical Safety Code.

.14 At the west pier, supply, install and wire new stainless steel junction box ***+11E*** complete with terminal strips and weatherproof receptacle as defined in Electrical Documentation. Junction Box shall include a weatherproof padlock with a custom key system common to all electrical cabinets, no universal key system is

permitted. Refer to drawing M12 for installation, raceway, and equipment details.

.15 At the west pier, supply, install and wire new marine navigation lights ***+F-MNAV_NW*** and ***+F-MNAV_SW***. In addition to requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.16 At the west pier, supply, install and wire new passage lights ***+F-PASG_WEST-1*** and ***+F-PASG_WEST-2***. In addition to requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.17 At the west pier, supply and install required raceway, cable/wire, and make all necessary terminations to connect the existing west traffic gates ***+F-TG_NE*** and ***+F-TG_SE*** and traffic signal lamps ***+F-TL_WEST,*** to the west pier junction box ***+11E***. In addition to the requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.18 At the west traffic gates, supply, install and wire new fuse and terminals to isolate control and power portion of gate circuitry as defined in Electrical Documentation.

.19 At the west traffic lights, modify the west traffic light circuitry as defined in Electrical Documentation.

.20 At the east pier, supply, install, cable and wire a new non-fusible disconnect switch ***=E+F-DS_TR2*** and new 7.5kVA, 600V to 120/240V transformer ***=E+F-TR2*** for east traffic gate power, as defined in the electrical documentation. Disconnect switch to include a weatherproof padlock with a custom key system common to all electrical cabinets, no universal key system is permitted.

.21 At the east pier, the existing stainless steel junction box ***+31E*** can be re-used providing it is in good condition, otherwise supply and install new. Supply and install new terminal strips and new weatherproof receptacle as defined in Electrical Documentation. All existing holes in Junction Box Shall be sealed with approved fittings. Junction Box shall include a weatherproof padlock with a custom key system common to all electrical cabinets, no universal key system is permitted.

.22 At the east pier, supply, install and wire new marine navigation lights ***+F-MNAV_NE*** and ***+F-MNAV_SE***. In addition to requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.23 At the east pier, supply, install and wire new passage lights ***+F-PASG_EAST-1***and ***+F-PASG_EAST-2***. In addition to requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.24 At the east traffic gates, supply, install and wire new fuse and terminals to isolate control and power portion of gate circuitry as defined in Electrical Documentation.

.25 At the east traffic lights, modify the east traffic light circuitry as defined in Electrical Documentation.

.26 At the centre pier, supply, install and wire new stainless steel junction boxes ***+21E***, ***+22E, +23E***, ***+24E*** complete with terminal strips and weatherproof receptacle as defined in Electrical Documentation. Each Junction Box shall include a weatherproof padlock with a custom key system common to all electrical cabinets, no universal key system is permitted. In addition to the requirements identified in the Electrical Documentation, refer to drawing M07 through M12 for installation, raceway, and equipment details.

.27 At the centre pier, supply, install new cable track ***+25E*** and cables as defined in Electrical Documentation. Track shall provide suitable cable separation and cables shall be spaced apart in order of circuit nominal voltage such that encoder, communication, and 24VDC cables are on one side, 120-230V cables in the middle and 600V cables to the opposite side. In addition to the requirements identified in the Electrical Documentation, refer to drawing M07 through M12 for installation, raceway, and equipment details.

.28 At the centre pier, supply, install and wire new cabling for span streetlight ***+F-SL_SPAN.*** In addition to the requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.29 At the centre pier, supply, install and wire new passage lights ***+F-PASG_SPAN-1, +F-PASG_SPAN-2***, ***+F-PASG_SPAN-3*** and ***+F-PASG_SPAN-4***. In addition to the requirements identified in the Electrical Documentation, refer to drawing M12 for installation, raceway, and equipment details.

.30 At the centre pier, remove existing thermostat control for pivot bearing heater blanket and re-install, wire and terminate in new junction box **+21E**.

.31 Supply all spare parts identified in the Electrical Documentation - Recommended Spare Parts List.

.1 Spare parts shall be supplied in the quantities identified in the Recommended Spare Parts List.

.2 Spare parts shall be delivered to site prior to the start of commissioning.

.3 Spare parts shall be delivered in the original manufacturers unbroken packaging, all seals intact.

.32 Supply and install all electrical field devices as per Electrical Documentation and mechanical drawings M07 through M12 (bridge span and wedges motors, motor encoders, brakes, heaters, span and rotary cam position switches and safety disconnect switches).

.1 The Contractor is expected to perform the necessary risk assessments on site and take measures to complete the work safely. Contractor to have workplace safety procedures in place as per OHSA, other relevant regulations and in accordance with Section 01 35 29, Health and Safety Requirements.

.2 Documentation to support the electrical work effort is provided in the Electrical Documentation and mechanical drawings. Electrical Documentation is organized by a high-level letter and sheet number (Example: E01). High levels are:

A = Preface

B = Specifications

C = Concept (Design)

D = Distribution (Power)

E = Electrical (Control)

I = Installation

R = Reports

.3 Furnish all labour, materials, tools, and equipment required to complete the installation and testing of electrical work as specified herein.

.4 The Contractor is responsible for the work effort to demolish and dispose, replace, and cleanup the entire electrical power and control system unless otherwise noted. The electrical Contractor is to remove existing equipment, raceways and wiring to support the installation of new equipment. It is the Contractor's responsibility, as part of their Scope of Work, to remove and dispose of, in a proper manner all replaced components and scrap material and maintain a tidy and safe work site.

.5 The electrical Contractor is to purchase and install the following equipment including, but not limited to, all necessary accessories, raceways, wire/cable, installation hardware, connectors, and component identification labelling: (Refer to the Electrical Documentation and mechanical drawings for detailed materials specifications).

.1 600V, 3 phase, 4 wire splitter trough ***=E+4E-SPLIT1,*** complete with distribution blocks and grounding strips.

.2 600V to 208Y/120V, 30kVA transformer ***=E+4E-4TR1*** and associated fusible disconnect switch ***=E+4E-3DS1***.

.3 208Y/120V 3 phase panel board ***+5E*** fabricated and wired complete with all materials defined in Electrical Documentation.

.4 Span and Wedges variable frequency drive panels ***+1E*** and ***+2E,*** fabricated and wired, complete with all components defined in the Electrical Documentation. The variable frequency drive components, PLC, HMI, networking equipment and encoders shall be of the same manufacturer and exactly match the Electrical Documentation and mechanical drawings. Bidders' proposal shall detail each of these parts with manufacturer and part numbers and shall also provide

supporting documentation to demonstrate the equipment meets all control requirements and will perform the bridge equipment movements and meet the latest version of the CSA Bridge Design Code or as required by the Departmental Representative.

.5 Operator Console ***+3E,*** fabricated and wired, complete with all components as defined in Electrical Documentation. The PLC, HMI, networking equipment, variable frequency drive components, and encoders shall be of the same manufacturer and exactly match the Electrical Documentation and mechanical drawings. Bidders' proposal shall detail each of these parts with manufacturer and part numbers.

.6 Traffic Control Panel ***+6E*** fabricated and wired complete with all materials as defined in Electrical Documentation.

.7 West Pier stainless steel junction box ***+11E*** complete with terminal strips and weatherproof receptacle.

.8 West Pier marine passage lights ***+F-PASG_WEST-1*** and ***+F-PASG_WEST-2***.

.9 West Pier marine navigation lights ***+F-MNAV_NW*** and ***+F-MNAV_SW.***

.10 East Pier 600V to 120/240V, 7.5kVA transformer ***=E+F-TR2*** and associated fusible disconnect switch ***=E+F-DS_TR2***.

.11 East Pier marine navigation lights ***+F-MNAV_NE*** and ***+F-MNAV_SE.***

.12 East Pier marine passage lights ***+F-PASG_EAST-1***and ***+F-PASG_EAST-2.***

.13 East Pier terminal strips and weatherproof receptacle for existing junction box ***+31E.***

.14 Centre Pier cable track ***+25E.***

.15 Centre Pier stainless steel junction boxes ***+21E***, ***+22E, +23E***, ***+24E*** complete with terminal strips and weatherproof receptacle.

.16 Centre Pier marine passage lights ***+F-PASG_SPAN-1, +F-PASG_SPAN-2***, ***+F-PASG_SPAN-3*** and ***+F-PASG_SPAN-4***.

.17 Centre Pier span motors ***=E+F-M1.A*** and ***=E+F-M1.B*** complete with motor thermostats and space heaters.

.18 Centre Pier span motor safety disconnect switches ***=E+F-DS1.A*** and ***=E+F-DS1.A***

.19 Centre Pier span motor space heaters safety disconnect switches ***=E+F-DS1.HA*** and ***=E+F-DS1.HB.***

.20 Centre Pier span brakes ***=E+F-B1.A*** and ***=E+F-B1.B***.

.21 Centre Pier span brake safety disconnect switches ***=E+F-DS1.BA*** and ***=E+F-DS1.BB.***

.22 Centre Pier span encoders ***=E+F-ZT1.A*** and ***=E+F-ZT1.B*** complete with cable connectors.

.23 Centre Pier span rotary cam switch assembly ***=E+F-SPAN_CAM.***

.24 Centre Pier wedges motors ***=E+F-M2.A*** and ***=E+F-M2.B*** complete with motor brakes, thermostats and space heaters.

.25 Centre Pier wedges motor safety disconnect switches ***=E+F-DS2.A*** and ***=E+F-DS2.A***

.26 Centre Pier wedges motor space heaters safety disconnect switches ***=E+F-DS2.HA*** and ***=E+F-DS2.HB.***

.27 Centre Pier wedges brake safety disconnect switches ***=E+F-DS2.BA*** and ***=E+F-DS2.BB.***

.28 Centre Pier wedges encoders ***=E+F-ZT2.A*** and ***=E+F-ZT2.B*** complete with cable connectors.

.29 Centre Pier wedges rotary cam switch assembly ***=E+F-WEDG_CAM.***

.6 The Contractor is to provide and install all raceways, fittings, field cables and wire (Cable lengths identified in Electrical Documentation are estimates only, Contractor to verify), and cable and wire identification labelling, for the complete installation, specifically but not limited to:

.1 Raceways, fittings, cable and wire at Control Tower to interconnect Control Tower electrical distribution equipment, operator consoles, drive panels, control panels, transformers, safety disconnect switches and any electrically powered device.

.2 Raceways, fittings, cable, and wire from Control Tower electrical equipment to West Pier Junction Box ***+11E.***

.3 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to West Pier marine passage lights ***+F-PASG_WEST-1*** and ***+F-PASG_WEST-2.***

.4 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to West Pier marine navigation lights ***+F-MNAV_NW*** and ***+F-MNAV_SW.***

.5 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to West Traffic gates ***+F-TG_NW*** and ***+F-TG_SW.***

.6 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to west traffic lights ***=E+F-TL_WEST.***

.7 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to west streetlights ***=E+F-SL_WEST.***

.8 Raceways, fittings, cable, and wire from West Pier Junction Box ***+11E*** to West Pier Receptacle ***=E+F-11E_REC.***

.9 Raceways, fittings, cable, and wire from Control Tower electrical equipment to East Pier 600V to 120/240V, 7.5kVA transformer ***=E+F-TR2*** and associated fusible disconnect switch ***=E+F-DS_TR2***. Submarine cable to be installed in PVC conduit and protected with ½ round concrete channel. Consult Departmental representative to finalize and approve raceway arrangement prior to installation.

.10 Raceways, fittings, cable, and wire from Control Tower electrical equipment to East Pier Junction Box ***+31E*** including submarine raceway protection devices. Submarine cable to be installed in PVC conduit and protected with ½ round concrete channel. Consult Departmental Representative to finalize and approve raceway arrangement prior to installation.

.11 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East Pier marine passage lights ***+F-PASG_EAST-1***and ***+F-PASG_EAST-2.***

.12 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East Pier marine navigation lights ***+F-MNAV_NE*** and ***+F-MNAV_SE.***

.13 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East Traffic gates ***+F-TG_NE*** and ***+F-TG_SE.***

.14 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East traffic lights ***=E+F-TL_EAST.***

.15 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East Streetlights ***=E+F-SL_EAST.***

.16 Raceways, fittings, cable, and wire from East Pier Junction Box ***+31E*** to East Pier Receptacle ***=E+F-31E_REC.***

.17 Raceways, fittings, cable, and wire from Control Tower electrical equipment to Centre Pier Junction Boxes ***+21E, +22, +23E*** and ***+24E*** including submarine raceway protection devices. Submarine raceway design is based on supply and installation of one Ø103mm PVC conduit for 120-600V circuit cables from Control Tower to Pier and one Ø103mm PVC conduit from Control Tower to Pier for 5-24VDC and communication circuit cables as defined in Electrical Documentation

and mechanical drawing M12. Embedded Ø103mm Conduit Sleeves in Centre Pier to be re-used if condition permits otherwise new raceway to be installed on outer wall of pier column with stainless steel raceway protection cover, see mechanical drawing M12 for details. All submarine raceways to be protected by ½ round Ø508mm concrete channel. Consult Departmental Representative to finalize and approve raceway arrangement prior to installation.

.18 Raceways, fittings, cable, and wire between interconnecting Centre Pier Junction Boxes ***+21E, +22E, +23E*** and ***+24E*** including cable routed through Center Pier Cable Track ***+25E***. Installation of all cables and wire shall maintain separation between 120-600VAC cables and 5-24VDC cables. Cable terminations only where indicated in Electrical Documentation.

.19 Raceways, fittings, cable, and wire between interconnecting Control Tower to Centre Pier Motor Disconnect Switches and Centre Pier Encoders including cable routed through Center Pier Cable Track ***+25E.*** Motor power, encoder signal, and communication cables shall be continuous from Control Tower Electrical Cabinet to final destination as indicated in Electrical Documentation. ***NO*** terminations or joints in junction boxes or raceways shall be permitted for these cables.

.20 Raceways, fittings, cable, and wire between interconnecting Centre Pier junction boxes ***+23E*** and ***+24E*** to motor brakes and heater disconnect switches, Centre Pier rotary cam switches and Centre Pier motor thermostats.

.21 Raceways, fittings, cable, and wire between Center Pier safety disconnect switches and Centre Pier motors, motor brakes and motor heaters.

.22 Raceways, fittings, cable, and wire between Center Pier junction box ***+23E*** and Center Pier streetlight and passage lights.

.23 Existing submarine cables between Control Tower and Centre Pier shall be removed. Existing submarine cables between Centre Pier and East Pier can be left in place and tagged as spares. New submarine cables to be supplied and installed as per requirements identified in Electrical Documentation and mechanical drawing M12.

.24 All submarine cables to be rated for its intended usage and installation method. Submarine cables to be protected by concrete channel as defined on drawing M12.

.25 At end of commissioning, Contractor shall provide one complete set of spare fuses for each fusible disconnect switch or terminal.

All raceways, cable, wire, installation materials and installation methods shall comply with the Ontario electrical safety code in addition to the requirements identified in Part 2 "Products" of this specification and the Electrical Documentation. Refer to drawing M11 for equipment locations and M12 for routing and installation information.

.7 Check and re-torque all electrical connections on existing and new equipment in the control tower, west, centre, and east piers including junction boxes, panels, safety switches, connectors, and field devices.

.8 Contractor is to complete electrical check out, support the setup and configuration of the bridge power and control equipment for the full duration of commissioning.

.9 Contractor shall test all submarine cables to ensure cable and conductor integrity and verify no faults.

.10 Contractor shall conduct point-to-point tests on wiring and terminations in all fabricated control panels including drive panels, control consoles, and traffic control panels prior to site delivery.

.11 At end of installation and before commissioning, the Contractor is to provide:

.1 Marked up drawings in clear and legible red ink indicating all as built conditions.

.2 Signed validation document. Validation document details all performed checks and functional tests. It signifies the completion of the project and that the equipment is ready for service, having met the requirements described in the mechanical and electrical specifications.

.12 The Contractor will support all project activities, until all commissioning is completed and the bridge is signed off by the Departmental Representative and is ready to be placed into service.

1.05 SCHEDULING

.1 Do not start work prior to the approval of the Departmental Representative.

1.06 CONTINUITY OF SERVICE

.1 If, during this period there is a need to restrict or impede roadway traffic, this shall be coordinated with the Departmental Representative. The Departmental Representative shall be made aware at least one (1) week in advance and his approval shall be obtained prior to the event.

.2 Obtain all required permits, take full responsibility for all required provisions and activities, and pay all associated fees related to the closure or traffic restriction.

.3 After substantial completion of the work and during commissioning, there will be a need to operate the bridge. Obtain all required permits, take full responsibility for all required provisions and activities, and pay all associated fees related to the closure or traffic restriction.

1.07 PERMITS, FEES AND CERTIFICATES

.1 Give notices, obtain permits, pay fees, and furnish certificates as evidence that the work installed conforms to the laws and regulations of all governing authorities.

.2 On completion of the job, deliver to the Departmental Representative three (3) copies of the certificate of approval from the Inspection Department.

1.08 APPROVALS

.1 All work shall be installed for the approval and/or acceptance of the Electrical Safety Authority and all other agencies having jurisdiction.

.2 Pay all inspection and approval fees.

.3 On completion of the work, deliver to the Departmental Representative three (3) copies of the certificate of approval from the Inspection Department.

1.09 QUALIFICATIONS

.1 The Contractor for the electrical installation shall be a qualified electrical Contractor, licensed by the Province of Ontario and regularly engaged in the installation of electrical systems.

.2 Use only qualified electricians holding valid Ontario certificates to perform the electrical work with a minimum of five (5) years of related experience.

.3 The Contractor shall have qualified personnel to continuously direct and monitor all electrical work.

.4 Electricians skilled in their trade shall perform all labour in the best and most workmanlike manner. Standards of work required throughout shall be of such standards as will bring results of first quality only. What is known, as "local practice" will not be allowed unless it conforms to this standard.

1.10 SITE VISITS AND EXISTING CONDITIONS

.1 The Contractor shall visit the site to familiarize himself with the existing installation and conditions. The Contractor shall make a proper evaluation of the extent of the work and will be considered to know the effects of all site conditions of the

work. No extras will be considered which result from the Contractor's failure to consider the extent of the required work.

.2 Report any discrepancies between these specifications and site conditions to Departmental Representative.

1.11 SHOP DRAWINGS AND PRODUCT DATA

.1 Prior to carrying out any associated work, submit to the Departmental Representative for his review, shop drawings, calculations and manufacturer's product data for any custom assembled or manufactured items, consisting of dimensioned layouts and schematic diagrams containing all necessary details to define the equipment proposed to be installed including the following equipment and arrangements:

.1 Control panels, drive panels, and operator consoles.

.2 Junction boxes.

.3 Transformers.

.4 Modifications to existing distribution panels.

.5 Programmable logic controller, I/O networking devices and HMI’s.

.6 Motor control drives and associated equipment and all control relays.

.7 Panel devices such as push buttons, selector switches and indicating lights.

.8 Motors and brakes.

.9 Lamicoid nameplates.

.10 Breakers and safety disconnect switches.

.11 Plugs and receptacles.

.12 Traffic control equipment.

.13 Marine navigation and passage lighting equipment.

.14 Position limit switches and encoders.

.15 Raceways, Cables and Wire.

.2 Any work carried out by the Contractor prior to obtaining reviewed Shop Drawings from the Departmental Representative may be required to be redone. All such work will be at the Contractor's expense.

1.12 INSPECTIONS AND TESTS

.1 Arrange and pay for all inspections, examinations and tests required by the authorities and/or agencies specified in Clause 1.5 above as necessary, to obtain complete and final acceptance of the system.

.2 Furnish to Departmental Representative Certificates of Acceptance from Inspection Department on completion of work.

.3 The Contractor shall arrange with the Departmental Representative for final inspection. Any deficiencies discovered during final inspection shall be promptly rectified by the Contractor and to the satisfaction of the Departmental Representative.

1.13 TRIAL USAGE

.1 The Departmental Representative reserves the right for trial usage of any electrical device, machinery, apparatus, equipment, and other work supplied under this Division before final completion and acceptance.

.2 The Departmental Representative will have the privilege of such trial usage for such reasonable length of time as Departmental Representative deems sufficient for making a complete test as soon as Contractor claims that said work is completed, in accordance with the drawings and specifications. No claims for damage may be made by the Contractor for injury to or breaking of any parts of such tested work, whether caused by weakness or inaccuracy of structural parts or by defective materials or workmanship of any kind whatsoever.

.3 Such trial usage of any electrical device, machinery, apparatus, equipment, or other work is not to be construed as evidence of acceptance of the system.

1.14 FIELD VERIFICATION AND SHOP DRAWINGS

.1 Before any parts are ordered it is essential to field verify the "as built" system configuration. Some changes may have been made that are not included in the reference drawings.

.2 All Shop Drawings shall be submitted for approval before procurement and manufacturing.

1.15 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions and guidance from Departmental Representative.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 It is the responsibility of the Contractor to unload all materials and equipment (covered in this contract) arriving on the site and to provide all necessary handling equipment. These materials and equipment shall be stored as directed by the Departmental Representative.

.4 It is the Contractor's responsibility before unloading any material or equipment to verify that it is in proper condition. Should the Contractor discover any damage, the Contractor shall not proceed with unloading until the Contractor has received instructions from the Departmental Representative.

.5 During handling of the equipment, the Contractor shall be responsible for any damage which should occur to the equipment

(covered in this Contract), or to nearby equipment which may have become damaged while handling said equipment.

.6 Storage and Handling Requirements:

.1 The storage shall always be kept under lock and key.
.2 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.3 Store and protect all materials from nicks, scratches, and blemishes.
.4 Replace defective or damaged materials with new.
.5 The Departmental Representative shall not be responsible for any lost or damaged materials or tools on the site. Coordinate with the site supervisor for storage facilities if suitable space is available.

.7 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials.

.8 Protect all finishes, in the areas of work from damage that would impair its existing efficiency or mar its appearance.

.9 Protect factory-finished equipment from damage. Restore damaged finishes to original condition. Return equipment to manufacturer for refinishing, if so directed.

.10 During the progress of construction, protect existing installations from physical damage, construction debris, dust and similar hazards resulting from the construction work.

1.16 MEASUREMENT AND PAYMENT

.1 No measurement for payment will be made for the work of this Section.

.2 All costs for labour, materials, and equipment necessary to complete the work of this Section, shall be included.

2 PRODUCTS

2.01 APPROVED MATERIALS

.1 All materials and equipment shall be CSA approved or shall bear an Electrical Safety Authority Special Approvals label or Ontario Electrical Safety Code recognized approval entity.

.2 All custom equipment such as control panel assemblies shall be certified to CSA C22.2 No.14-18 (Industrial Control Equipment) and shall be marked as such with a valid, official CSA label.

.3 Deviations from the Electrical Documentation or this specification will only be permitted when prior written approval is obtained from the Departmental Representative.

2.02 WIRE AND CABLE

.1 All conductors shall be copper, unless otherwise stated.

.2 Wiring in conduits: copper minimum 12 AWG, type RW90, X-link. Size all wiring to maintain a maximum voltage drop of 2½%.

.3 Armoured Cable: PVC jacketed, copper Teck cable may be used in lieu of conduit and wire.

.4 Minimum wire sizes shall be as follows:

.1 Power - 12AWG

.2 Control - 14AWG

.3 Analog Control - 18AWG

.5 Conductor insulation colour coding shall be as follows:

.1 AC Power (all voltages) Black

.2 DC Power (all voltages) Blue

.3 Neutral White

.4 Grounding Green or Bare

.5 AC Control (all conductors) Red unless included in cable assembly.

.6 DC Control (all conductors) Blue unless included in cable assembly.

2.03 CONDUIT, RACEWAYS AND FITTINGS

.1 All conduits shall be sized, at minimum, according to C22.1 ON-18 Ontario Electrical Safety Code (OESC), 27th edition - 2018.

.2 Use rigid PVC for all direct buried conduit or where encased in concrete.

.3 Conduit shall be rigid galvanized steel where the wiring may be subject to mechanical harm, otherwise rigid PVC or equivalent may be used. Teck cable is also permissible for surface run wiring.

.4 Submarine cable shall be rated for its intended use.

.5 Submarine cables shall be installed with a continuous concrete channel cover as detailed in Electrical Documentation and mechanical drawing M12.

.6 Liquid tight flex is to be used where a raceway is connected to equipment subject to movement or vibration. The length of this flexible connection is not to exceed 1m.

2.04 JUNCTION AND PULL BOXES

.1 Pull boxes are to be stainless steel type 304 NEMA 4X, CSA type 4.

.2 Box Sizes shall be large enough for the cables entering them and the conductors and connections therein in compliance with the Ontario Electrical Safety Code. Minimum size of any box shall be 152.4mm by 152.4mm.

.3 Doors are to be hinged to their enclosures or held captive when removed.

.4 Where boxes contain joints or connections use terminals for these connections. Provide a sub-panel for terminal strips.

.5 Junction boxes accessible to public to include padlock mechanism and weatherproof padlock. All padlocks shall include a custom key system common to all electrical cabinets, no universal key system is permitted.

2.05 CONTROL & DISTRIBUTION PANELS

.1 All modifications to or inside of all control and distribution panels shall be laid out in a neat, organized, and functional manner.

2.06 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of Ontario Electrical Safety Code.

.2 Porcelain enamel decal signs, minimum size 175 x 250 mm.

2.07 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates and labels as follows:

.1 Nameplates: plastic laminate (lamicoid) 3 mm thick plastic engraving sheet melamine, black matt white finish face, black core, lettering accurately aligned and engraved into core mechanically attached with stainless steel self-tapping screws.

.2 Sizes as per Electrical Documentation otherwise as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.2 Labels: embossed plastic labels with 6 mm high letters unless specified otherwise.

.3 Wording on nameplates and labels as per Electrical Documentation otherwise to be approved by Departmental Representative prior to manufacture.

.4 Allow for minimum of twenty-five (25) letters per nameplate and label.

.5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

.6 Identify equipment with Size 3 labels engraved "ASSET INVENTORY NO. _____" as directed by Departmental Representative.

.7 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.8 Terminal cabinets and pull boxes: indicate system and voltage.

.9 Transformers: indicate capacity, primary and secondary voltages.

3 EXECUTION

3.01 DESIGN REQUIREMENTS

.1 Contractor shall provide documentation to prove all power, control and electromechanical equipment will meet all functional and mechanical requirements identified in the Electrical and Mechanical Drawings and Specifications or as required by Departmental Representative.

.2 Specification of electrical components to align exactly with the Electrical Documentation.

3.02 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.03 ACCESSIBILITY AND SPACE

.1 The Contractor shall follow the approved shop drawings and Contract Drawings in laying out work and check Drawings of other trades, to verify spaces in which work will be installed. Maintain maximum headroom or space conditions at all points. Where headroom or space conditions appear inadequate, the Departmental Representative shall be notified before proceeding with installation.

3.04 CUTTING AND PATCHING

.1 Employ appropriate trades to perform cutting, patching, and making good existing walls (or other), as required. Before commencing, obtain approval for extent and nature of cutting. Make good, disturbed surfaces and clean-up work debris on completion.

.2 Obtain Departmental Representative's approval before cutting, boring, or sleeving any load bearing members.

3.05 INSTALLATION METHODS AND MATERIALS

.1 Electrical installation to be co-ordinated with mechanical and all other discipline works to achieve the most efficient and orderly arrangement.

.2 All materials shall be new, best in quality, shall conform to the applicable standards of the Canadian Standard Association and shall be manufactured to applicable EEMAC and NEMA specifications.

.3 All equipment shall be installed in accordance with the best commercial practices, specifications, and manufacturer's instruction.

.4 All runs between equipment, junction boxes, and panels are to be continuous with no splices allowed.

.5 Run all wiring in conduit or as armoured cable.

.6 Run all conduit and cable parallel to building lines and support at intervals, as required by the Ontario Electrical Safety Code.

.7 Provide all necessary pull and connection boxes.

.8 Terminate all armoured cables and liquid tight conduit with watertight fittings.

.9 Use EEMAC12 enclosures for indoor locations and EEMAC4 stainless steel or PVC boxes when located outdoors.

.10 Ensure that sufficient space is provided in boxes to allow for pulling in and bending of cables.

.11 Boxes shall be so installed as to be accessible after completion of the work.

.12 Boxes shall be securely mounted and shall be plumb with surrounding structural members.

.13 Drill necessary openings in the boxes for conduit entrance. Openings shall have close-tolerance and no unused openings shall be left in the boxes when the installation is complete. No openings permitted in top of enclosures unless written permission of the Departmental Representative is obtained.

.14 Provide a complete system of raceways and wiring for work indicated and specified. Provide support systems where necessary to comply with the requirements of the Electrical Safety Code and this specification.

.15 Provide all supports, inserts and sleeves for the installation shown on the drawings and specifications.

.16 Do not cut or drill structural steel unless written permission of the Departmental Representative is obtained.

.17 Support outlet boxes, junction boxes, panel tubs, etc., independently of the tray or conduit running to them. Where necessary, use 316 stainless steel brackets or rods to fasten them securely to the structure.

.18 Bend cable and conduit according to the manufacturer's recommendations and the requirements of the Ontario Electrical Safety Code.

.19 Run all cables and conductors in single lengths.

.20 Form, group, and tape all wiring to provide a neat and orderly appearance.

.21 Conductors may be coated with a lubricant manufactured for such purpose. In no case grease or coat conductors with substances injurious to the conductor jacket or insulation.

.22 Separate all wiring into three (3) classes: power, control, and signal. Run each class in a separate cable or conduit.

.23 Where cables contain more conductors than shown on interconnection diagrams, tag each spare as SP-1, SP-2, etc. at every terminal point and tie back neatly with PVC tape.

.24 When cables or conduits are to be run underground, coordinate with the Departmental Representatives forces to ensure worker safety. Identify and locate all underground services and devices that may be damaged by the new work.

3.06 WIRING METHODS

.1 All wiring shall be protected by a suitable raceway. Above grade raceways shall be rigid metal conduit. Flexible liquid tight metal conduit shall be permitted for the 1 metre of raceway prior to the final electrical device. Rigid PVC conduit is permitted for underground raceways.

.2 Fastening hardware shall be 316 stainless steel.

.3 Exposed wiring shall be minimized. Exposed wiring shall be used, only, where raceway is not feasible.

.4 Connectors, plugs, and receptacles shall be certified weatherproof or marine grade as required.

3.07 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.

.2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

.3 Install electrical equipment at following heights unless indicated otherwise.

.1 Local switches: 1400 mm.

.2 Panelboards: as required by Code or as indicated.

3.08 GROUNDING

.1 Provide grounding for new work to comply with Ontario Safety Authority inspection requirements.

.2 Ground resistance shall be tested for compliance with the Ontario Electrical Safety Code.

.3 Grounding to meet requirements of specification section 26 05 28.

3.09 CO-ORDINATION OF PROTECTION DEVICES

.1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.10 IDENTIFICATION AND LABELLING

.1 Permanently identify wires at each termination point with numbers, per the schematic drawings. Use Brady, self-laminating, thermal transfer tags or equal. Label every wire at each connection point or terminal, and in addition the terminal to which the wire(s) are connected.

.2 Label all disconnects, panels, pull boxes, etc. For all items, supply and mount white plastic nameplates with engraved black lettering.

.3 Attach nameplates with metal self-tapping stainless-steel screws. Lettering shall indicate name and equipment number of the device or of the load being served.

.4 Lettering shall be approximately 6mm high for labels identifying panels, 4mm high for labels identifying groupings of push buttons and similar devices, and 3.5mm for individual devices.

3.11 FIELD QUALITY CONTROL

.1 Load Balance:

.1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.

.3 Provide upon completion of work, load balance report, phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.

.2 Conduct the following quality control tests in accordance with Section 01 45 00 - Quality Control.

.1 Power generation and distribution system including phasing, voltage, grounding and load balancing.

.2 Circuits originating from branch distribution panels.

.3 Lighting and its control.

.4 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.

.5 Systems: fire alarm communications.

.6 Insulation resistance testing:

.1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

.2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.

.3 Check resistance to ground before energizing.

.3 Carry out tests in presence of Departmental Representative.

.4 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

.5 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.12 INSPECTION, TESTING AND COMMISSIONING

.1 Prior to final commissioning, the Contractor shall pre-commission all systems and equipment. Within three (3) weeks of Awarding the contract, provide complete checklists covering all pre-commissioning work. The checklists shall be in a form allowing each checked item to be initialed by the checker to confirm that the item is complete and operating correctly. Included items are connection integrity and polarity for all wiring, device operation, configuration and correct directions of motors and solenoids. All work by the Contractor shall be included on the checklists and all check items shall be included to ensure the correctness of all work.

.2 The following testing and commissioning measures shall be taken:

.1 It is anticipated that commissioning will take 10, eight-hour days to complete. The Contractor shall notify the Departmental Representative three working days prior to the bridge being ready for commissioning. During commissioning, the Contractor is required to provide all necessary manpower and assistance for the entire period to enable and assist in the work. During commissioning, the bridge and subsystems will be operated multiple times and roadway traffic will therefore be interfered with. Roadway traffic control will be the responsibility of the Contractor during this period.

.2 If during commissioning, problems are encountered with the Contractor's work that should have been detected by the Contractor's pre-commissioning work, commissioning will be suspended until the problems are fixed. These periods of time will not be counted as commissioning time and the Contractor will therefore not be entitled to additional

reimbursement. If the extent of required repairs warrants it, commissioning may, at the Departmental Representative's discretion, be temporarily terminated until another date, after required repairs and additional pre-commissioning has been carried out by the Contractor.

3.13 DISPOSAL AND CLEANING

.1 Leave premises in a clean, safe, and usable condition and remove all excess debris at the end of each working day.

.2 The demolition work is detailed in the Mechanical drawings and Specifications and therefore Dispose of all removed electrical equipment and materials in accordance with Mechanical Section 13 10 00.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

.4 Waste Management: separate waste materials for reuse and recycling.

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

3.14 RECORD DOCUMENTS

.1 Keep one set of prints on site for the sole purpose of recording changes to the work and exact locations for all work concealed at the completion of the project.

.2 Turn over the 'As Built' marked up drawings prior to final payment being due from Departmental Representative.

.3 Maintain an extra set of white prints on the project and, as the work progresses, clearly note all the changes in location and/or the sizes of wiring, fixtures, panels, and equipment, preferably in red ink.

.4 After completion of the work, provide all such drawings and associated product information to the Departmental Representative as a complete set of 'As-Built' records.

.5 The Final Certificate of Acceptance will not be issued until the bridge is fully commissioned and satisfactory 'As-Built' record drawings are filed with the Departmental Representative.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 26 05 01, Common Work Results for Electrical.

1.02 REFERENCE STANDARDS

.1 The work shall be installed to comply with the latest issue of all applicable codes and standards.

.2 OESC.

.1 C22.1 ON-18 [2018], Ontario Electrical Safety Code, 27th edition.

.3 Canadian Standards Association (CSA).

.1 CSA C22.2 No.14-18 [2018], Industrial Control Equipment

.4 Ontario Provincial Standard Specification (OPSS).

.1 OPSS.PROV 609 [November 2019], Construction Specification for Grounding

1.03 Definitions

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE 100-2000.

2 PRODUCTS

2.01 MATERIALS

.1 Sign supports.

.1 Steel posts

2.02 GROUND WIRES

.1 As per OPSS.PROV 609 and contract drawings.

2.03 BURIED CONNECTORS - COMPRESSION TYPE

.1 As per OPSS.PROV 609 and contract drawings.

2.04 GROUND RODS

.1 As per OPSS.PROV 609 and contract drawings.

3 EXECUTION

3.01 GENERAL

.1 Clean all paint, rust and dirt from all surfaces to which ground lugs are bolted.

.2 Protect exposed grounding conductors from mechanical damage.

.3 Ensure that molds, for exothermic type connections, are not used for more than 50 connections.

.4 At junction and terminal boxes, bond grounding conductors to ground stud.

.5 Bond the main substation ground grid to the building grounding system.

3.02 GROUND WIRES

.1 Installed as per OPSS.PROV 609 and contract drawings.

3.03 BURIED CONNECTORS - COMPRESSION TYPE

.1 Installed as per OPSS.PROV 609 and contract drawings.

3.04 GROUND RODS

.1 Installed as per OPSS.PROV 609 and contract drawings.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL

.1 The provisions of OPSS 805 shall apply to this item except as amended or extended herein or in other Sections. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

1.2 OUTLINE OF WORK

.1 As part of the work for this tender item the Contractor shall:
- .1 Supply and installation of turbidity curtain while placing new submarine cables, concrete caps, and other in-water Work.
- .3 Maintain the turbidity curtain in proper repair.
- .4 Remove and dispose of the turbidity curtain and all other related hardware at the completion of the project.

.2 Installation locations as shown in the Contract Documents and as directed on-site by the Departmental Representative.

1.3 – REFERENCES

.1 Ontario Provincial Standard Specification (OPSS)
- .1 OPSS.MUNI 805, November 2018, Construction Specification for Temporary Erosion and Sediment Measures.
- .2 OPSD 219.260, November 2015, Turbidity Curtain
- .3 OPSD 219.261, November 2015, Turbidity Curtain Seam Detail

1.4 MEASUREMENT AND PAYMENT

.1 Payment for this item based on breakdown of price submitted following tender close for the lump sum item. Payments will be made on a lump sum basis and such payment shall be full compensation for all labour, Equipment, and Material required to do the Work.

PART 2 – PRODUCTS

2.1 GENERAL

.1 In accordance with OPSS 805 except as amended or extended herein or in other Sections. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

2.2 MATERIALS

.1 In accordance with OPSS 805 except as amended or extended herein or in other Sections. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

PART 3 - EXECUTION

3.1 GENERAL

.1 Carry out in accordance with OPSS 805 except as amended or extended herein or in other Sections. The term "Contract Administrator" shall be removed and replaced with "Departmental Representative" in the above referenced OPSS specification.

.2 Turbidity curtain shall be installed such that no more than 50% of the waterway is blocked at any time.

END OF SECTION

ANNEX A
LOCAL CONTENT

12.0 LOCAL CONTENT

.1 The intent of local content is to ensure that a portion of the contract amount is spent locally, on local goods and services. A minimum of 10% of the total tender amount is to be allocated for local content.

Local content means labour, construction materials and rental equipment purchased on the reserve by the Contractor for use on the project. Items manufactured or assembled off the reserve shall not constitute construction materials even if purchased from a seller situated on the reserve. To qualify as local labour, an individual must be a member of and resident on the reserve. Invoices, receipts and time sheets will be required to support claim for local content.

The Contractor is encouraged to Contact the Walpole Island First Nation Economic Development as required in obtaining local content.

.2 Local Labour

.1 Local labour is to be paid at the hourly rates listed in Statement “E” below.

.2 The hourly rates listed do not include payroll burden costs. The Contractor can claim payroll burden costs separately as local content but will be required to submit a breakdown to the Departmental Representative and Walpole First Nation for review.

.3 The Contractor will be responsible for contacting individuals and settling terms and conditions of employment of local labour.

.4 The Contractor will be in control of the hiring and layoffs of local labour but must maintain local labour amounts.

.5 The following may be included as “local content”:

First Nations labour / labourers

First Nations Bridge Operator

.3 Local Equipment

.1 Local equipment is to be paid at the hourly rates listed in Statement “E”.

.2 The Contractor will be responsible for contacting individuals and settling terms and conditions of rental of local equipment.

.3 The Contractor will be in control of the hiring and layoffs of local equipment but must maintain local equipment amounts.

.4 It will be the responsibility of the Contractor to inspect local equipment and be knowledgeable of its condition prior to submitting his tender.

.5 The Contractor will be responsible for hiring experienced operators, if required, fuel and regular maintenance for each piece of local equipment.

.6 The following may be included as “local content”:

Heavy equipment rental including but not limited to back hoes

Dump trucks

.4 Local Construction Materials

.1 The Contractor will be responsible for contacting suppliers and settling terms and conditions of the purchase of local construction materials.

.2 The Contractor will be responsible for the haulage of the local construction materials from stockpile location to the site.

.3 The following items may be included as local content:

Contractor purchase of gasoline at market rates from gas bars located on the reserve.

Contractor lease of fenced laydown area.

Contractor purchase of document printing and copying.

13.0 LOCAL CONTENT CONDITIONS

.1 Tenderers are to complete Statement "E" – Intended Use of Local Labour, Equipment, Construction Materials, of the Form of Tender.

.2 The Contractor is responsible to verify with the Walpole First Nation the use of local content identified in Statement "E" of the Form of Tender. The Contactor may, with the approval of Walpole First Nation, vary the specifics of the local content actually utilized from that set out in Statement "E" of the Form of Tender, provided that the aggregate minimum local content amount is maintained.

.3 The Contractor will be responsible to submit a monthly local content summary report to verify use of local content. The summary report shall include the following information.

- Local content requested
- Local content received
- Variance between local content requested and local content received complete with action plan to address variance time sheets and invoices.

.4 Upon verification by Walpole Island First Nation that a local content amount has been utilized, the amount thereof shall be paid out of the local content amount.

.5 It is anticipated that the process outlined in .2 above will provide ongoing adjustments to local content thereby ensuring minimums are achieved. Should a balance of the local content still remaining at the end of the project, the amount thereof may be retained permanently by the Departmental Representative.

.6 All Tenderers are encouraged to use local labour, materials, and equipment to the fullest extent.

.7 It is the Contractor's sole responsibility to secure and maintain such services as required. No claim for additional fees or time shall be considered by the Owner for the Contractor carrying out this obligation.

STATEMENT "E"

INTENDED USE OF LOCAL LABOUR, EQUIPMENT, MATERIAL AND SERVICES

The Tenderer will acquire the local content as detailed in Clause 12 of the Instructions to Tenderers.

Should the Tenderer terminate employment of any local labour identified in Statement "E" prior completion of the project, the Tenderer must provide Walpole First Nation with a written explanation for the reason of termination. The Tenderer is to replace such persons with a local person to the extent that they are available and qualified prior to attempting to recruit from outside of the Reserve.

Should the Tenderer terminate employment of any local equipment identified in Statement "E" prior to completion of the project, the Tenderer must provide Walpole First Nation with a written explanation for the reason of termination. The Tenderer may substitute such local equipment with other equipment of their choice subject to prior approval of Walpole First Nation. Other local equipment is to be used whenever possible if such substitutions take place.

The Tenderer will, no later than the third working day of each month, prepare and submit to Walpole First Nation, a report showing the following:

- Each local person employed for any time during the previous month, their name permanent residence, job classification, date hired and date terminated, if applicable
- Each piece of local construction equipment rented during the previous month and the local contractor the equipment was rented from, and
- Local material purchased and used during the previous month and its source.

12.2 **LOCAL LABOUR**: The Tenderer proposes to employ the local people listed hereunder for the period specified.

LOCAL LABOUR LIST

Job Classification	No. of Persons	Net Wage Rate $/hr	Total Manhours	Total Amount
TOTAL				

STATEMENT "E" (cont'd)

INTENDED USE OF LOCAL LABOUR, EQUIPMENT, MATERIAL AND SERVICES

12.3 LOCAL EQUIPMENT: The Tenderer proposes the use of the following local pieces of construction equipment if available, when required for the project:

LOCAL EQUIPMENT LIST

Item	Hrs/Days/Months	Rate/hr	Total Amount
TOTAL			

12.4 LOCAL MATERIALS: The Tenderer proposes the purchase the following local supplies if available, when required for the project:

LOCAL MATERIALS LIST

Type	Quantity	Unit	Price	Total
TOTAL				

ANNEX B
FREQUENCY DATA OF SWING SPAN OPENING (2012)

2012 Bridge Opened - Summary			
Date	**Time**	**Vessel Type**	**Bridge Opened # of times**
April 9/12	3:00pm	Tugboat & Barge	1
April 17/12	4:00pm	Cruiser	1
May 4/12	4:00pm	Cruiser	1
May 11/12	3:39pm	Tugboat & Barge	1
May 19/12	4:00pm	Cruiser	1
" "	7:00pm	Cruiser	1
May 23/12	3:54pm	Tugboat & Barge	1
May 25/12	3:00pm	Tugboat & Barge	1
May 30/12	8:45am	Tugboat & Barge	1
June 5/12	8:25am	Tugboat & Barge	1
" "	4:30pm	Tugboat & Barge	1
June 17/12	2:00pm	Cruiser	1
June 29/12	6:00pm	Cruiser	1
July 1/12	3:00pm	Cruiser	1
July 2/12	2:00pm	Cruiser	1
July 4/12	11:00am	Cruiser	1
July 7/12	1:00pm	Cruiser	1
July 8/12	6:00pm	Cruiser	1
July 14/12	2:00pm	2 Cruisers	1
July 15/12	4:00pm	Cruiser	1
July 18/12	2:00pm	2 Cruisers	1
July 21/12	12:00pm	Cruiser	1
July 22/12	10:00am	Cruiser	1
July 24/12	1:55pm	Tugboat & Barge	1
July 30/12	1:00pm	2 Cruisers	1
July 31/12	11:15am	Tugboat & Barge	1
Aug. 1/12	12:00pm	2 Cruisers	1
Aug. 3/12	10:17am	Test Open	1
" "	10:45am	Test Open	1
" "	10:57am	Test Open	1
" "	11:21am	Tugboat & Barge	1
Aug. 6/12	2:00pm	Sailboat	1
Aug. 7/12	12:00pm	Cruiser & Sailboat	1
Aug. 8/12	11:00am	Cruiser	1

" "	5:00pm	Cruiser	1
Aug.10/12	11:00am	Cruiser	1
" "	12:00pm	2 Cruisers & 1 Sailboat	1
" "	12:25pm	Test Open	1
" "	2:30pm	Tugboat	1
" "	4:00pm	Cruiser	1
Aug.11/12	9:00am	"Pleasure" Tugboat	1
" "	7:00pm	Tugboat	1
Aug.12/12	9:00am	Tugboat	1
" "	10:00am	2 Cruisers	1
" "	12:00pm	Sailboat	1
Aug. 13/12	2:02pm	Cruiser	1
Aug.14/12	2:00pm	Sailboat	1
Aug.15/12	1:00pm	Sailboat	1
Aug.16/12	1:00pm	Cruiser	1
Aug.17/12	2:40pm	Tugboat & Barge	1
Aug.21/12	8:30am	Tugboat & Barge	1
Aug.22/12	2:15pm	Tugboat & Barge	1
Aug.30/12	9:00am	Grease Face Plates	1
Sept. 1/12	11:00am	Cruiser	1
" "	6:00pm	Cruiser	1
Sept. 15/12	1:00pm	Cruiser	1
Sept. 16/12	1:00pm	Cruiser	1
Sept. 17/12	3:07pm	Test Open	1
Sept. 19/12	12:00pm	Cruiser	1
Sept. 20/12	10:05am	Tugboat	1
Sept. 28/12	11:30am	Tugboat & Barge	1
" "	2:00pm	Cruiser	1
" "	3:00pm	3 Cruisers	1
Oct. 6/12	2:00pm	Cruiser	1
Oct. 7/12	2:00pm	Cruiser	1
Oct.12/12	12:00pm	Cruiser	1
Oct.13/12	2:00pm	Cruiser	1
Oct.16/12	11:00am	Cruiser	1
" "	2:00pm	2 Cruisers	1
" "	6:01pm	Cruiser	1
Oct. 17/12	2:00pm	Cruiser	1

Oct. 21/12	3:00pm	Cruiser	1
Oct. 22/12	2:25pm	Tugboat & Barge	1
Nov. 2/12	2:00pm	Cruiser	1
" "	2:15pm	2 Cruisers	1
Nov. 10/12	1:00pm	Cruiser	1
Nov. 11/12	4:00pm	Cruiser	1
Nov. 27/12	2:45pm	Tugboat & Barge	1
Dec. 20/12	8:00am	Tugboat	1
" "	1:45pm	Tugboat	1

Total # of times the Bridge was opened in 2012	**80**

2012 Bridge Traffic Count - Summary					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting East:	West:
April 9/12	3:00pm	Tugboat & Barge	2	16	10
April 17/12	4:00pm	Cruiser	1	9	12
May 4/12	4:00pm	Cruiser	1	21	28
May 11/12	3:39pm	Tugboat & Barge	2	16	15
May 19/12	4:00pm	Cruiser	1	12	18
" "	7:00pm	Cruiser	1	8	10
May 23/12	3:54pm	Tugboat & Barge	2	26	20
May 25/12	3:00pm	Tugboat & Barge	2	19	25
May 30/12	8:45am	Tugboat & Barge	2	10	13
June 5/12	8:25am	Tugboat & Barge	2	30	10
" "	4:30pm	Tugboat & Barge	2	31	32
June 17/12	2:00pm	Cruiser	1	17	10
June 29/12	6:00pm	Cruiser	1	25	19
July 1/12	3:00pm	Cruiser	1	13	10
July 2/12	2:00pm	Cruiser	1	14	16
July 4/12	11:00am	Cruiser	1	11	10
July 7/12	1:00pm	Cruiser	1	26	10
July 8/12	6:00pm	Cruiser	1	7	38
July 14/12	2:00pm	2 Cruisers	2	34	15
July 15/12	4:00pm	Cruiser	1	12	17
July 18/12	2:00pm	2 Cruisers	2	21	26
July 21/12	12:00pm	Cruiser	1	11	12
July 22/12	10:00am	Cruiser	1	10	8
July 24/12	1:55pm	Tugboat & Barge	2	11	28
July 30/12	1:00pm	2 Cruisers	2	26	8
July 31/12	11:15am	Tugboat & Barge	2	25	17
Aug. 1/12	12:00pm	2 Cruisers	2	25	17
Aug. 3/12	10:17am	Test Open		14	9
" "	10:45am	Test Open		22	9
" "	10:57am	Test Open		20	4
" "	11:21am	Tugboat & Barge	2	29	24
Aug. 6/12	2:00pm	Sailboat	1	19	14
Aug. 7/12	12:00pm	Cruiser & Sailboat	2	21	38
Aug. 8/12	11:00am	Cruiser	1	34	20

" "	5:00pm	Cruiser	1	10	15
Aug.10/12	11:00am	Cruiser	1	15	11
" "	12:00pm	2 Cruisers & 1 Sailboat	3	22	52
" "	12:25pm	Test Open		12	9
" "	2:30pm	Tugboat	1	16	19
" "	4:00pm	Cruiser	1	11	7
Aug.11/12	9:00am	"Pleasure" Tugboat	1	6	3
" "	7:00pm	Tugboat	1	15	16
Aug.12/12	9:00am	Tugboat	1	13	11
" "	10:00am	2 Cruisers	2	7	8
" "	12:00pm	Sailboat	1	8	13
Aug. 13/12	2:02pm	Cruiser	1	15	16
Aug.14/12	2:00pm	Sailboat	1	22	19
Aug.15/12	1:00pm	Sailboat	1	12	9
Aug.16/12	1:00pm	Cruiser	1	15	20
Aug.17/12	2:40pm	Tugboat & Barge	2	28	27
Aug.21/12	8:30am	Tugboat & Barge	2	16	13
Aug.22/12	2:15pm	Tugboat & Barge	2	19	21
Aug.30/12	9:00am	Grease Face Plates		10	7
Sept. 1/12	11:00am	Cruiser	1	4	9
" "	6:00pm	Cruiser	1	9	7
Sept. 15/12	1:00pm	Cruiser	1	12	20
Sept. 16/12	1:00pm	Cruiser	1	12	17
Sept. 17/12	3:07pm	Test Open		11	17
Sept. 19/12	12:00pm	Cruiser	1	14	16
Sept. 20/12	10:05am	Tugboat	1	11	9
Sept. 28/12	11:30am	Tugboat & Barge	2	25	18
" "	2:00pm	Cruiser	1	15	27
" "	3:00pm	3 Cruisers	3	10	34
Oct. 6/12	2:00pm	Cruiser	1	16	26
Oct. 7/12	2:00pm	Cruiser	1	28	34
Oct.12/12	12:00pm	Cruiser	1	6	20
Oct.13/12	2:00pm	Cruiser	1	18	20
Oct.16/12	11:00am	Cruiser	1	16	16
" "	2:00pm	2 Cruisers	2	14	19
" "	6:01pm	Cruiser	1	21	17
Oct. 17/12	2:00pm	Cruiser	1	6	7

Oct. 21/12	3:00pm	Cruiser	1	33	26
Oct. 22/12	2:25pm	Tugboat & Barge	2	22	8
Nov. 2/12	2:00pm	Cruiser	1		
" "	2:15pm	2 Cruisers	2	25	25
Nov. 10/12	1:00pm	Cruiser	1	26	36
Nov. 11/12	4:00pm	Cruiser	1	8	9
Nov. 27/12	2:45pm	Tugboat & Barge	2	17	11
Dec. 20/12	8:00am	Tugboat	1	5	6
" "	1:45pm	Tugboat	1	22	19

Total Vessels	**102**
Total Vehicles	**2664**

2012 Monthly Bridge Traffic Count - April					
Date	**Time**	**Vessel Type**	**# of Vessels**	**# of Vehicles Waiting**	
				East:	**West:**
April 9/12	3:00pm	Tugboat & Barge	2	16	10
April 17/12	4:00pm	Cruiser	1	9	12

April 2012 Total Vessels	**3**
April 2012 Total Vehicles	**47**

2012 Monthly Bridge Traffic Count - May					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
May 4/12	4:00pm	Cruiser	1	21	28
May 11/12	3:39pm	Tugboat & Barge	2	16	15
May 19/12	4:00pm	Cruiser	1	12	18
" "	7:00pm	Cruiser	1	8	10
May 23/12	3:54pm	Tugboat & Barge	2	26	20
May 25/12	3:00pm	Tugboat & Barge	2	19	25
May 30/12	8:45am	Tugboat & Barge	2	10	13

May 2012 Total Vessels	**11**
May 2012 Total Vehicles	**241**

2012 Monthly Bridge Traffic Count - June					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
June 5/12	8:25am	Tugboat & Barge	2	30	10
" "	4:30pm	Tugboat & Barge	2	31	32
June 17/12	2:00pm	Cruiser	1	17	10
June 29/12	6:00pm	Cruiser	1	25	19

June 2012 Total Vessels	**6**
June 2012 Total Vehicles	**174**

2012 Monthly Bridge Traffic Count - July					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
July 1/12	3:00pm	Cruiser	1	13	10
July 2/12	2:00pm	Cruiser	1	14	16
July 4/12	11:00am	Cruiser	1	11	10
July 7/12	1:00pm	Cruiser	1	26	10
July 8/12	6:00pm	Cruiser	1	7	38
July 14/12	2:00pm	2 Cruisers	2	34	15
July 15/12	4:00pm	Cruiser	1	12	17
July 18/12	2:00pm	2 Cruisers	2	21	26
July 21/12	12:00pm	Cruiser	1	11	12
July 22/12	10:00am	Cruiser	1	10	8
July 24/12	1:55pm	Tugboat & Barge	2	11	28
July 30/12	1:00pm	2 Cruisers	2	26	8
July 31/12	11:15am	Tugboat & Barge	2	25	17

July 2012 Total Vessels	**18**
July 2012 Total Vehicles	**436**

2012 Monthly Bridge Traffic Count - August					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
Aug. 1/12	12:00pm	2 Cruisers	2	25	17
Aug. 3/12	10:17am	Test Open		14	9
" "	10:45am	Test Open		22	9
" "	10:57am	Test Open		20	4
" "	11:21am	Tugboat & Barge	2	29	24
Aug. 6/12	2:00pm	Sailboat	1	19	14
Aug. 7/12	12:00pm	Cruiser & Sailboat	2	21	38
Aug. 8/12	11:00am	Cruiser	1	34	20
" "	5:00pm	Cruiser	1	10	15
Aug.10/12	11:00am	Cruiser	1	15	11
" "	12:00pm	2 Cruisers & 1 Sailboat	3	22	52
" "	12:25pm	Test Open		12	9
" "	2:30pm	Tugboat	1	16	19
" "	4:00pm	Cruiser	1	11	7
Aug.11/12	9:00am	"Pleasure" Tugboat	1	6	3
" "	7:00pm	Tugboat	1	15	16
Aug.12/12	9:00am	Tugboat	1	13	11
" "	10:00am	2 Cruisers	2	7	8
" "	12:00pm	Sailboat	1	8	13
Aug. 13/12	2:02pm	Cruiser	1	15	16
Aug.14/12	2:00pm	Sailboat	1	22	19
Aug.15/12	1:00pm	Sailboat	1	12	9
Aug.16/12	1:00pm	Cruiser	1	15	20
Aug.17/12	2:40pm	Tugboat & Barge	2	28	27
Aug.21/12	8:30am	Tugboat & Barge	2	16	13
Aug.22/12	2:15pm	Tugboat & Barge	2	19	21
Aug.30/12	9:00am	Grease Face Plates		10	7

Aug. 2012 Total Vessels	**31**
Aug. 2012 Total Vehicles	**887**

2012 Monthly Bridge Traffic Count - September					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
Sept. 1/12	11:00am	Cruiser	1	4	9
" "	6:00pm	Cruiser	1	9	7
Sept. 15/12	1:00pm	Cruiser	1	12	20
Sept. 16/12	1:00pm	Cruiser	1	12	17
Sept. 17/12	3:07pm	Test Open		11	17
Sept. 19/12	12:00pm	Cruiser	1	14	16
Sept. 20/12	10:05am	Tugboat	1	11	9
Sept. 28/12	11:30am	Tugboat & Barge	2	25	18
" "	2:00pm	Cruiser	1	15	27
" "	3:00pm	3 Cruisers	3	10	34

Sept. 2012 Total Vessels	**12**
Sept. 2012 Total Vehicles	**297**

2012 Monthly Bridge Traffic Count - October					
Date	Time	Vessel Type	# of Vessels	# of Vehicles Waiting	
				East:	West:
Oct. 6/12	2:00pm	Cruiser	1	16	26
Oct. 7/12	2:00pm	Cruiser	1	28	34
Oct.12/12	12:00pm	Cruiser	1	6	20
Oct.13/12	2:00pm	Cruiser	1	18	20
Oct.16/12	11:00am	Cruiser	1	16	16
" "	2:00pm	2 Cruisers	2	14	19
" "	6:01pm	Cruiser	1	21	17
Oct. 17/12	2:00pm	Cruiser	1	6	7
Oct. 21/12	3:00pm	Cruiser	1	33	26
Oct. 22/12	2:25pm	Tugboat & Barge	2	22	8

Oct. 2012 Total Vessels	**12**
Oct. 2012 Total Vehicles	**373**

2012 Monthly Bridge Traffic Count - November					
Date	**Time**	**Vessel Type**	**# of Vessels**	**# of Vehicles Waiting**	
				East:	**West:**
Nov. 2/12	2:00pm	Cruiser	1		
" "	2:15pm	2 Cruisers	2	25	25
Nov. 10/12	1:00pm	Cruiser	1	26	36
Nov. 11/12	4:00pm	Cruiser	1	8	9
Nov. 27/12	2:45pm	Tugboat & Barge	2	17	11

Nov. 2012 Total Vessels	**7**
Nov. 2012 Total Vehicles	**157**

2012 Monthly Bridge Traffic Count - December					
Date	**Time**	**Vessel Type**	**# of Vessels**	**# of Vehicles Waiting**	
				East:	**West:**
Dec. 20/12	8:00am	Tugboat	1	5	6
" "	1:45pm	Tugboat	1	22	19

Dec. 2012 Total Vessels	**2**
Dec. 2012 Total Vehicles	**52**

2012 Monthly Bridge Traffic Count - Totals		
Month	**Total Vessels**	**Total Vehicles**
April	3	47
May	11	241
June	6	174
July	18	436
August	31	887
September	12	297
October	12	373
November	7	157
December	2	52

Totals	**102**	**2664**

ANNEX C
EMERGENCY RESPONSE PLAN

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

McCormick Rankin

Emergency Response Plan During Bridge Rehabilitation Due to Unforseen Temporary Bridge Closure

Walpole Island Swing Bridge

Annex K to Walpole Island First Nation Emergency Response Plan (May 1, 2006)

PWGSC Project No. R.051213.001

MRC McCORMICK RANKIN
A member of MMM GROUP

February 2014

Annex K to Walpole Island First Nation Emergency Response Plan (May 1, 2006)

Emergency Response Plan During Bridge Rehabilitation Due to Unforeseen Temporary Bridge Closure

Table of Contents

Attachments

1. Purpose of Plan – Aim and Scope

The objective of the Emergency Response Plan During Bridge Rehabilitation, an annex to the existing Walpole Island First Nation Emergency Response Plan (May, 2006), is to allow for a coordinated response should there be an unforeseen temporary closure of the Walpole Island Swing Bridge to traffic during bridge rehabilitation.

This Annex to the Walpole Island First Nation Emergency Response Plan (May, 2006), has been prepared for the 2014 structural rehabilitation of the Walpole Island Swing Bridge. This Annex can be applied as a guideline for future similar bridge rehabilitations with updating.

Should there be an unforeseen temporary closure of the bridge, the aim of the plan is to provide direction with respect to implementing the response (*see Section 4 - Response*) necessary to restore bridge service and allow for non-emergency and emergency travel between Walpole Island First Nation and mainland Ontario during the temporary closure.

This Annex is to be used in conjunction with the Walpole Island First Nation Emergency Response Plan (May, 2006).

2. Authority and Maintenance of Plan

This plan is published as **Annex K**, **Emergency Response Plan During Bridge Rehabilitation**, to the Walpole Island First Nation Emergency Response Plan (May, 2006 as authorized by Band Council Resolution No: 2067-06).

Authority and Maintenance of Annex K, Emergency Response Plan During Bridge Rehabilitation, is under the Authority and Maintenance of the Walpole Island First Nation Emergency Response Plan (May, 2006) as noted under Tab 2 Part 2 Plan Preparation and Maintenance.

This Annex to the Walpole Island First Nation Emergency Response Plan (May, 2006), has been prepared for the 2014 structural rehabilitation of the Walpole Island Swing Bridge. This Annex can be applied as a guideline to future similar bridge rehabilitations with updating.

3. Description of Risk

This plan is specific to managing incidents that result in the unforeseen temporary closure of the Walpole Island Swing Bridge to traffic during bridge rehabilitation. In such an incident traffic would be prevented from travelling to/from Walpole Island until such incident has been resolved.

Possible causes of an unforeseen temporary bridge closure during bridge rehabilitation may include:

- Inoperable swing span (i.e. swing span is partially or fully open)
  - loss of power supply *(generator will start and restore power within 1 minute)*
  - blown fuse/tripped overload *(possible 30 minutes to restore)*
  - mechanical failure *(possible 8 to 12 hour shutdown in operation until repairs can be effected)*
- Spill of construction materials *(spill removed within 2 to 3 hours)*
- Collision in work zone *(vehicle(s) removed within 1 or 2 hours)*

The nature of the incident that results in the temporary closure of the bridge to traffic and the time of day that the incident occurs will determine the extent of implementation of the response plan.

4. Response

The objective of the Emergency Response Plan During Bridge Rehabilitation is to allow for a coordinated response should there be an unforeseen temporary closure of the Walpole Island Swing Bridge to traffic during bridge rehabilitation.

The nature of the incident and the time of day that the incident occurs will determine the extent to which the Response Plan is implemented.

The extent of implementation, and therefore the extent of notifications and advisories, increases based on whether there is a minor incident or major incident, and the need for an emergency response during a major incident.

An incident that can be resolved with minimal delay to traffic is considered minor. Any other incident is considered major.

Examples of minor incidents that may result in a temporary bridge closure include:

- Inoperable swing span (i.e. swing span is partially or fully open) due to:
  - loss of power supply *(generator will start and restore power within 1 minute)*
  - blown fuse/tripped overload *(possible 30 minutes to restore)*
- Collision in work zone *(vehicle(s) removed within 1 or 2 hours)*

Examples of major incidents that may result in a temporary bridge closure include:

- Inoperable swing span (i.e. swing span is partially or fully open) due to:
  - mechanical failure *(possible 8 to 12 hour shutdown in operation until repairs can be effected)*
- Spill of construction materials *(spill removed within 2 to 3 hours)*

Attachment 1, Summary Flow Chart of Response Plan, provides an overview of the key actions required to implement the response plan. Individual roles and responsibilities specific to the response plan are also listed in **Attachment 4, Individual Roles and Responsibilities**, and are detailed in the following sub-sections.

4.1 Minor Incident - Implementation of Plan/Restoration of Bridge Service

4.1.1 Identify

Should an unexpected minor incident occur that prevents traffic from crossing the Walpole Island Swing Bridge during bridge rehabilitation, the Bridge Operators and Construction Site Supervisors would likely to be the first to identify that there is a problem.

Outside of bridge operating and/or construction hours, the potential for a traffic collision or other incident within the construction work zone still exists. In such an incident the Walpole Island First Nation Police would be made aware of the incident either by those involved and/or witness/passersby.

4.1.2 Notify

Should an incident occur, the Bridge Operator, Construction Site Supervisor, or if outside of operating or construction hours, the Walpole Island First Nation Police, must notify the Walpole Island First Nation Emergency Operations Control Group by either contacting the Chief of Walpole Island First Nation, the Director of Operations, or the Emergency Management Coordinator per the Chain of Command provided as Annex A of the Walpole Island First Nation Emergency Response Plan.

The Bridge Operator and/or Construction Site Supervisor must also notify the Walpole Island First Nation Police.

If an unexpected incident occurs that prevents traffic from temporarily crossing the bridge outside of bridge operating or construction working hours during bridge rehabilitation, the Walpole Island First Nation Police should also notify the Construction Site Supervisor if it is a construction-related problem.

4.1.3 Fix

The nature of the incident will determine the extent to which the Response Plan is implemented. An incident that can be resolved with minimal delay to traffic is considered minor.

A minor incident involving an inoperable swing span would be identified and resolved by the Bridge Operators per existing maintenance and repair procedures.

A minor incident involving bridge rehabilitation activities would be identified and resolved by the Construction Site Supervisor per the rehabilitation contract procedures.

A minor incident involving the general public, such as a collision in the work zone, would be resolved by the Walpole Island First Nation Police per existing procedures.

Once the problem has been fixed, the Bridge Operator, Construction Site Supervisor, or if outside of operating or construction hours, the Walpole Island First Nation Police, must notify the Walpole Island First Nation Emergency Operations Control Group by either contacting the Chief of Walpole Island First Nation, the Director of Operations, or the Emergency Management Coordinator per the Chain of Command provided as Annex A of the Walpole Island First Nation Emergency Response Plan.

The Bridge Operator and/or Construction Site Supervisor must also notify the Walpole Island First Nation Police.

4.2 Major Incident - Implementation of Plan/Restoration of Bridge Service

Should an unexpected major incident occur that prevents traffic from crossing the Walpole Island Swing Bridge during bridge rehabilitation, the initial response is similar to that of a minor incident.

4.2.1 Identify

During bridge rehabilitation, the Bridge Operators and Construction Site Supervisors would likely to be the first to identify that there is a problem.

Outside of bridge operating and/or construction hours, the potential for a traffic collision or other incident within the construction work zone still exists. In such an incident the Walpole Island First Nation Police would be made aware of the incident either by those involved and/or witness/passersby.

4.2.2 Notify

Should an incident occur, the Bridge Operator, Construction Site Supervisor, or if outside of operating or construction hours, the Walpole Island First Nation Police, must notify the Walpole Island First Nation Emergency Operations Control Group by either contacting the Chief of Walpole Island First Nation, the Director of Operations, or the Emergency Management Coordinator per the Chain of Command provided as Annex A of the Walpole Island First Nation Emergency Response Plan.

The Bridge Operator and/or Construction Site Supervisor must also notify the Walpole Island First Nation Police.

If an unexpected incident occurs that prevents traffic from temporarily crossing the bridge outside of bridge operating or construction working hours during bridge rehabilitation, the Walpole Island First Nation Police should also notify the Construction Site Supervisor if it is a construction-related problem.

The nature of the incident and the time of day that the incident occurs will determine the extent to which the Response Plan is implemented.

Should it be determined that the incident will result in significant delays to traffic and prevent the passage of Emergency Response Vehicles, the Emergency Operations Control Group must advise the following organizations of the situation (contact information included as **Attachment 5**):

- Emergency Services:
    - Walpole Island First Nation Police Department
    - Walpole Island First Nation Fire Department
    - Wallaceburg Central Ambulance Communication Centre (CACC)
    - Emergency Management Coordinator – Municipality of Chatham-Kent
    - Chatham-Kent Police Service
    - Chatham-Kent Fire Department
    - Emergency Management Coordinator – County of Lambton
    - Ontario Provincial Police – Lambton Detachment (Petrolia)
    - Township of St. Clair – Fire/Emergency Services

- Non-Emergency Services
    - Adjacent Municipalities
        - Municipality of Chatham-Kent
        - Township of St. Clair
        - City of Algonac, Michigan
    - Border Services
        - U.S. Bureau of Customs and Border Protection (Algonac, MI and Marine City, MI)
        - Canada Border Services Agency (Walpole Island, ON and Sombra, ON)
    - Walpole Island/Tahgahoning Enterprises Ferry
    - Bluewater Ferry
    - Walpole Island Bus Lines

- Walpole Island First Nation Public Works Manager

The Emergency Operations Control Group should advise the above agencies/organizations of the following:

- Reason for unexpected closure of bridge to traffic
- Expected duration of closure
- What actions have been taken or are going to be taken

Once advised of the situation, Emergency Services, Non-Emergency Services, and the Walpole Island First Nation Public Works Manager may have specific responsibilities to undertake as described in **Sections 4.3** and **4.4**.

4.2.3 Fix

The nature of the incident and the time of day that the incident occurs will determine the extent to which the Response Plan is implemented.

A major incident involving an inoperable swing span would be identified and resolved by the Bridge Operators per existing maintenance and repair procedures.

A major incident involving bridge rehabilitation activities would be identified and resolved by the Construction Site Supervisor per the rehabilitation contract procedures.

A major incident involving the general public, such as a collision in the work zone, would be resolved by the Walpole Island First Nation Police per existing procedures.

Once the problem has been fixed, the Bridge Operator, Construction Site Supervisor, or if outside of operating or construction hours, the Walpole Island First Nation Police, must notify the Walpole Island First Nation Emergency Operations Control Group by either contacting the Chief of Walpole Island First Nation, the Director of Operations, or the Emergency Management Coordinator per the Chain of Command provided as Annex A of the Walpole Island First Nation Emergency Response Plan.

The Emergency Operations Control Group must then advise the Emergency Services, Non-Emergency Services, as well as the Walpole Island First Nation Public Works Manager, listed in **Section 4.2.2**, that the situation has been resolved and that the Walpole Island Swing Bridge has been re-opened to traffic (contact information included as **Attachment 5**).

4.3 Implementation of Detour for Border Traffic and Non-Emergency Travel

Once Emergency Services and Non-Emergency Services are advised that the bridge will be temporarily closed to traffic due to a major incident, the agencies/organizations may be required to assist in implementing a detour route to accommodate border traffic and non-emergency travel to/from Walpole Island.

The detour route is shown in **Attachment 2, Potential Detour Route – Border Traffic and Non-Emergency Travel to/from Walpole Island**.

4.3.1 Border Traffic

Traffic already destined for the Canada-U.S. border crossing at Walpole Island, ON and Algonac, MI, via the Walpole-Algonac Ferry Line Ltd., will be detoured to the border crossing at Sombra, ON and Marine City, MI, via the Bluewater Ferry, using Chatham-Kent Road 33/Lambton County Road 33 (St. Clair Parkway) and Michigan State Highway M-29 (River Road).

The Canada Border Services Agency locations at Walpole Island and Sombra are open daily between 7:00 am and 11:00 pm. Ferry services are scheduled similarly. As such, the accommodation of detoured border traffic between mainland Ontario, as well as Walpole Island, and Michigan, needs to be considered only for that time period.

Dependent on the time of day (weekday commuter periods versus non-commuter periods), day of the week (weekday versus weekend), and the time of year, the level of response to implement a detour may be different.

To assist with the implementation of a detour the following may be required from external agencies and organizations:

- Traffic management in vicinity of border crossing locations as well as the intersection of Chatham-Kent Road 32 and Chatham-Kent Road 33 (St. Clair Parkway):
    - Local police services *(as required)*
- Detour signage at key intersections:
    - Adjacent municipalities *(as required/in conjunction with Walpole Island First Nation)*
- Additional staffing at Marine City-Sombra border crossing:
    - U.S. Bureau of Customs and Border Protection *(as required)*
    - Canada Border Services Agency *(as required)*

4.3.2 Non-Emergency Travel to/from Walpole Island and the Municipality of Chatham-Kent

Non-emergency traffic destined to/from Walpole Island and the Municipality of Chatham-Kent and other communities, will be detoured to the Canada-U.S. border crossings at Walpole Island, ON and Algonac, MI, and at Sombra, ON and Marine City, MI.

Non-emergency traffic includes commuters travelling to/from Walpole Island for employment, education, recreation, or shopping/business services. This would also include students attending high school in Wallaceburg.

The detour route is the same as shown in **Attachment 2**, and as discussed previously with respect to Border Traffic.

In addition to the timing restrictions and considerations noted previously with respect to Border Traffic, additional considerations for commuters and students include:

- Need for a valid Secure Certificate of Indian Status (SCIS), Passport, Enhanced Driver's License, or Nexus Card:
  - Approved identification is required for any person crossing the Canada-U.S. border.
- Accommodation:
  - For individuals without the required identification to cross the Canada-U.S. border or individuals travelling outside of the ferry and border operating hours, emergency accommodation may be required (see **Section 4.6**).

4.4 Boat on Standby

Once the Walpole Island First Nation Public Works Manager is advised that the bridge will be temporarily closed to traffic due to a major incident, s/he has the responsibility to ensure one boat belonging to the Walpole Island First Nation Public Works Department is on standby for emergency use.

As land ambulance service is provided from Chatham-Kent, the boat will be essential to ensure that the emergency needs of the people on Walpole Island can continue to be met (see **Section 4.5**).

Per **Attachment 3, Potential Boat Crossing Locations – Emergency Travel (Emergency Needs for People on Walpole Island)**, the Walpole Island First Nation Public Works Manager will maintain one boat at Potential Boat Crossing Alternative 1 (north of the Walpole Island Swing Bridge at New Ferry Road) or at Potential Boat Crossing Alternative 2 (south of the Walpole Island Swing Bridge at Old Ferry Road).

The preferred boat crossing location will be confirmed prior to commencement of bridge rehabilitation by the Emergency Operations Control Group and the Walpole Island Public Works Department.

4.5 Emergency Response During a Major Incident

In the event of a request for emergency assistance during an unforeseen closure of the bridge to traffic, it is expected that the earlier notifications to emergency services and preparations undertaken in **Sections 4.2** and **4.4**, will ensure that the emergency needs for people on Walpole Island are met.

As shown in **Attachment 1, Summary Flow Chart of Response Plan**, the following is an expected flow of events:

1) An emergency call is received by 911 dispatch. Depending on the nature of the emergency, 911 dispatches the appropriate emergency services as required (Walpole Island First Nation Police Department, Walpole Island First Nation Fire Department, and the Central Ambulance Communication Centre (CACC) Wallaceburg) to respond.
2) Walpole Island First Nation Police and Fire Departments respond. Should it be determined that emergency medical services are required to transport the individual(s) to hospital in Wallaceburg and/or Chatham, CACC will be notified to dispatch the nearest land ambulance. Dependent on the nature and/or severity of the emergency medical services required, an ORNGE air ambulance may be requested by CACC. The nearest ORNGE base is at London, ON, with back-up provided from Toronto, ON. **An air ambulance response may not be available due to other incidents that may be occurring at the same time and/or weather conditions or maintenance.*
3) Walpole Island First Nation Police and Fire Departments will provide immediate medical assistance and will transport the individual(s) to the preferred boat crossing location identified in **Section 4.4** and in **Attachment 3**.
4) Land ambulance will meet the boat at the mainland side of the preferred boat crossing location identified in **Section 4.4** and in **Attachment 3**.
5) The Walpole Island First Nation Public Works Department boat will provide the emergency crossing from Walpole Island to mainland Chatham-Kent.
6) If an ORNGE air ambulance is responding, the landing location for the helicopter is determined by the pilot in command.
7) In the event that additional police assistance is required by the Walpole Island First Nation Police Department, the Chatham-Kent Police Service will respond at the mainland side of the preferred boat crossing location identified in **Section 4.4** and in **Attachment 3**.

4.6 Other Considerations

Dependent on the nature of the incident and the extent to which the Emergency Response Plan During Bridge Rehabilitation is implemented, additional considerations may be required.

The below noted items are included as part of the Walpole Island First Nation Emergency Response Plan (May 2006):

- Alerting the Public – See Walpole Island First Nation Emergency Response Plan, Annex F
- Emergency Accommodation (For individuals unable to travel to or from Walpole Island – See Walpole Island First Nation Emergency Response Plan, Annex G, Care of Evacuees
- Additional Transportation Considerations – See Walpole Island First Nation Emergency Response Plan, Annex G, Transportation Considerations

5. Preparedness

Thirty (30) days prior to bridge rehabilitation being undertaken, the following will be completed by the Emergency Operations Control Group to prepare for the potential implementation of the plan:

- Confirm updated contact information for emergency and non-emergency services identified in this Annex.
- Notify emergency and non-emergency services identified in this Annex that bridge rehabilitation will be undertaken.
- Ensure all emergency and non-emergency services identified in this Annex are aware of this Annex, the objective of the response plan during bridge rehabilitation, and their roles and responsibilities associated with the potential implementation of the response plan should it be required.
- Ensure that Construction Site Supervisors and Bridge Operators are aware of this Annex, the objective of the response plan during bridge rehabilitation, and their roles and responsibilities associated with the potential implementation of the response plan should it be required.
- Ensure availability of resources, such as boat(s) and signage, as identified in this Annex.
- Ensure identified boat crossing locations for emergency travel as shown in **Attachment 3** remain suitable for use.

6. Post-Incident Activities

Following the implementation of the emergency response plan and the resolution of the incident that caused the closure of the bridge to traffic during bridge rehabilitation, the following will be undertaken by the Emergency Operations Control Group:

- De-briefing session in order to identify gaps in the response plan and future considerations for improvement to the response plan; and
- Review of incident that resulted in the closure of the bridge to traffic with the aim to identify opportunities and mitigating measures to reduce the potential for future occurrences of similar events.

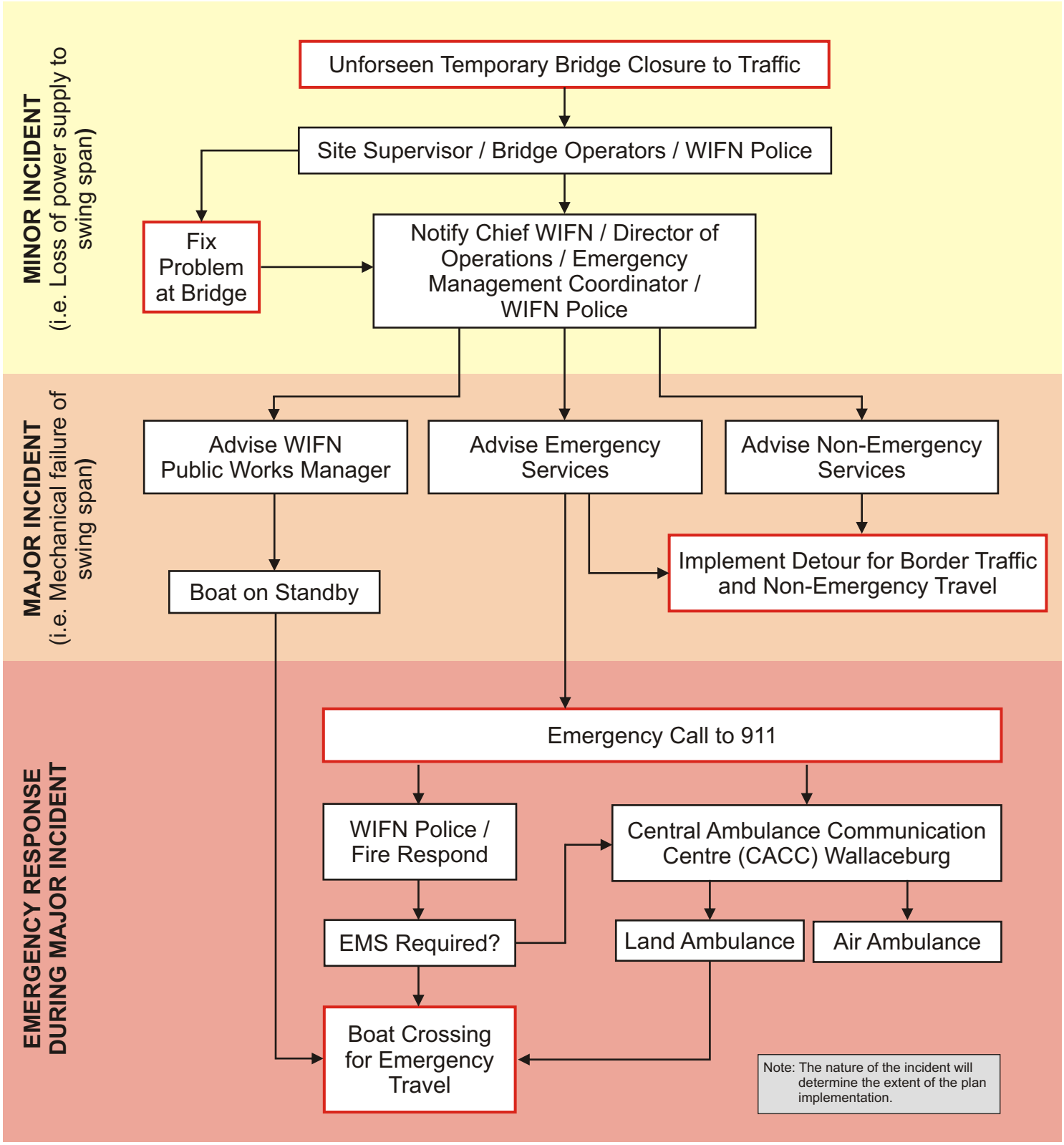
Depending on the nature of the incident and the extent to which the response plan was implemented, the extent of the post-event activities will be determined. For example, a minor incident that involved the loss of power supply to the swing span but was quickly resolved may require only a brief incident report. A major incident that involved the mechanical failure of a swing span component that resulted in an 8 hour closure of the bridge to traffic, and the subsequent implementation of the detour plan for border traffic and non-emergency travel, will require a more detailed review and de-briefing potentially involving emergency services and non-emergency services.

Updates to this Annex should incorporate recommendations stemming from such reviews.

Attachments

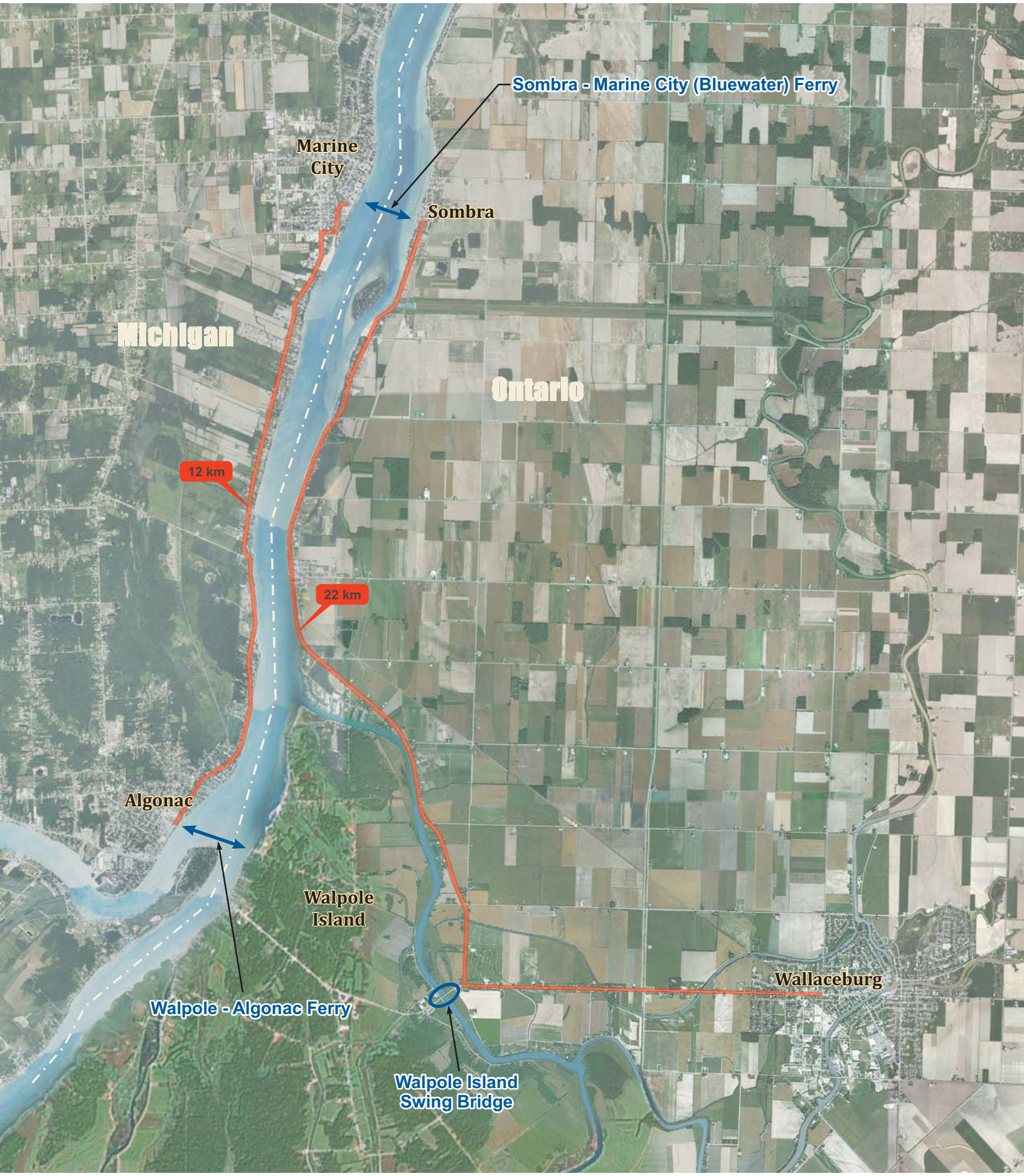
Attachment 1: Summary Flowchart – Response Plan

Summary Flowchart - Response Plan



Attachment 2: Potential Detour Route – Border Traffic and Non-Emergency Travel to/from Walpole Island

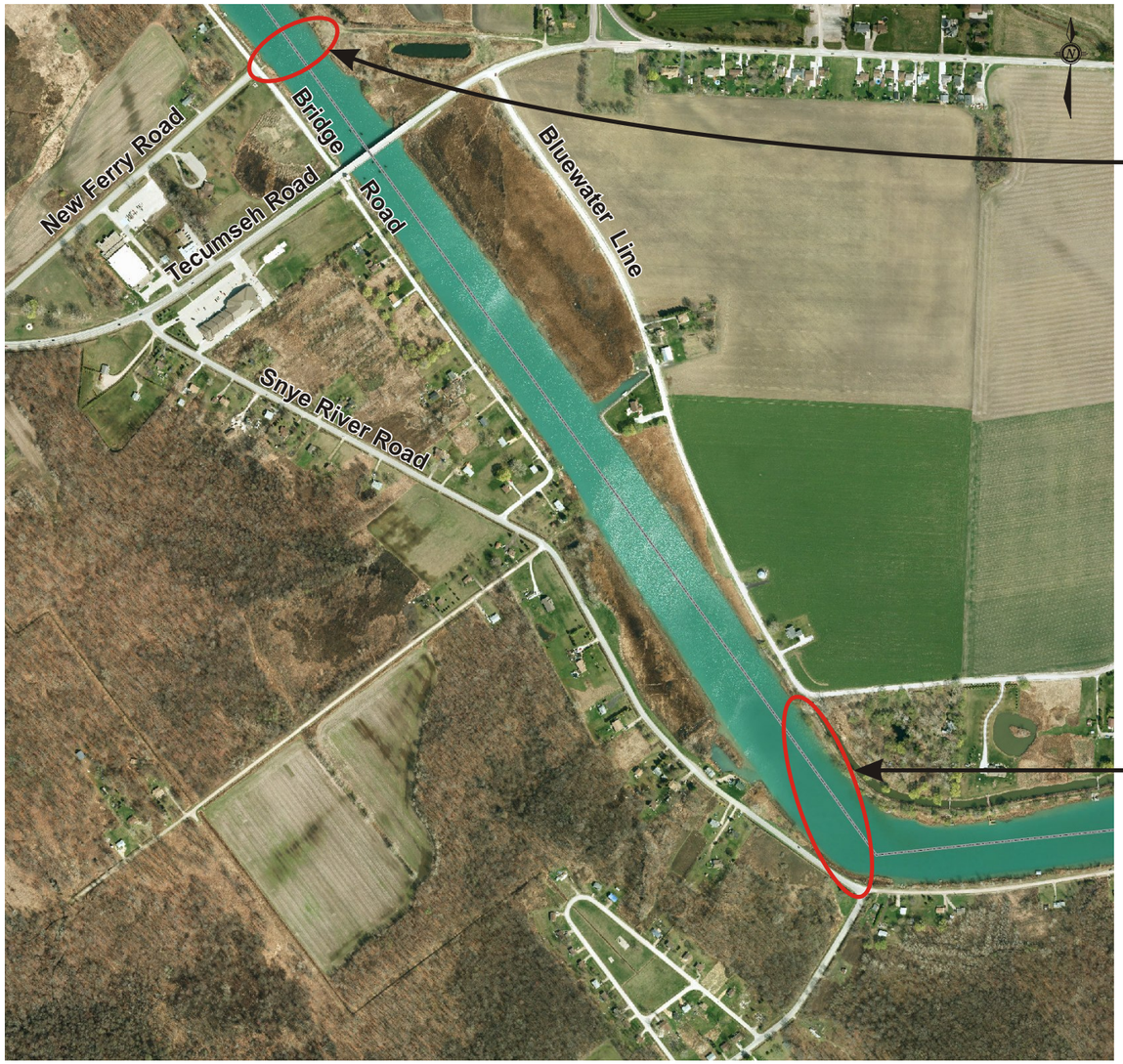
Potential Detour Route - Border Traffic and Non-Emergency Travel to/from Walpole Island



Attachment 3: Potential Boat Crossing Locations

Walpole Island Swing Bridge
Emergency Response Plan
Annex K - Attachment 3
PWGSC Project No. R251213.001

Potential Boat Crossing Locations - Emergency Travel (Emergency Needs for People on Walpole Island)



Potential Boat Crossing Alternative 1

Potential Boat Crossing Alternative 2

Attachment 4: Individual Roles and Responsibilities

Individual Roles and Responsibilities Specific to Annex K – Emergency Response Plan during Bridge Rehabilitation

Note that the below listed responsibilities do not supersede responsibilities that are part of an individual's standard operations procedures or responsibilities that may be detailed elsewhere in the Walpole Island First Nation Emergency Response Plan.

Bridge Operator	Construction Site Supervisor	Walpole Island First Nation Police	Emergency Operations Control Group (EOCG)	Walpole Island First Nation Public Works Manager
If an unexpected bridge equipment-related incident occurs that prevents traffic from temporarily crossing the Walpole Island Swing Bridge during bridge rehabilitation, **the Bridge Operator is responsible for:**	If an unexpected construction-related incident occurs that prevents traffic from temporarily crossing the Walpole Island Swing Bridge during bridge rehabilitation, **the Construction Site Supervisor is responsible for:**	If an unexpected incident occurs that prevents traffic from temporarily crossing the Walpole Island Swing Bridge outside of bridge operating hours or construction working hours during bridge rehabilitation, **the Walpole Island First Nation Police is responsible for:**	If an unexpected incident occurs that prevents traffic from temporarily crossing the Walpole Island Swing Bridge during bridge rehabilitation, **the Walpole Island First Nation EOCG is responsible for:**	If an unexpected incident occurs that prevents traffic from temporarily crossing the Walpole Island Swing Bridge during bridge rehabilitation, **the Walpole Island First Nation Public Works Manager is responsible for:**

• **Identifying** the problem.
• **Notifying** WIFN EOCG per Annex A of ERP:
  • Chief of WIFN or
  • Director of WIFN Operations or
  • WIFN Emergency Management Coordinator
• **Notifying** WIFN Police
	• **Identifying** the problem.
	• **Notifying** WIFN EOCG per Annex A of ERP:
	  • Chief of WIFN or
	  • Director of WIFN Operations or
	  • WIFN Emergency Management Coordinator
	• **Notifying WIFN Police**
		• **Identifying** the problem.
		• **Notifying** WIFN EOCG per Annex A of ERP:
		  • Chief of WIFN or
		  • Director of WIFN Operations or
		  • WIFN Emergency Management Coordinator
		• **Notifying** Construction Site Supervisor if construction-related problem.
			• If the EOCG is informed of an unexpected incident that prevents traffic from crossing the Walpole Island Swing Bridge, **determine** in consultation with the Bridge Operator and/or Construction Site Supervisor and/or the WIFN Police **whether or not the incident will result in significant delays to traffic and prevent the passage of Emergency Response Vehicles**.	

• If minor bridge equipment-related incident, **resolving** per existing bridge maintenance and repair procedures.
• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
  • Chief of WIFN or
  • Director of WIFN Operations or
  • WIFN Emergency Management Coordinator
• **Notifying** WIFN Police
	• If minor construction-related incident, **resolving** per construction contract procedures.
	• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
	  • Chief of WIFN or
	  • Director of WIFN Operations or
	  • WIFN Emergency Management Coordinator
	• **Notifying** WIFN Police
		• If minor incident involving the general public, **resolving** per standard WIFN Police procedures.
		• If minor bridge equipment-related or construction-related incident, coordinate and direct their services as needed to ensure that any actions necessary for the mitigation of the incident are taken.
		• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
		  • Chief of WIFN or
		  • Director of WIFN Operations or
		  • WIFN Emergency Management Coordinator
			• If minor incident, coordinate and direct their services as needed to ensure that any actions necessary for the mitigation of the incident are taken.	

Bridge Operator	Construction Site Supervisor	Walpole Island First Nation Police	Emergency Operations Control Group (EOCG)	Walpole Island First Nation Public Works Manager

• If major bridge equipment-related incident, **resolving** per existing bridge maintenance and repair procedures.	• If major construction-related incident, **resolving** per construction contract procedures.	• If major incident involving the general public, **resolving** per standard WIFN Police procedures.
		• If emergency medical service required, **provide immediate medical assistance and transport individual(s) to:**
		  • Potential Boat Crossing Alternative 1 (New Ferry Road/Bridge Road)
		  • If Potential Boat Crossing Alternative 1 is determined to be not useable, than Potential Boat Crossing Alternative 2 (Old Ferry Road/Snye River Road) should be used.
			• If major incident, **coordinate and direct their services as needed to ensure that any actions necessary for the mitigation of the incident are taken**.
			• **Per Section 4.2.2 of Annex K, advise Emergency Services, Non-Emergency Services, and the WIFN Public Works Manager** of the following:
			  • Reason for unexpected closure of bridge to traffic;
			  • Expected duration of closure; and
			  • What actions have been taken or are going to be taken.
				• If advised by EOCG that the bridge is temporarily closed to traffic due to major incident, WIFN Public Works Manager to **mobilize one boat for standby emergency use**.
				• **Per Attachment 3 of Annex K**, the boat is to be available for emergency use at:
				  • Potential Boat Crossing Alternative 1 (New Ferry Road/Bridge Road)
				  • If Potential Boat Crossing Alternative 1 is determined to be not useable, than Potential Boat Crossing Alternative 2 (Old Ferry Road/Snye River Road) should be used.
				• **WIFN Public Works Manager should coordinate with Emergency Services as needed to ensure that any actions necessary for the mitigation of the incident are taken.**
				• If emergency medical service required, WIFN Police/Fire to transport individual(s) to boat crossing location.
				• WIFN Public Works Manager **transports individual(s) requiring medical assistance via boat to land ambulance waiting at mainland side of:**
				  • Potential Boat Crossing Alternative 1 (New Ferry Road/Bridge Road)
				  • If Potential Boat Crossing Alternative 1 is determined to be not useable, than Potential Boat Crossing Alternative 2 (Old Ferry Road/Snye River Road) should be used.

• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
  • Chief of WIFN or
  • Director of WIFN Operations or
  • WIFN Emergency Management Coordinator
	• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
	  • Chief of WIFN or
	  • Director of WIFN Operations or
	  • WIFN Emergency Management Coordinator
		• Once fixed, **notifying** WIFN EOCG per Annex A of ERP:
		  • Chief of WIFN or
		  • Director of WIFN Operations or
		  • WIFN Emergency Management Coordinator
			• Once notified that the incident has been resolved and the bridge is re-opened to traffic, EOCG to **advise per Section 4.2.2 of Annex K, Emergency Services, Non-Emergency Services, and the WIFN Public Works Manager**.	

Attachment 5:

Emergency Contact List (as of June 2013, updated February 2014)

	Title	First Name	Last Name	Position	Agency/Organization	Street Address 1	Street Address 2	Town	Province	Postal Code	Telephone	Fax	Email
Emergency Operations Control Group													
The Chief	Chief	Burton	Kewayosh		Walpole Island First Nation	Band Council Office	RR 3	Walpole Island	ON	N8A 4K9	519-627-1481	519-627-0440	Burton.Kewayosh@wifn.org
The Director of Operations	Mr	Everett	Kicknosway	Director of Operations	Walpole Island First Nation	117 Tahgahoning Road	RR 3	Walpole Island	ON	N8A 4K9	519-627-1481	519-627-0440	Everett.Kicknosway@wifn.org
Emergency Management Coordinator ***(see Fire Chief)***													
Fire Chief	Mr	Charles	Wright	Fire Chief	Wapole Island First Nation Fire Department	1624 River Road North	RR 3	Walpole Island	ON	N8A 4K9	519-627-8879		walpole_fire_dept@hotmail.com
Public Works Manager	Ms	Judy	Jacobs		Walpole Island First Nation Public Works Department	538 Chiefs Road South	RR 3	Walpole Island	ON	N8A 4K9	519-627-1426	519-627-4915	Judy.Jacobs@wifn.org
Police Chief	Mr	J. Chad	Jacobs	A/Police Chief	Wapole Island First Nation Police Department	778 Tecumseh Road	RR 3	Walpole Island	ON	N8A 4K9	519-627-6011	519-627-3677	Chad.Jacobs@ontario.ca
Nurse/Manager	Ms	Rosemary	Williams	Nurse/Manager	Wapole Island First Nation Health Centre	1604 River Road North	RR 3	Walpole Island	ON	N8A 4K9	519-627-0765	519-627-0017	rosemary.williams@wifn.org
Evacuation Coordinator													
Emergency Information Officer													
Administrator	Ms	Donna	Miskokomon		Walpole Island First Nation	538 Chiefs Road South	RR 3	Walpole Island	ON	N8A 4K9	519-627-1426	519-627-4915	Donna.Miskokomon@wifn.org
Emergency Services													
Ambulance/Helicopter	Ms	Judy	Carnegie	Manager	Wallaceburg CACC EMS Dispatch Centre	150 Dora Drive		Wallaceburg	ON	N8A 0A9	519-627-0701	519-627-3122	judy.carnegie@ontario.ca
Ambulance/Helicopter	Mr	Brad	Jacobs	Manager of Operations	Wallaceburg CACC EMS Dispatch Centre	150 Dora Drive		Wallaceburg	ON	N8A 0A9	519-627-0701	519-627-3122	
Emergency Management Coordinator	Mr	Alan	DeVillaer	Emergency Management Coordinator	Municipality of Chatham-Kent	Fire & Emergency Services	5 Second Street	Chatham	ON	N7M 5X2	519-352-8401 x 3503	519-352-8620	alan.devillaer@chatham-kent.ca
Emergency Management Coordinator	Mr	Mark	Wetering	Emergency Management Coordinator	County of Lambton - Building Services Department	789 Broadway Street	P.O. Box 3000	Wyoming	ON	N0N 1T0	519-845-0801	519-845-3817	
Walpole Island First Nation Police	Mr	J. Chad	Jacobs	A/Police Chief	Wapole Island First Nation Police Department	778 Tecumseh Road	RR 3	Walpole Island	ON	N8A 4K9	519-627-6011	519-627-3677	Chad.Jacobs@ontario.ca
Police		Dennis	Poole	Chief of Police	Chatham-Kent Police Service	P.O. Box 366	24 Third Street	Chatham	ON	N7M 5K5			
Police				Staff Sergeant	Ontario Provincial Police - Lambton Detachment (Petrolia)	P.O. Box 400	4224 Oil Heritage Road	Petrolia	ON	N0N 1R0	519-882-1011	519-882-1014	
Walpole Island First Nation Fire Department	Mr	Charles	Wright	Fire Chief	Wapole Island First Nation Fire Department	1624 River Road North	RR 3	Walpole Island	ON	N8A 4K9	519-627-8879		walpole_fire_dept@hotmail.com
Fire	Chief	Ken	Stuebing	Fire Chief	Chatham-Kent Fire Department	5 Second Street		Chatham	ON	N7M 5X2	519-436-3270	519-352-8620	
Fire/Emergency Services	Chief	Walt	Anderson	Chief	Township of St. Clair Fire Department	1155 Emily Street		Mooretown	ON	N0N 1M0	519-481-0111 Cell – 519-383-2330	519-867-5509	
	Deputy Chief	Steve	Bicum	Deputy Chief	Township of St. Clair Fire Department	1155 Emily Street		Mooretown	ON	N0N 1M0	519-481-0111 Cell – 519-466-5181	519-867-5509	

	Title	First Name	Last Name	Position	Agency/Organization	Street Address 1	Street Address 2	Town	Province	Postal Code	Telephone	Fax	Email
Non-Emergency Services													
Adjacent Municipalities	Mr.	Thomas	Kelly	General Manager, Infrastructure & Engineering Services	Municipality of Chatham-Kent	P.O. Box 640		Chatham	ON	N7M 5K8	519-360-1998	519-436-3237	Thomas.Kelly@chatham-kent.ca
	Mr.	Dennis	Chepeka	Director, Public Works North	Municipality of Chatham-Kent	P.O. Box 640		Chatham	ON	N7M 5K8	519-352-8401 x 3960		Dennis.Chepeka@chatham-kent.ca
	Mr.	Tom	Kissner	General Manager	Chatham-Kent Public Utilities Commission	325 Grand Avenue East	P.O. Box 1191	Chatham	ON	N7M 5L8	519-436-0119 x 307		Tom.Kissner@chatham-kent.ca
	Mr	John	DeMars	Director of Administration/Clerk	Township of St. Clair	1155 Emily Street		Mooretown	ON	N0N 1M0	519-867-2021	519-867-5509	
	Mr	Douglas R.	Alexander	City Manager	Algonac City Hall	805 St. Clair River Drive		Algonac	Michigan	48001	810-794-9361	810-794-4804	algcitymngr@i-is.com
Border Services				Supervisor	Bureau of Customs and Border Protection	Algonac Ferry Dock		Algonac	Michigan		810-794-3321	810-794-5680	6:30 am-10:30 pm
				Supervisor	Bureau of Customs and Border Protection	Marine City Ferry Dock		Marine City	Michigan		(810) 765-5454	(810) 765-0170	6:45 am-10:45 pm
				Supervisor	*Bureau of Customs and Border Protection*	*Blue Water Bridge, Port Huron*		*Port Huron*	*Michigan*		*(810) 985-9541*	*(810) 985-6070*	***After Hours Only***
				Supervisor	Canada Border Services Agency	Walpole Island Ferry		Walpole Island	Ontario				7:00 am – 11:00 pm
				Supervisor	Canada Border Services Agency	Sombra Ferry		Sombra	Ontario				7:00 am – 11:00 pm
				Supervisor	Canada Border Services Agency	Sarnia – Blue Water Bridge		Point Edward	Ontario				***After Hours Only***
Transportation													
Ferry	Mr.	Graham	Hoogterp	Operations Manager	Walpole Island/Tahgahoning Enterprises Ferry	100 Tahgahoning Road		Walpole Island	ON	N8A 4K9	519-627-0881 Cell: 519-359-6509		grahamhoogterp@gmail.com
Ferry	Mr	Lowell	Dalghetti		Bluewater Ferry	3490 King Street	PO Box 171	Sombra	ON	N0P 2H0	519-892-3879		info@bluewaterferry.com
Buses		Rick and Diana	Kewayosh		Kewayosh Bus Lines	1884 River Road	RR 3	Walpole Island (Wallaceburg)	ON	N8A 4K9	519-627-8752 (H); 519-784-7985 cell		
					Kewayosh Bus Lines	100 Kewayosh Lane		Walpole Island (Wallaceburg)	ON	N8A 4K9	519-627-8752 (H); 519-784-7985 cell		
Other													
FN - School Board	Mr.	Steven	Kewayosh	Maintenance Supervisor	Walpole Island First Nation School Board	521 Tecumseh Road	RR 3	Walpole Island (Wallaceburg)	ON	N8A 4K9	519-627-0712/0780	519-627-8596	
Emergency Management Ontario	Mr	Steve	Beatty	Field Officer - St Clair Sector	Emergency Management Ontario, Ministry of Community Safety & Correctional Services	P.O. Box 25177		London	ON	N6C 6A9	519-679-7055		steve.beatty@ontario.ca

ANNEX D
DESIGNATED SUBSTANCES SURVEY

DESIGNATED SUBSTANCE SURVEY

Walpole Island Swing Bridge Rehabilitation

Public Works and Government Services Canada

Project #: R.0512113.001

FINAL REPORT

MAY 2012

PREPARED BY:

ecoplans Limited
A member of MMM GROUP
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Email: ecoplans@ecoplans.com

PROJECT NO. 3211121.000.

EXECUTIVE SUMMARY

Ecoplans (Ecoplans) was retained by McCormick Rankin to complete a designated substance survey (DSS) of the Walpole Island Swing Bridge, in Walpole Island, Ontario (the "Subject Property"). The Subject Property includes a swing bridge spanning the Chenal Ecart (Snye) River and the accompanying control tower. The bridge connects Tecumseh Road on Walpole Island to Dufferin Avenue.

The purpose of the Designated Substance Survey (DSS) was to identify and characterize building materials that may contain hazardous substances; document the location, type, and current conditions of hazardous building materials; and to assess the need for environmental management of these materials during future renovation work.

Based on the results of this investigation, hazardous building materials have not been identified in accessible areas of the Site. In general, building materials were observed to be in good condition at the Subject Property. The following summarizes the findings and recommendations of the DSS:

Lead: Laboratory results from five representative paint samples collected from areas along walls or railings where localized flaking was observed indicated that elevated levels of lead was not detected in these samples. The majority of painted surfaces observed in the building were observed to be in good condition with some minor localized areas of peeling or flaking. In addition, given the age of the building, any painted surfaces not samples would likely not contain elevated levels of lead. Standard dust control techniques are considered to be appropriate to protect on-site workers during future renovation or demolition processes that may involve disturbing painted surfaces.

Asbestos: Based on the results of the DSS, ACM is not suspected to be present in sampled building materials or other accessible materials observed at the Subject Property. It is possible that inaccessible materials not assessed at the time of this survey (e.g., roofing materials, materials behind enclosed walls, etc.) may contain asbestos. If material conditions are suspect at the time of exposure, confirmatory sampling should be conducted to identify management options.

Mercury: Fluorescent light tubes, metal halide lights and thermostats were observed in the control tower. These materials may contain mercury. The continued use of these systems does not present a hazard to site occupants and the environment. If future renovation activities require the replacement of these light tubes and thermostats, it is recommended that a qualified contractor remove and dispose/recycle the light tubes and thermostats in accordance with regulatory requirements.

Silica: Materials used for the construction of the building, such as mortar, concrete, block and brick are likely to contain silica. As this material was observed to be in good condition at the time of the DSS survey, the possible presence of silica in these materials does not present a

hazard to site occupants and the environment. If future renovation activities may affect the integrity of these materials, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled.

ODS: Based on the results of this survey, ODS are not suspected to be present at the subject property.

PCBs: Based on the results of the survey, there is the potential for PCBs to be present in the light fixture ballasts identified at the Subject Property. It is recommended that during any building renovations that all light fixture ballast be checked for the presence of PCBs.

Other Designated Substances: Ecoplans did not identify the presence of the other following designated substances; Acrylonitrile, Arsenic, Benzene, Coke oven emissions, Ethylene oxide, Isocyanates, and Vinyl chloride.

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1.0 BACKGROUND

Ecoplans (Ecoplans) was retained by McCormick Rankin (MRC) to complete a Designated Substance Survey (DSS) of the Walpole Island Swing Bridge, in Walpole Island, Ontario (the "Subject Property").

The Subject Property includes a swing bridge spanning the Chenal Ecart (Snye) River and the accompanying control tower. The bridge connects Tecumseh Road on Walpole Island to Dufferin Avenue (Figure 1). Repairs and maintenance include in 1981, a concrete overlay and new slabs, operation cables were replaced in 1994 and in 2003 the entire structure was cleaned and recoated.

The purpose of the Designated Substance Survey (DSS) was to identify and characterize building materials that may contain hazardous substances; document the location, type, and current conditions of hazardous building materials; and to assess the need for environmental management of these materials during future renovation work.

1.1 Site Structure Description

The Subject Property is located at NAD 83, Zone 17 UTM co-ordinates 378967E, 4716615N. The Walpole Island Swing Bridge was constructed in 1968 and spans 156 metres across. The bridge consists of a main swing span and two fixed approach spans. The main swing span is constructed of steel plate girders, concrete sidewalks, and a steel orthotropic deck with asphalt surface and rotates upon the centre pivot pier.

The control room structure consists of a concrete slab-on-grade two-storey tower with no basement and is located on the west shore at the south side of the fixed approach span.

Power for the bridge control is supplied via submarine cables from the control tower to the centre pivot pier.

1.2 Limitations

The DSS was completed by observing areas of the building structure that were deemed safe for access. The DSS report reflects the observations and results of analysis completed on specific structures and finishes of the building.

1.3 Scope of Work

Eleven designated substances are regulated under the Occupational Health and Safety Act:

Acrylonitrile, Arsenic, Asbestos, Benzene, Coke oven emissions, Ethylene oxide, Isocyanates, Lead, Mercury, Silica, and Vinyl chloride.

In addition, other potentially hazardous materials such as polychlorinated biphenyls (PCBs) and ozone depleting substances (ODS) are commonly found in buildings. This assessment considers these substances as well.

The DSS considered the age of the facility and typical manufacturing processes for building materials in the assessment of potentially hazardous substances. The scope of work included the following:

- Visually assess building materials for the possible presence of designated substances and hazardous materials;
- Recover non-destructive and representative samples of building materials and submit for laboratory analysis. Samples of building materials suspected of containing hazardous materials were recovered, placed into re-sealable plastic bags and labelled with a unique sample identification number. Samples were submitted to Maxxam Analytics (Maxxam) located in Mississauga, Ontario for analytical testing of lead.
- Prepare a summary report indicating the findings of the DSS.

1.4 Quality Assurance and Quality Control

Samples of building materials were submitted for laboratory analysis. Quality assurance and quality control of the samples were maintained in a number of ways:

- Samples were given unique identifiers as they were collected, identifying the project number, date and sample location. The sample numbers were recorded in field notes for each location.
- A chain-of-custody (COC) form was filled out prior to submitting the samples to the laboratory. The COC documented sample movement from collection to receipt at the laboratory and provided sample identification, requested analysis, and conditions of samples upon arrival at the laboratory (e.g. container status).
- Maxxam is accredited with the Canadian Association for Laboratory Accreditation (CALA) for the analysis of lead. EMSL and Pinchin are accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for the analysis of asbestos. Copies of the quality assurance reports and analytical methods are included with the Certificates of Analysis in Appendix A.

2.0 SITE VISIT

Ecoplans conducted site visits of the Subject Property on October 4, 2011 and April 30, 2012. The purpose of the site visits was to determine the location, quantity, and current conditions of hazardous materials present within the Subject Property. Mr. Agostino Monteleone and Mr. Mathew Thompson of MRC provided access to detailed drawings of the bridge structure for the purpose of this survey. The Bridge Operator had previously escorted Ecoplans field staff around the premises during the initial site visit that Ecoplans completed in October 2011 which identified possible locations and types of hazardous materials to be further assessed during the DSS. Photographs of the site inspection are included at the end of the report.

2.1 Lead

Lead can be present in a variety of materials including paint, plumbing and solder. Lead was used as a white pigment in paint until the mid-1950s, in concentrations as high as 50% by weight. As such, buildings built before the mid-1950s are likely to contain lead based paint (LBP). Smaller amounts of lead may also be found in buildings constructed up to 1980.

Under the Canadian Hazardous Products Act (1986, Updated 2005) paint containing lead in excess of 0.06% (600 mg/kg) is controlled in Canada. This definition does not evaluate existing painted surfaces in the work place. In absence of Canadian regulations, the U.S. Housing and Urban Development (HUD) guideline was consulted to provide a criterion used in the evaluation of building paint. HUD defines any paint containing over 0.5% (5,000 mg/kg) or 1.0 mg/cm2 of lead to be LBP.

The presence of lead does not affect the management of building materials for recycling, however, control measures may be required to minimize the generation of airborne lead dust, particularly for activities that may generate excessive dust, such as sanding or grinding.

2.1.1 Lead Assessment Results

A total of five samples were collected and submitted for the analysis of lead in the paint. Three samples were collected from the control tower (tower blue, tower grey and tower red). The control tower walls were painted blue (Photograph 1) and the railing samples were layered with the grey paint overlying the red (Photograph 2).

Two samples were collected from the bridge on the west pier (girder grey and railing grey). The paint was observed to be in generally good condition with some minor areas of localized cracking and peeling (Photograph 3 and 4).

Table 1: Lead Analytical Results Summary

Sample ID	Sample Description	Sample Location	Lead Content	Lead Impacted
Tower Blue (Photograph 1)	Paint	Tower wall	530 mg/kg	No
Tower Grey (Photograph 2)	Second Coat of Paint	Tower railing	580 mg/kg	No
Tower Red (Photograph 2)	Base Coat of Paint	Tower railing	2400 mg/kg	No
Girder Grey (Photograph 3)	Grey Paint	Centre Girder on west pier	130 mg/kg	No
Railing Grey (Photograph 4)	Grey Paint	West pier railing	62 mg/kg	No

Based on the survey results, elevated levels of lead (i.e. above the 5,000 mg/kg US HUD Guideline) were not identified in the painted building materials at the Subject Property. In addition, given the age of the building, any painted surfaces not samples would likely not contain elevated levels of lead.

In general, standard dust control practices for activities associated with building renovation are sufficient to control dust from exposed painted surfaces with less than 5,000 mg/kg lead. At higher concentrations, abatement, worker protection or enhanced dust control measures may be required. Based on this survey and historical reports, standard dust control measures are likely sufficient where dismantling of painted surfaces is conducted. Should painted surfaces be grounded, sanded or otherwise abraded, the effects of any works on the underlying substrates of paint should be considered in the development of dust control measures.

2.2 Asbestos

Asbestos is a commercial term given to six naturally occurring minerals that are incombustible and separable into fibres. The fibres are strong, durable and resistant to heat and fire and are long, thin and flexible enabling them to be woven into cloth. These qualities have resulted in the wide use of asbestos in commercial, industrial, automotive and building materials. Common asbestos containing materials (ACMs) include pipe-covering, insulating cement, insulating block, refractory and boiler insulation materials, transite board, fireproofing spray, joint compound, vinyl floor tile, ceiling tile, mastics, roofing products, and duct insulation for HVAC applications. Although the common construction use of friable (hand pressure crumbles the

material easily) ACM generally ceased voluntarily in the mid-1970s, it was not until the mid to late 1980s that ACM use was banned through legislation.

Under Occupational Health and Safety regulations in effect in Ontario, material containing 0.5% by dry weight or more of asbestos fibres is considered ACM. Ecoplans staff inspected the Subject Property for the presence of friable and non-friable ACM.

2.2.1 Inspection

No materials were observed that warranted confirmatory sampling for potential asbestos-containing material. Walls, flooring, and ceilings in the Control Tower are comprised of exposed concrete and steel stairs and were in good condition. Fibreglass pipe wrap insulation was observed and had been painted.

2.2.2 Asbestos Assessment Results

As noted above no building material samples were sampled for ACMs.

2.2.3 Additional Sampling Requirements

In the event that future bridge renovations occur, materials that become exposed that support the suspicion of asbestos should be sampled. Based on the results of the analysis of other suspect materials and the date of building construction, asbestos is unlikely to be present in these materials.

If encountered, non-friable suspect materials can be removed prior to renovation according to Type 1 abatement procedures. Friable suspect materials should be removed prior to renovation according to Type 2 (provided quantity and type of material is suitable) or Type 3 abatement procedures.

2.3 Mercury

Mercury is a naturally occurring metal that is found in air, water and soil. Elemental or metallic mercury is the most common industrial form of mercury. Mercury is a toxic element that is controlled as a designated substance in Ontario. Mercury containing equipment (MCE) commonly found in the workplace includes: mercury vapour lamps of high intensity discharge lamps, fluorescent light tubes, thermostats and electrical switches.

Interior fluorescent lights and thermostats were observed during the DSS and are suspected of containing mercury. These materials will require management during building renovations to avoid the release of mercury to the environment.

2.4 Silica

Silica is a naturally occurring mineral and can be present in materials used for building construction, such as mortar, concrete, block and brick. Silica is a designated substance and

dust generated through the handling of materials containing silica must be controlled. The building is comprised primarily of concrete construction; therefore, standard dust control measures should be implemented where practical to ensure airborne dusts are controlled.

2.5 Polychlorinated Biphenyls

PCBs were first manufactured in 1929 and used until the late 1970s in dielectric fluid in transformers, motor capacitors and lighting ballasts. In the late 1970s, the use of PCBs was banned and replacement of PCB-containing equipment was phased in over the following decades. Ballast manufacturers stopped using PCBs in their products by 1980.

A detailed inspection of florescent light ballasts could not be completed due to safety limitations. However, because the building was constructed a decade prior the ban of PCBs, it is likely that PCBs are present in any ballasts installed at the Subject Property and if present the ballasts must be managed in accordance with the EPA Ontario Regulation 362/90 (as amended In 2011).

2.6 Ozone Depleting Substances

Ozone depleting substances (ODS) generally contain chlorine, fluorine, bromine, carbon, and hydrogen in varying proportions and are often described by the general term halocarbons. Chlorofluorocarbons (CFCs), carbon tetrachloride, and methyl chloroform are important human-produced ozone-depleting gases that have been used in many applications including refrigeration, air conditioning, foam blowing, cleaning of electronic components, and as solvents. Another important group of human-produced halocarbons is the halons, which contain carbon, bromine, fluorine, and (in some cases) chlorine and have been mainly used as fire extinguishers.

The manufacture and use of ODS and CFCs in industry has been severely curtailed following the Montreal Protocol (1988). In Canada, CEPA, 1999 and the Ozone-Depleting Substances Regulation, 1998 (SOR/99-7) regulates the manufacturing, use and restrictions of ODS and CFCs.

ODS are not suspected to be present at the subject property**.**

2.7 Other Designated Substances

Ecoplans did not identify the presence of the other following designated substances; Acrylonitrile, Arsenic, Benzene, Coke oven emissions, Ethylene oxide, Isocyanates, and Vinyl chloride.

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this investigation, hazardous building materials have not been identified in accessible areas of the Site. In general, building materials were observed to be in good condition at the Subject Property. The following summarizes the findings and recommendations of the DSS:

Lead: Laboratory results from five representative paint samples collected from areas along walls or railings where localized flaking was observed indicated that elevated levels of lead was not detected in these samples. The majority of painted surfaces observed in the building were observed to be in good condition with some minor localized areas of peeling or flaking. In addition, given the age of the building, any painted surfaces not samples would likely not contain elevated levels of lead. Standard dust control techniques are considered to be appropriate to protect on-site workers during future renovation or demolition processes that may involve disturbing painted surfaces.

Asbestos: Based on the results of the DSS, ACM is not suspected to be present in sampled building materials or other accessible materials observed at the Subject Property. It is possible that inaccessible materials not assessed at the time of this survey (e.g., roofing materials, materials behind enclosed walls, etc.) may contain asbestos. If material conditions are suspect at the time of exposure, confirmatory sampling should be conducted to identify management options.

Mercury: Fluorescent light tubes, metal halide lights and thermostats were observed in the control tower. These materials may contain mercury. The continued use of these systems does not present a hazard to site occupants and the environment. If future renovation activities require the replacement of these light tubes and thermostats, it is recommended that a qualified contractor remove and dispose/recycle the light tubes and thermostats in accordance with regulatory requirements.

Silica: Materials used for the construction of the building, such as mortar, concrete, block and brick are likely to contain silica. As this material was observed to be in good condition at the time of the DSS survey, the possible presence of silica in these materials does not present a hazard to site occupants and the environment. If future renovation activities affect the integrity of these materials, standard demolition dust control measures should be implemented where practical to ensure airborne dusts are controlled.

ODS: Based on the results of this survey, ODS are not suspected to be present at the subject property.

PCBs: Based on the results of the survey, there is the potential for PCBs to be present in the light fixture ballasts identified at the Subject Property. It is recommended that during any building renovations that all light fixture ballast be checked for the presence of PCBs.

Other Designated Substances: Ecoplans did not identify the presence of the other following designated substances; Acrylonitrile, Arsenic, Benzene, Coke oven emissions, Ethylene oxide, Isocyanates, and Vinyl chloride.

Yours truly,

ECOPLANS, a member of MMM Group

Reviewed by:

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Environmental Scientist

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Senior Hydrogeologist

4.0 CLOSURE AND LIMITATIONS

This report has been prepared for use by MRC in accordance with generally accepted environmental investigation practices at the time of the assessment. We understand that the report may be provided to potential renovation contractors, for the purpose of identifying potential hazardous materials in the building. Therefore we extend the use of the report to these parties, for the stated purpose. Any use of the report by any other party without the written consent of MMM Group Limited is the sole responsibility of such party. MMM Group Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

The observations and investigations (hereinafter referred to as the "work") upon which this report are based were carried out in accordance with the terms and conditions of the contract pursuant to which the work was commissioned. The conclusions presented in the report are based solely upon the scope of services described in the contract and governed by the time and budgetary constraints imposed by the contract.

The principles, procedures and standards applied in conducting hazardous materials or designated substances surveys are neither regulated nor universally the same. The work has been carried out in accordance with generally accepted environmental study and/or professional practice, industry standards and applicable environmental regulations. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report.

The conclusions of the designated substances survey are based upon conditions observed at the time of the site visit. No assurance is made regarding changes in conditions subsequent to the investigation.

The conclusions of the designated substances survey regarding the current environmental conditions on the subject site are based on the investigations conducted during the work and information from other sources as may be indicated in the report. The accuracy of information from other sources as it may have been considered was not verified, nor was it determined that the information considered represented all such information that exists and pertains to the subject site. The conclusions made are based on reasonable and professional interpretation of the information considered. If additional information concerning environmental conditions of relevance to this report is obtained during future work at the subject property, MMM Group Limited should be notified in order that we may determine if modifications to the conclusions presented in this report are necessary.

This designated substances survey report must be read as a whole and sections taken out of such context may be misleading. When discrepancies occur between the preliminary (draft) and final versions of the report, the final version of the report shall take precedence.

MMM Group Limited's liability with respect to the work is limited to re-performing, without cost, any part of the work that is unacceptable solely as a result of failure to comply with industry standards. MMM Group Limited's maximum liability is limited to the amount of its remuneration under the original contract, provided that notice of claim is made within one year of the date of delivery of the report.

5.0 QUALIFICATIONS OF THE ENVIRONMENTAL CONSULTANT

Ecoplans Limited, established in 1970, provides consulting services in the biological and physical sciences, environmental planning, landscape architecture, environmental impact assessment, and environmental site assessment and remediation. Ecoplans' staff includes specialists in all facets of the environmental field. The Environmental Site Assessment and Remediation Division of Ecoplans Limited specializes in Phase I, II and III Environmental Site Assessments, electromagnetic surveys, aboveground and underground storage tank removals/assessments, groundwater investigations and site remediation/restoration. Ecoplans has completed numerous Phase I and Phase II Environmental Site Assessments for both the public and private sector. Some of their clients include the Ministry of Transportation, GO Transit, Ontario Realty Corporation, Regional Municipality of Peel, Greater Toronto Airports Authority, Medallion Properties Inc., and Marshall-Barwick Inc.

Mr. Derek Stewart, M.Sc., P.Geo, is a Senior Hydrogeologist with Ecoplans' Environmental Site Assessment & Remediation Division. Mr. Stewart has over 21 years of experience carrying out site assessments and remediation projects working for a number of environmental consulting firms. He has been with Ecoplans since 1996. At the project level, Mr. Stewart provides technical and editorial support to his staff and peer reviews all draft and final reports prior to being sent to the client.

Ms. Annette Blazeiko, B.A.Sc, is an Environmental Scientist working with Ecoplans' Environmental Site Assessment & Remediation Division. Ms. Blazeiko has an academic background in Environmental Sciences, and Environmental Management and Assessment. She has over 5 years of experience in the field and has completed numerous Phase I and II Environmental Site Assessments including hazardous materials surveys at various types of properties. She is familiar with building operations and abatement protocols that are associated with hazardous materials.

6.0 REFERENCES

Environmental Protection Act, Ontario Regulation 362/90 – Waste Management – PCBs (as amended by O.Reg. 232/11). E-Laws, Service Ontario.

Hazardous Products Act, RSC 1985, c.H-3, Controlled Products Regulations SOR/88-66. Department of Justice, Canada.

Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2 (revised) by Environment Canada, dated August 1991.

Occupational Health & Safety Act, Ontario Regulation 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (as amended by O. Reg. 479/10). e-Laws, Service Ontario.