



**TERMS OF REFERENCE**

**REQUEST FOR PROPOSAL  
R-2010-06**

**CONSULTING ENGINEERING SERVICES FOR  
COMPLETE STRUCTURAL INSPECTIONS  
OF BRIDGES  
WITHIN THE CITY OF DRYDEN**

## **1.0 INTRODUCTION**

The City of Dryden requires the services of an Engineering Firm to complete several structural inspections and reports on bridges as specified within the Terms of Reference. The Engineering Firm will complete the appropriate bridge inspections and reports in accordance with the most current publication of the M.T.O. "Ontario Structural Inspection Manual" and "Ontario Regulation O. Reg. 278/06- Standards for Bridges". The overview of the assignment as it relates to the Bridge structures is as follows:

1. Record initial inventory data.
2. Enter and/or verify information related to the various appraisals.
3. Carry out the detailed visual inspection.
4. Record the inspection information into OSIM Format.
5. Provide Class C rehabilitation Cost Estimates.
6. Provide Class C Cost Estimates for the replacement of each Bridge structure and the life expectancy of the existing structure.

## **2.0 TIMING**

The City of Dryden would like the project to commence as soon as possible after award and inspection reports are to be completed by the first week in December, 2010

## **3.0 SCOPE OF WORK**

The project consists of the following;

### **Bridge Inspection and Reporting**

The Engineering Firm will complete the appropriate bridge inspection of each bridge outlined within these Terms of Reference, in accordance with most current publication of the "Ontario Structural Inspection Manual and Ontario Regulation 278/06 – "Standards for Bridges". The inventory data and the inspection procedure, including the amount and minimum type of data is to be collected and recorded, shall be in accordance with the requirements of the most current version of the OSIM as described below.

These bridge assignments require some recording of initial inventory information. The Engineering Firm shall obtain and input this inventory data for each structure to be inspected. The Engineering Firm shall review the drawings and older inspection reports provided at the City of Dryden Public Works offices, extract general structure data, identify the elements that make up the structure,

and extract data on those elements. This includes identifying and recording the types of element(s), dimensions (length, width, height, and area) and other relevant information required and described in the OSIM. Where drawings are not available, the Engineering Firm shall conduct field measurements of the general structure and the specific elements and enter the data in OSIM forms. The assignment also includes the requirement to compare and verify the information obtained from drawings with observations in the field. The Engineering Firm shall note and record any such discrepancies and update the OSIM forms.

Specific requirements of OSIM namely Part 1 - Section 1.3.2 Enhanced OSIM Inspections, Part 3 - Additional Investigations, Part 4 - Material Condition Surveys and Part 5 - Underwater Inspections of the OSIM are not required to be performed as part of this proposal. These sections will be used as the basis for the successful consulting firm to identify and recommend supplementary investigations, surveys and/or inspections that should be conducted over and above the scope of this RFP. It is required for the Engineering Firm to provide recommendation on which structures should be scheduled for an Enhanced OSIM Inspection for the next future biannual OSIM Inspection planned for 2012. For all assignments, the Engineering Firm shall complete the information in the Appraisal Indices Section. This includes the Load Capacity, Barrier, Fatigue, Seismic, and Sour and Flood.

The Engineering Firm shall maintain timesheet logs for all field activities that show staff time spent at each structure site.

The Engineering Firm shall carry out a detailed visual inspection of the underside of structures. The Engineering Firm shall make their own arrangements and schedule the use of a Bridgmaster, for the bridges where this machine will be required for access. The Engineering Firm shall make arrangements and schedule the necessary traffic protection and shall include the costs of all traffic protection in the lump sum amount for each bridge outlined in this Term of Reference. This is only required for sites requiring a Bridgmaster for inspection of areas that are inaccessible from the ground. The ground portion of the inspection should be done by foot, ladder or boat in some cases.

The Material Element Condition State Tables that identify the criteria to be used to assess the condition states of the elements is obtained from OSIM, Section 4 of Part 2.

Procedures and methods for computing the surface area of elements are given in OSIM, Section 3 of Part 2.

This assignment also includes carrying out detailed visual inspections in the field for the structures. The Engineering Firm shall note and record the quantity of each element in each condition state in accordance with the procedures and format in the OSIM. This information shall be recorded on the inspection forms in the field and later transferred into MS Excel Digital Format. Note: For many elements, the condition states will be recorded as an area measurement, m<sup>2</sup>. For example, a deck element of area 1000 m<sup>2</sup> may have 100 m<sup>2</sup> in excellent condition, 700 m<sup>2</sup> in good condition, 100 m<sup>2</sup> in fair condition and 100 m<sup>2</sup> in poor condition. For some elements, such as bearings, each will record the data. For example, a bridge with 10 bearings may have 5 bearings in excellent condition, 3 bearings in good condition, 1 bearing in fair condition and 1 bearing in poor condition. For other elements, such as expansion joint armouring, the data is recorded by linear metre. For example, an expansion joint armouring of 10 m length may have 1 metre in excellent condition, 2 metres in good condition, 3 metres in fair condition, and 4 metres in poor condition.

In addition to rating the elements, the Engineering Firm shall also complete the suspected performance deficiencies, maintenance needs, recommended rehabilitation work, associated Class C cost estimates and comments for each element as described in OSIM. The recommended capital and maintenance requirements of the OSIM data shall be summarized into a MS Excel Digital spreadsheet that includes the class C costs estimates and recommendations for any additional investigations for the structure if deemed to be required.

An additional requirement of the Engineering Firm shall be to provide Class C cost estimate for the replacement of each bridge structure and the life expectancy of the existing structure.

The requirements for the safety and protection of workers in the field, including protective clothing, traffic control and protection devices, and any and all measures required accordingly, is the responsibility of the Engineering Firm.

All field inspections are to be carried out in accordance with the Occupational Health and Safety Plan to be developed by the Engineering Firm. All signing is to be in accordance with Ministry requirements and manuals for traffic control devices. Field inspections are to be carried out so as to minimize the impact on flow of traffic, and so as not to affect traffic, including no lane restrictions, during the periods to be specified by the City of Dryden. The Engineering Firm will carry out the field inspections so as not to damage any utilities or property. Any property damaged for whatever cause shall be reported to the City.

This assignment is to be self-managed by the selected Engineering Firm, including all day-to-day decisions, and scheduling of work activities. Requests

for information and direction of inspection staff must be made or provided directly by the Engineering Firm's Project Manager.

The City of Dryden Contact is to be kept informed of the progress of the work on a regular basis. To this end, the City of Dryden Contact shall be copied on all pertinent correspondence. The City of Dryden Contact shall be advised of significant problems and issues arising, including options considered and solutions adopted. The City of Dryden Contact is also to be consulted about major deviations from standards, specifications and procedures prior to their implementation, and be advised of any potential problems. An additional requirement of the Engineering Firm shall be to provide Class C cost estimate for the replacement of each bridge structure and the life expectancy of the existing structure. The following bridge structures will be inspected in the City of Dryden:

**Bridge Number 1:**

**Bridge Name:** Highlands Subdivision Bridge– Palker Road

**Total Length:** 54.0 m x 4.5 m

**Originally Built:** Approx.1993

**Type of Bridge:** Treated Timber/ One Lane

**Last Inspection Date:** Oct 19/2004

**Last Inspection Report Available:** Yes

**Last Rehabilitation Date:**

**Bridge Number 2:**

**Bridge Name:** Wabigoon River Bridge – Duke St. /Hwy #594 Bridge

**Total Length:** 24.65 m x 10.95 m

**Originally Built:**

**Type of Bridge:** Concrete deck supported on steel beams

**Last Inspection Date:** December, 1997

**Last Inspection Report Available:** Yes

**Last Rehabilitation Date:** Widening October 2002, Repainting 2004

**Bridge Number 3:**

**Bridge Name:** Wabigoon River Pedestrian Bridge – Duke St. / Hwy #594 Bridge

**Total Length:** 23.3 m x 3.0 m

**Originally Built:** September 1991

**Type of Bridge:** Concrete deck supported on steel beams

**Last Inspection Date:**

**Last Inspection Report Available:**

**Last Rehabilitation Date:**

**Bridge Number 4:**

**Bridge Name:** Hwy #17 Swanson Creek Reinforced Box Culvert

**Total Length:** 21.7m x 4.0 m

**Originally Built:**

**Type of Bridge:** Reinforced Box Culvert

**Last Inspection Date:** December/2005

**Last Inspection Report Available:** yes

**Last Rehabilitation Date:**

**Bridge Number 5:**

**Bridge Name:** Hwy #17 Swanson Creek Pedestrian Bridge

**Total Length:** 9.0 m x 2.0 m

**Originally Built**

**Type of Bridge:** Steel with wood planking

**Last Inspection Date:**

**Last Inspection Report Available:**

**Last Rehabilitation Date:**

**Bridge Number 6:**

**Bridge Name:** Hwy #601/ Colonization North Dual Culverts

**Total Length:** 28.0m x 2.5m x 2 Culverts

**Originally Built:**

**Type of Bridge:** Steel Culvert

**Last Inspection Date:**

**Last Inspection Report Available:**

**Last Rehabilitation Date:**

The Comprehensive General Liability and Professional Insurance Policy limits required for this assignment are as follows:

Comprehensive General Liability - The policy limit shall be no less than \$5,000,000 per occurrence.

Professional - A Professional Liability Insurance Policy, in an amount not less than \$2,000,000 per claim in the aggregate insuring the Engineering Firm.

## 4.0 SCHEDULE

### Mandatory Meetings

The Successful Engineering Firm is required to attend a Project Start-Up Meeting at the City of Dryden Engineering Office, 159 King St., Dryden, Ontario. The Start-Up meeting is to be scheduled prior to project commencement. The Engineering Firm's Project Manager shall be present at the meetings. Minutes shall be prepared by the Engineering Firm and distributed by e-mail within 5 business days, to all attendees and invited persons that could not attend. The Engineering Firm shall make the appropriate changes, additions and deletions to the minutes, as necessary.

### Deliverables

The Proposal submission shall provide a timetable and schedule in "bar-chart" format listing when each structure will be inspected and the final report submitted. The Engineering Firm shall submit updated schedules to the City's Project Manager one week prior to the planned inspections. For bridges requiring inspection with a Bridgmaster, the schedule shall clearly identify the date, including alternate date, for each structure requiring the use of the Bridgmaster, for inspection.

The **completion date** for all inspections including the submission of the completed reports will be clearly identified in the Engineering Firm's Proposal. The deadline for submission of final report(s) will be first week of December 2010. It is anticipated to have council award this assignment on or about September 20<sup>th</sup>/2010

## 5.0 SERVICES AND DELIVERABLES

### Services:

The Engineering Firm will be required to provide the following services:

- 1) Prior to the commencement of the field inspections, the Engineering Firm shall familiarize itself with all available reference documents provided, including the location of the structure sites and other relevant site conditions which may impact on the planning and carrying out of the inspection work in the field.
- 2) The Engineering Firm shall carry out the detailed visual inspections of all the structures, and note and record defects and deterioration and the condition states of bridge elements in accordance with the procedures and format set out in the OSIM. The Engineering Firm shall make sufficient and relevant comments

as necessary to describe the condition of the structure and its elements.

3) As part of the field inspection, the Engineering Firm shall make notes of "bird nests", their sizes and locations on the structures inspected for this assignment.

4) The Engineering Firm shall identify and record any performance deficiencies in elements.

5) The Engineering Firm shall identify and record any maintenance required to be carried out on the structure and its elements, and around the site.

6) The Engineering Firm shall note and record recommendations regarding the repair and rehabilitation work required for each element of the structures inspected, and shall recommend and record the time frame within which the work should be carried out in addition to Class C Cost Estimates for the same in current 2010 dollar values.

7) The Engineering Firm shall take a sufficient number of photographs to clearly identify the structure and the condition of all elements of the structure. A digital camera with zoom and flash features shall be used to take all photographs. Digital photographs shall show the date (month-day-year) when they were taken.

Photographs shall be taken of the following:

- One photograph shall be taken which clearly shows the deck cross-section and features such as number of traffic lanes, curbs and sidewalks, medians and railing system. *Note: This photograph is normally taken from the approach roadway looking along the length of the bridge.*

- One photograph shall be taken of the elevation of the structure and which clearly shows the number of spans and superstructure type.

- One photograph shall be taken of the underside (soffit) which shows the type and number of main superstructure element(s).

- One photograph shall be taken of each expansion joint, taken along the length of the joint.

- Photographs shall be taken to clearly show the substructure.

- All digital photographs shall be captioned to identify the element type and location.

- All digital photographs shall be compatible with viewing software running Windows XP.

- Individual photographs shall be taken of all areas in a poor condition state (areas with severe defects and deterioration). These photographs shall be taken at sufficiently close range such that the type, location and extent of the defects and deterioration are clearly visible and apparent. *Note: Where there are no areas of severe deterioration in an element, then a photograph shall be taken showing a typical area which represents the worst condition state in that element.*

8) The Engineering Firm is responsible for the development and implementation of a plan for worker safety, and safety to the traveling public. The Engineering Firm shall provide traffic control and protection, as required and associated costs for site work, in compliance with the MTO Manual of Uniform Traffic Control Devices and the Ontario Traffic Manual Book 7. Furthermore, the Engineering Firm is responsible to provide reputable and experienced traffic protection personnel to complete this assignment.

9) The Engineering Firm shall safely carry out the field work in accordance with the Occupational Health and Safety Act. The successful Engineering Firm shall provide its own Safety plan prior to the commencement of field investigations.

10) The Engineering Firm is responsible to provide all necessary equipment, materials and labour to do the work. As a minimum, the Engineering Firm shall have available the inspection equipment specified in Part 2 Section 1.4 of OSIM. The use of special equipment and devices may be required to reach and inspect structure elements with difficult access. At some sites, observations from the ground together with the use of visual enhancement equipment, such as binoculars, may be adequate. Where defects and deterioration are visually suspect or apparent in elements that are not directly accessible, then this information shall be recorded on the inspection form.

11) For box girder type bridges, of either steel or concrete construction, and of vertical depth of 1.2 metres or greater.

- The Engineering Firm shall include complete element and inspection data entry for all inside box girders as described in OSIM.

- The Engineering Firm shall conduct a detailed visual inspection of the inside of the box girders including the concrete soffit. Special attention shall be given to

fatigue prone details. The Engineering Firm shall submit a brief report for each box girder bridge outlining the condition and all observations such as fatigue cracks, deterioration, debris, drain blockage, evidence of deck leakage, soffit condition, etc.

- The Engineering Firm shall provide digital photographs showing the inside condition of the box girders. Individual photographs shall be taken of all areas in poor condition state. The type, location and extent of the defects and deterioration shall be clearly depicted.

12) The Engineering Firm shall immediately inform the City's Project Manager of any critical defects or deficiencies, such as fatigue cracks in steel girders, and all unsafe conditions which are discovered in the field.

***Deliverables:***

1) **Executive Summary** - The Engineering Firm shall provide an electronic copy, on CD or DVD, an executive summary detail/remarks for each bridge, the OSIM Inspection Forms, inspection data in the MS Excel Data Entry Format , capital and maintenance requirements of the OSIM data summarized into a MS Excel spreadsheet that includes the Class C costs estimates and recommendations for any additional investigations for the structure, and inspection photographs, all acceptable to the City's Project Manager.

2) **Complete Inspection Reports** - The Engineering Firm shall provide a digital draft report for review, then two (2) Final hard copies of the complete Inspection Report containing tabbed sections for each structure inspected and one (1) Digital Copy. The hard copy reports shall bear the stamp of a qualified Professional Engineer. The report shall be printed on standard imperial size 8.5"x11" paper. The Engineering Firm shall provide one (1) colour hard copy of all photographs, of size 100mm X150mm. Hard copies of the photos shall be placed on 8.5"x11" paper with no more than two photos to a page. The Site Number, structure name and date of inspection shall be printed across the top of the page. A brief description of the element or area photographed, indicating the location and size of the defect or deterioration shown, shall be written below each photo. *Note: hard copies need not be on photographic paper. Good quality reproductions from colour laser printers, or colour photocopies are acceptable.* There shall be a bound separate report produced for each structure site. The Inspection Report shall identify the condition states of the elements, performance deficiencies, required maintenance, and recommendations for repairs and rehabilitation including Class C Cost Estimates. All required reports shall be submitted in a MS Word format on CD or DVD, with the exception of the spread sheets identified to be in MS Excel Format.

3) **Photographs** - The Engineering Firm shall provide one (1) colour digital copy of all photographs in "jpg" format, in resolution from 1024x768 to 1280x1024, so that the file size is less than 500 kb, stored on Windows XP readable CD('s) or DVD's. Digital photos for each structure shall be stored in sub-directories that are labeled by structure name and date of inspection. Each digital photograph file shall be named to allow it to be easily identified with the element or part of the structure to which it applies. An Index file and Table of Contents for photographs, as specified in this document, shall be created on the CD ('s) or DVD's and a hard copy of these provided with the CD ('s) or DVD's.

4) **Feedback Report** - The Engineering Firm shall provide one (1) copy of a report which details any problems and difficulties encountered in collecting the inventory and inspection data. The purpose of this report is to provide feedback to the City that can be used to improve the ease of collecting and recording the data and the quality of the data collected. Specifically, the Engineering Firm shall provide feedback as to the ease, or difficulty, of assessing the condition states for elements and quantifying areas, completing the inspection forms, and suggestions for improvements.

## **6.0 BASIS OF PAYMENT**

A lump sum price quoted for each structure Inspection Location and each Associated Final Report will form the basis of payment. The summation of prices quoted for all Locations will constitute the "Maximum Ceiling Price". The proposal shall clearly identify the pricing as described above in a tabular format. This table shall also indicate the method of underside access for each bridge.

The Maximum Ceiling Price prepared by the Engineering Firm shall be full compensation for all services, deliverables, equipment, materials and testing required providing the Deliverables and Services. The RFP shall include a tabular format breakdown of costs for each structure itemizing costs related to document review, site inspection, reporting, and Bridgemastrer costs if applicable. This format breakdown of costs shall also identify the method of access to under structure

The payments for all work will be made in installments and on the basis of inspection completions and final report completion over the duration of the assignment. Billing shall not be made more frequently than monthly and must be accompanied by a description indicating the status of the work and percent completion.

## **7.0 FEE SCHEDULE**

The Engineering Firm shall provide a fee schedule indicating the name and function of, and rate of pay for, each individual who will be participating in the assignment. This information will be used as the basis for negotiation for extra services.

## **8.0 QUALIFICATIONS**

The Engineering Firm project leader responsible for completing the Inspection Report for each bridge by interpreting the field inspection data and making maintenance and repair recommendations shall be a professional engineer licensed in Ontario, with experience in bridge/culvert inspections.

The Engineering Firm field team leader responsible for carrying out the inspection in the field shall be a professional engineer licensed in Ontario, or a qualified engineering technician with training and experience in bridge/culvert inspections using the Ontario Structure Inspection Manual (OSIM).

The Engineering Firm shall describe their previous work of this type, highlighting their experience and expertise with the specific requirements of this project. If the Engineering Firm intends to partner with others to complete certain components, the experience and expertise of those partner companies must also be described, citing previous relevant work.

The Engineering Firm shall identify the Project Manager and other staff, and list the responsibilities of each. Qualifications of the Engineering Firm's Project Manager and key personnel should be outlined. Any substitution of staff during the course of the project will not be permitted without approval of the City of Dryden

Submit a typical sample of a structural inspection report of a bridge structure. Digital Format acceptable.

## **9.0 PROPOSAL SUBMISSION:**

The proposals prepared by the Engineering Firms will clearly indicate that the structural inspections and reports will be carried in accordance with the **Terms of Reference** included with this document.

The Engineering Firm's proposal must contain at least, but is not necessarily to the following:

- 1) A work chart or work schedule showing the timing of the major tasks and milestones;
- 2) The Engineering Firm shall describe their previous work of this type, highlighting their experience and expertise with the specific requirements of this project. If the Engineering Firm intends to partner with others to complete certain components, the experience and expertise of those partner companies must also be described, citing previous relevant work.
- 3) The Engineering Firm shall identify the Project Manager and other staff, and list the responsibilities of each. Qualifications of the Engineering Firm's Project Manager and key personnel should be outlined. Any substitution of staff during the course of the project will not be permitted without approval of the City of Dryden
- 4) Maximum total cost of the project broken down by each Bridge Structure that are described with reference to the following specific tasks; shall obtain and input inventory data, detailed visual field inspection work, report writing, printing costs, traffic protection costs, uses of a bridge master and other disbursements listed separately.
- 5) Per diem rates for key personnel involved in the project and an estimate of the number of hours that project staff will spend on each specific task.
- 6) Submit a typical sample of a structural inspection report of a bridge structure. Digital Copy Acceptable

## **10.0 PROPOSAL SUBMISSION DATE**

All consultants must declare their intention to respond in order to receive any addenda to the Request for Proposal. to Mr. Blake Poole, Manager of Capital Planning and Technology, phone 807-223-2367 or email- [bpooledryden.ca](mailto:bpooledryden.ca).

Proposals shall be received on or before **September 15<sup>th</sup> by 3:00 pm Dryden time**. Late submissions will be returned unopened. Facsimiles will not be accepted.

These submissions will be reviewed by the City of Dryden with the intent to have an approved Engineering Firm in place on or before Sept 20<sup>th</sup>/2010.

The Engineering Firm will submit Three (3) copies of the Proposal must be submitted in a plain envelope marked "RFP for Structural Inspections of Bridges" and addressed to:

Attention:  
Ms Colleen Brosseau  
The Corporation of the City of Dryden  
30 Van Horne Ave  
Dryden, Ontario  
P8N 2A7

If any additional information is required, please feel free to contact Mr. Blake Poole, Manager of Capital Planning and Technology, phone 807-223-2367 or email- [bpoole@dryden.ca](mailto:bpoole@dryden.ca).

## **11.0 PROPOSAL EVALUATION**

The City of Dryden will review the proposal submitted by each individual Engineering Firm

A scoring system will be utilized by City of Dryden on the following categories;

- 1) Quality of the proposal submitted - ease of understanding, required components of the project, work schedule, and structural inspection reports.
- 2) Past Experience in completing structural inspections of Bridges
- 3) Key Personnel assigned to the project
- 4) Costing of Proposal
- 5) Schedule

It should clearly understood that the City of Dryden has the right to assign weighing to each of the 5 above mentioned categories and if any proposal submitted fails to include any mandatory requirements as outlined in the Terms of Reference, the proposal is automatically disqualified.

The City of Dryden's Administration will assess the Consultant's proposal and will make a recommendation for consideration of Council. The selected Consultant will be required to provide and sign a Standard Ontario Professional Engineer's Agreement with the City of Dryden for his services on the Project. The

Agreement will include the Consultant's Proposal as part of the conditions along with these Terms of Reference.