PROCUREMENT NOTICE

February 25, 2019

Table of Contents

1 CONTEXT OF THE PROCUREMENT NOTICE

1.1 Subject of the procurement notice

The Jacques Cartier and Champlain Bridges Incorporated (JCCBI or the Corporation) recently began planning the original Champlain Bridge's deconstruction project, hereinafter "the Project", and shortly will launch a request for qualifications, followed by a request for proposal.

This procurement notice, which is addressed to any party interested in the realization of the Project, provides information on the context, the scope and the timeline of the Project. In the upcoming sections, you will find the following information with respect to the Project:

- Background;
- Description of the Structure;
- Condition of the Structure;
- Work to be carried out;
- Main Constraints;
- Structure of the Contract and Financial Information;
- Preliminary Schedule, and;
- Procurement Process.

2 PROJECT INFORMATION

2.1 The Jacques Cartier and Champlain Bridges Incorporated

As a manager of important infrastructure, The Jacques Cartier and Champlain Bridges Incorporated (the Corporation), established in 1978, is a federal Crown corporation responsible for the Jacques Cartier Bridge, the Champlain Bridge, the Champlain Bridge Ice Control Structure, the Île des Sœurs Bypass Bridge, the federal sections of Bonaventure Expressway and the Honoré Mercier Bridge, as well as the Melocheville Tunnel.

Every day, the Corporation ensures a safe drive for thousands of users by managing, maintaining and repairing these important infrastructures for Greater Montreal. The Corporation also ensures that these critical structures remain safe, fully functional and aesthetically pleasing both today and into the future. The Corporation conducts construction, rehabilitation and reinforcement projects on the infrastructure under its responsibility and oversees the operation and maintenance of these structures.

2.2 Context

The original Champlain Bridge was opened in 1962. It was initially conceived using prestressed concrete beams. This design was not tailored for the Quebec climate and did not anticipate the future use of road salts.

Originally, the structure did not include a drainage system to funnel ground water flow away from structural components. Moreover, the monolithic structure of the Bridge deck and beams prevented the substitution

of damaged elements. This resulted in increased degradation of the edge beams located on each side of the Bridge.

The problems associated with the original conception of the Champlain Bridge reduced the useful life of several structural components. The original Champlain Bridge has reached the end of its useful life, and its replacement was announced in 2011. The Government of Canada issued a call for tenders for the construction of the new Champlain Bridge, the new Nuns' Island Bridge and the federal section of Highway 15. The new Champlain Bridge is located downstream of the existing bridge and no construction phasing has been considered: the original bridge remains fully operational until traffic is transferred to the new bridge. The new Champlain Bridge is built according to the public-private partnership (P3s) procurement method, and Signature on the St. Lawrence Group (SSL Group) will be responsible for the maintenance thereof for 30 years. A plan showing the location of both bridges is available in ***Appendix 1***.

The transfer of traffic to the new bridge is planned for 2019, possibly during the summer months. Once the traffic has been transferred, it will be possible to start the deconstruction of the original Champlain Bridge. Due to its condition, the Bridge can no longer be used for transportation purposes, resulting in the need to take the structure down.

The Champlain Bridge deconstruction project is a high-visibility project, located in an urban environment that crosses a sensitive ecosystem. Therefore, certain environmental constraints will have to be considered through the various stages of the deconstruction work. The available work area on land is limited and, in some locations, residents are in close proximity. The river (Including the Grand Bassin and the Petit Bassin de la Prairie) is a fish habitat, where several special-status species can be found. It is therefore important to protect both the water quality and the fish habitat, notably by limiting temporary encroachments on the riverbed. In fact, any encroachment into the fish habitat must be compensated for by JCCBI. Furthermore, the bridge and surroundings thereof are frequented by several avian species and compensation plans are in place to relocate the nests of certain species. The Couvée Islands are part of the Migratory Bird Sanctuary, and no encroachment can be tolerated in that location. Time constraints, which vary from one sector to another, will also have to be respected.

A Targeted Environmental Analysis (TEA) of the deconstruction project is in the process of being carried out by the Owner. This study is intended to update the information contained in the new Champlain Bridge environmental assessment performed in 2013. This TEA will update the mitigation measures and performance objectives to be met, which will be included in the Request for Proposal. It is expected that this TEA will be ratified and signed by the responsible authorities before the closing of the Request for Proposal.

2.3 Description of the Structure

The original Champlain Bridge is a key axis for the Montreal area and the busiest bridge in Canada. It allows the crossing of the St. Lawrence River and of its Seaway, connecting Nun's Island to Brossard. Opened to traffic in 1962, the 3440 m long and 24.08 m wide bridge has six traffic lanes, three in each direction.

The bridge consists of two main structural systems. The approach spans of Sections 5 and 7 (50 spans) consist of prestressed concrete beams, while the spans of Section 6, which allow the crossing of the Seaway, consist of steel trusses (seven spans).

The original Champlain Bridge, as represented by the plan below, is divided into three sections:

- **Section 5**: this section runs between Nun's Island and the Seaway (± 2150m), and consists of 40 spans, three of which are above ground and the rest are above the river. The beams are supported by reinforced concrete hammerhead piers, with the footings resting on the bedrock. The deck consists of seven precast beams that are prestressed by post-tensioning;
- **Section 6**: this section constitutes the crossing of the Seaway (± 763.45 m). The section consists of steel trusses. The spans consist of four deck trusses. The main structure is of cantilever type with a suspended center span and consists of three trusses. The piers of Section 6 consist of two or three shafts which are connected at the top by arches. The foundations rest on the bedrock;
- **Section 7**: this section runs between the Seaway and Brossard (± 528.07 m). Like Section 5, the deck consists of seven precast beams that are prestressed by post-tensioning. Section 7 has ten spans. The beams are supported by reinforced concrete hammerhead piers and the footings rest on the bedrock.

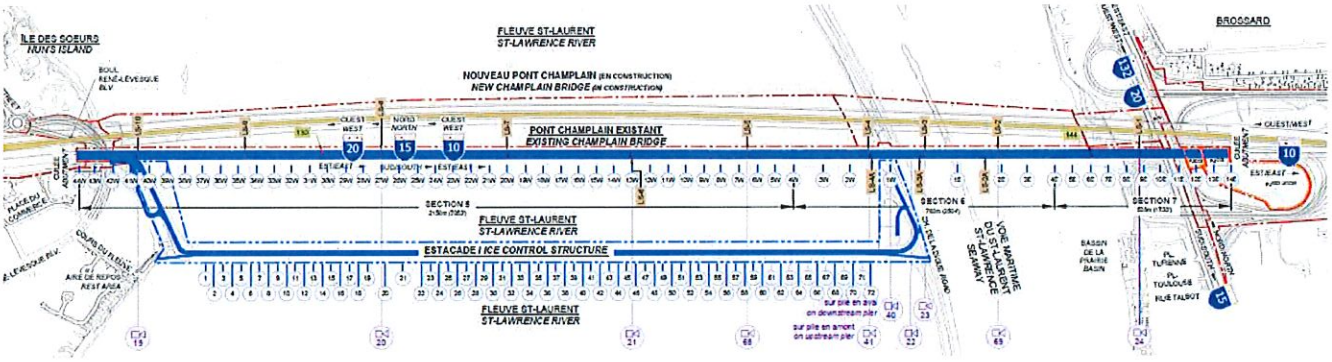

Figure 1 - Sections of Original Champlain Bridge

2.4 Condition of the Structure

Over time, the bridge has undergone numerous repairs and reinforcements to ensure the safety of users and the integrity of the structure. The prestressed concrete spans and the edge beams are the most deteriorated elements and are therefore those that have undergone the most significant repairs or reinforcements.

In recent years, several studies have been conducted concerning the condition of the structure and the reinforcements already in place. These studies are available on JCCBI's website, notably the « étude d'avant-projet portant sur la déconstruction de l'actuel pont Champlain ».

Below is a summary of the main reinforcements made on the prestressed concrete beams:

- **Type 1 external post-tensioning (EPT1) and Type 2 external post-tensioning (EPT2)**: one of the first reinforcements to be put in place was the addition of external post-tensioning (EPT) to the edge beams. First, Type 1 post-tensioning was added at the bottom footings of the beams. Subsequently, additional prestressing was required for certain beams and a second level of prestressing was added (EPT2) at the bottom of the beam web. This reinforcement type was applied to the edge beams and certain interior beams;

- **Type 1 queen post trusses (QP1)**: the queen post trusses (QP1) are reinforcements consisting mainly of prestressing bars placed under the edge beams. The prestressing bar anchor blocks are located along the prestressed beam web;
- **Type 2 queen post trusses (QP2)**: the Type 2 queen post truss consists of deviated sheathed and greased single strands, and was developed for spans whose vertical clearance above the road did not allow for the installation of the Type 1 queen post trusses. The system is an addition of prestressing through single strands whose anchor block is connected to the web of the prestressed beams. There are at least two types of QP2, one with 16 strands and one with 8 strands;
- **Carbon fiber (CFRP)**: carbon fiber reinforced polymer (CFRP) strips were generally installed on the two thirds at the ends of the edge beams to improve their shear capacity. Some interior beams have also been reinforced that way;
- **Span reinforcement system with shoring**: this system has been put in place for the spans where it is possible to put shoring under the beams. The system consists of steel columns that support the beams. The steel columns are based on shallow reinforced concrete footings. The span reinforcement system with shoring has also been used in combination with the QP2;
- **Modular truss**: modular trusses are steel trusses that are installed under the beams and designed to take all the loads of the edge beams whenever the need arises. Several types of modular trusses have been developed to be combined with the other reinforcements in place: standard trusses, trusses for QP1 and trusses for QP2;
- **Auxiliary beams**: when the vertical clearance does not allow for the installation of a modular truss and putting posts under the beams proves to be impossible, auxiliary beams are used. The system consists of two steel girders installed along the edge beams and connected by transverse post-tensioning.

The main reinforcements made in the diaphragms are the following:

- Addition of transverse post-tensioning;
- Carbon fiber (CFRP).

The main reinforcements made regarding the infill slab are the following:

- **Infill Slab Supports – Active System**: infill slabs are interconnected by prestressing cables. To reinforce them in certain spans, an active system consisting of sub-slab prestressing, with or without cradles, has been installed over the full width of the bridge;
- **Infill Slab Supports – Passive System**: the passive slab support essentially consists in a steel girder between the concrete beams to support the slab. This passive support system can only be positioned between two concrete beams.

The main intervention carried out for the steel spans in Section 6 is the following:

- Replacement of the original deck with a steel deck in the early 1990s. The original deck consisted of steel spacers and stringers supporting a concrete slab.

Finally, with respect to the piers, the main reinforcements are the following:

- **Addition of post-tensioning in the pier caps**: all concrete span pier caps were reinforced through the addition of post-tensioning. Three systems were installed: internal post-tensioning (addition of concrete with extra cover), external post-tensioning without sheath and external post-tensioning with sheath;
- **Shaft lining**: the shafts of the piers in Sections 5 and 7 have been lined with concrete, while certain piers in Section 6 were lined with steel;
- **Anchoring in the rock**: steel anchors have been added to the footings of some of the piles in Section 5.

2.5 Work to be carried out

JCCBI wishes to deconstruct the original Champlain Bridge, which has reached the end of its useful life.

The main work to be carried out as part of the Project includes the following:

- Deconstruction of the original Champlain Bridge;
- Off-site transportation of the materials;
- Waste disposal and recovery of materials, and;
- Site rehabilitation.

This work must be carried out keeping in mind sustainability and in line with JCCBI's mission and vision:

- **MISSION**: Ensure the mobility of users, the safety and the longevity of infrastructure using a systemic management approach based on sustainable development;
- **VISION**: Become a leader in major infrastructure management as an innovative expert, a mobility leader and a social and urban contributor.

2.6 Main Constraints

There are several constraints and requirements related to the Project and, more specifically, to the demolition work. These include the following:

- Physical constraints (workspace, access to the site and mobilization areas): JCCBI will do preparatory work aimed at promoting access (such work could potentially include the setting up of work jetties as soon as the selected company's mobilization work begins);
- Environmental constraints related to the various ecosystems and required mitigation measures, including:
  - physical environment: air quality, sound, contaminated soil, surface water, etc.;
  - biological environment: presence of maximum areas of encroachment. In addition, in some locations, work will be prohibited at all times (Migratory Bird Sanctuary – Couvée Islands) or at certain times (Saint-Lawrence Seaway). The methods and constrictions will need to be discussed with Fisheries and Oceans Canada (DFO) prior to implementation thereof;
  - water quality, fish habitat, avifauna, encroachment to be limited in an aquatic environment, passage for fish to be provided in the jetties, etc.;
  - human environment: this is a project with high sensitivity and visibility, during which it is necessary to limit nuisances in terms of noise, air quality, transportation, etc.;

- mitigation measures: federal authorities, notably the TEA, include a large number of mitigation measures that must be adhered to. The TEA includes mitigation measures similar to the environmental assessment carried out by Transport Canada (TC) in 2013 for the new bridge over the St. Lawrence river.

- Constraints due to the public services network in place on the bridge;
- Seasonal constraints for the work, including those related to work in water;
- Constraints related to navigation activities in the Seaway;
- Prohibition to use a blast demolition method.

In addition, certain requirements will be specified in the tender documents, notably in relation to the following elements:

- The permits required to carry out the work, as well as all other environmental permits required, will have to be obtained by the future contractor. JCCBI will do preparatory work to optimize the preliminary approaches with DFO and TC;
- Certain parts of the bridge (e.g. certain piers, in whole or in part) may need to be retained for environmental compensation purposes;
- The Project will have to be managed by an environmental management system which is ISO 14001 certified;
- The reuse or recovery of deconstruction materials will have to be taken into consideration in the development of deconstruction methods.

2.7 Structure of the Contract and Financial Information

- Financial compensation will be provided to the bidders who qualified during the Request for Qualifications process and whose proposals respect the Request for Proposal's requirements;
- For the contract, JCCBI is currently considering several delivery modes. JCCBI has not determined yet the optimal payment mechanism for the Project. Nevertheless, major milestone payments are currently the preferred approach.

2.8 Preliminary Schedule

A preliminary work schedule has been developed, as follows:

ESTIMATED SCHEDULE	
Request for Qualifications	March 2019 (10 to 12 weeks)
Request for Proposal	Summer 2019 (6 months)
Contract award	January 2020
End of the work	Beginning of 2023

2.9 Procurement Process

This project is subject to the Canadian Free Trade Agreement (CFTA) and the Canada-European Union Comprehensive Economic and Trade Agreement (CETA). The governance and procurement process will be structured according to the industry's best practices to ensure a fair, transparent and impartial treatment for all bidders. The procurement documents will be published on Merx.

The procurement process will unfold in two steps: the Request for Qualifications and the Request for Proposal. During the Request for Qualifications, the applicant must be able to provide the insurance and the guarantee required in consideration of the Project value.

Best regards,

Christian Desmars
Procurement director

APPENDIX 1 – LOCATION PLAN