FACT SHEET

DECONSTRUCTION IN THE ERA OF SUSTAINABLE DEVELOPMENT

DECONSTRUCTION OF THE CHAMPLAIN BRIDGE

Ponts JACQUES CARTIER + CHAMPLAIN Bridges

Canada

Deconstruction project

The Champlain Bridge has reached the end of its service life and will be deconstructed according to a sustainable development approach. This major project will last three years and has many components that are detailed in fact sheets on environmental protection, material reuse, and research and development. The deconstruction of the bridge will also free up space that will be used for recreation, tourism and commemorative purposes and that will include the Champlain Bridge Estacade. Another component called “Héritage Champlain” will get the community's creativity involved in the project.

Why is the bridge being taken down?

The deconstruction of the Champlain Bridge will begin in 2020. Inaugurated in 1962, this 3.4-km structure cannot be maintained due to design and drainage problems that caused premature deterioration from corrosion that attacked its essential structural components. This deterioration would only increase over the years.

The deconstruction will be an immense operation requiring rigorous planning to minimize the impact on the environment and the public and to effectively recover and reuse the bridge’s construction materials.

Work schedule

Spring 2019
Start of public meetings
Commissioning of the Samuel-De Champlain Bridge
Decommissioning of the original Champlain Bridge

Summer 2019:
Targeted environmental analysis completed

Winter 2020:
Start of design-build contract for the deconstruction

2022:
End of deconstruction of the Champlain Bridge
Redevelopment of available space and Champlain Bridge Estacade
Compensation work

Deconstructing a bridge in the era of sustainable development

In line with its values, JCCBI is pursuing a number of sustainable development initiatives with this project, including the reduction and compensation of greenhouse gases (GHG), material reuse and traceability, the development of spaces for the benefit of the community, as well as Envision recognition.

Transportation of materials

Materials will be transported by the river and by land, and mitigation measures will be set up to limit the impact on the public and the environment. Significant work will be done to ensure these materials are reused. A traceability protocol will be implemented so that the materials can be properly tracked.

Greenhouse (GHG) emissions

Throughout the deconstruction process, various actions will help reduce GHG emissions. A reflection process is underway on how to compensate for the remaining GHG emissions.

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A complex structure

The bridge is divided into three sections, as indicated by the numbers 5, 6 and 7 in the photo below. Sections 5 and 7 consist of concrete spans made of seven prefabricated beams with infill strips. Section 6, or the bridge's characteristic section that overhangs the St. Lawrence Seaway, is composed of steel trusses. The bridge deck rests on massive piers made of reinforced concrete.

Concrete deck

Dismantling the concrete spans is a great challenge given their particular design. A careful approach is also required to deconstruct the prefabricated girders with infill strips to maintain their structural integrity. Various reinforcement systems have been installed over time to maintain service levels and compensate for the impacts of corrosion. Removing these reinforcements adds to the complexity of the work phasing.

Steel deck

The steel deck has a total length of 450 m. Its longest span is 215 m and crosses the St. Lawrence Seaway. Deconstructing this portion of the structure poses a significant challenge and has a major constraint, as the work can in no way compromise activities on the seaway.

Piers

The deck is supported by giant piers made of a large volume of reinforced concrete. These massive components reach a maximum height of 30 m. Deconstructing the piers in the river requires special precautions along with deconstruction methods that will limit the impacts on the natural environment.

Envision recognition

JCCBI's team is aiming for Envision recognition, a system that evaluates the environmental and social components of infrastructure projects. The program sets out design criteria and a rating system to improve infrastructure project sustainability. Envision criteria will be used to evaluate five project areas: quality of life, project management, resources, ecology, and environmental footprint.

3 TECHNICAL CHALLENGES
- Structural integrity
- Transportation of materials
- Deconstruction methods

3.4 KM
Total bridge length

50 CONCRETE SPANS
These consist of 350 prestressed concrete beams that weigh 220 tonnes

7 STEEL SPANS
Composed of steel trusses

250 000 TONNES OF CONCRETE
From the deck and piers

25 000 TONNES OF STEEL
From the steel spans and reinforcements, including the large trusses under the edge girders

12 000 TONNES OF ASPHALT
From the road surface

Together, we can **advance innovation**

For more information, visit
champlaindeconstruction.ca