
FACTSHEET

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Ministry of Transportation and Infrastructure

Why a bridge instead of a tunnel?

Over the last three years, the project team considered and consulted on a number of options to replace the George Massey Tunnel – from replacing the existing tunnel with a new tunnel, to maintaining the existing tunnel and adding a bridge on the same or on a different path.

Ultimately, and following extensive technical analysis, with public and stakeholder input, the team decided that a bridge would be the best option. The following explains why.

Safety benefits of a bridge:

- Emergency response is much easier and safer on a bridge compared to a more confined space like a tunnel. Emergency responders were clear in consultation on their preference for a bridge over a tunnel.
- Compared to a new tunnel, a new bridge does not rely on lighting during daylight hours and there are no issues of transitions in lighting driving in and out of a tunnel.
- The bridge will provide a more comfortable environment for drivers. During consultation many users expressed a preference for the open driving experience of a bridge as opposed to a tunnel.
- It will also offer a better and safer travel experience for users, but particularly for cyclists and pedestrians who will be able to freely cross the Fraser River at this location for the first time ever in an open air environment. Currently, cyclists are shuttled by van and trailer through the tunnel for safety reasons.

Cost benefits of a bridge over a tunnel:

- The new bridge will be built to modern seismic standards, designed to withstand a 1-in-2475-year seismic event. Building a tunnel to the same required standards is a much more costly, complex and environmentally invasive process, involving river-bottom dredging and bringing in layers of sand, gravel and loose stone to reinforce the earth on-shore and in the Fraser River below the water.
- Unlike in the 1950s when the current tunnel was built, the pile driving equipment available today makes installation of deep-piled foundations for a bridge a practical and cost-effective solution. These foundations will make the bridge safe for a 1 in 2475 year earthquake.
- In contrast, construction of a new tunnel that meets modern seismic standards carries significant cost and risk:
 - For an immersed tube tunnel like we have today, the earth along the entire length of the tunnel would have to be reinforced using underwater stone columns, sand, gravel and riprap. This includes reinforcing along the sides and the bottom of the river.

- A bored tunnel may not be possible in the loose sands and clays found in this area. If possible, the loose sands and clays in the area would increase risk of shifting and settlement. To accommodate this, the tunnel tubes would need to be constructed even further apart, resulting in a longer connection to Highway 99 and adding to the cost of materials for construction, private property and agriculture requirements.
- A bored tunnel would need to be deeper than an immersed tube tunnel and would therefore be longer. In addition to the high risks associated with tunnel construction in soft soils, this additional length makes a bored tunnel much more expensive than other options.
- Long-term operations and maintenance costs of a new bridge will be lower than for a new tunnel because a tunnel would require, lighting, ventilation, sprinkler systems for fire suppression, and other life safety requirements for confined spaces.

Environmental benefits of a bridge over a tunnel:

- A new tunnel would require dredging of a deep trench in the bottom of the river, which would have a significant effect on the Fraser River environment and on marine traffic.
- By comparison, a new bridge can be constructed with minimal disturbance in the Fraser River, as the main piers will be on land, at the edge of the river, and then used as a base for construction, rather than in the river.
- Building a new bridge and removing the old tunnel also creates opportunities for environmental and community improvements to the Fraser River, and at Deas Island Park and Deas Slough because it removes highway traffic from Deas Island, which currently limits access between both sides of the park.

Community benefits of a bridge over a tunnel within the existing right-of-way:

- A new bridge can be built within the existing right-of-way so will require less private property and have less impact on agriculture, parks, recreation and the environment.
- A new tunnel would have to be built on a new alignment, upstream or downstream, to keep the existing tunnel functioning during construction and to reduce the risk of damaging the existing tunnel while construction is underway. This would require a significant amount of private property acquisition to build a new road right-of-way.
- Effects of a new tunnel would include agricultural and park land, residential and commercial properties, a new large bridge in Deas Slough and effects on marine traffic in the Fraser River.
- The project team anticipates that building a bridge may allow government to return some surplus highway right-of-way to farming.

Media Contact:

Media Relations
 Government Communications and Public
 Engagement
 Ministry of Transportation and Infrastructure
 250 356-8241

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