

Comparison of the Proposed Scenarios for the Prospect Point Underpass Structure

Listed below please find a brief summary of the issues and implications pertaining to the two proposed scenarios for the above-noted structure.

The two scenarios, labelled [Scenario A](#) and [Scenario B](#) are graphically presented in cross-sectional views and plans on the drawings which accompany this summary.

Scenario A, as recommended by the Heritage Commission, retains the existing roadway span (barrel arch) for Park Drive and modifies the Stanley Park Causeway in addition to other parts of the underpass structure to accommodate the widened Causeway and sidewalks.

Scenario B, as proposed by BCTFA involves the replacement of the existing span (barrel arch) portion of the underpass structure with a new, wider bridge superstructure which will accommodate the widened Causeway and sidewalks while preserving other parts of the Prospect Point underpass structure.

It could be argued that Scenario A as presented, with new side tunnels, ramps and retaining walls alter the look of the underpass and surrounding area in a more severe way than Scenario B. The Scenario A modifications convert the appearance of the underpass into that of a viaduct-type bridge and the concept of preserving a heritage structure would seem to be somehow lost. Furthermore, construction of the sidewalks and retaining walls would result in removal of the majority of the vegetation within the Causeway embankment cut in this area as well as the removal of numerous trees (including at least one, maybe more, significant sized trees) at the top of the cut. The root systems of other trees may also be severely impacted, and these trees may not survive.

On the technical side of the comparison between these two scenarios, the following observations can be made:

Under Scenario A

- Due to the shape of the existing structure, specifically the barrel arch shape, the widened Causeway will not have sufficient vertical roadway clearance at the curbs - therefore the Causeway must be lowered. Lowering the Causeway by up to 800mm presents one of the most challenging and costly components of this scheme. Apart from the inordinate extent of the work involved, which is estimated to require 210m of the Causeway to be removed and lowered, the cost of this work will be exceedingly high reflecting the fact that the traffic will have to be maintained without the benefit of prolonged closures. However this work is done, severe traffic disruptions will result from the scenario.
- Retaining the existing structure will require a Causeway realignment. This will necessitate the removal of a major portion of the already completed sidewalk on the east side of the Causeway which compound the technical issues outlined under Causeway lowering above.
- Utility lowering or relocation represents another significant challenge associated with the

Causeway lowering work. All of the existing utilities, some of which are concrete encased would need to be lowered or relocated. Time constraints will reflect in the cost of this item.

- Underpinning and retrofit of the foundations of the existing structure would be required as a result of lowering the Causeway. This is very specialized work which would need to be done in conjunction with the Causeway lowering. It is expected that, apart from the underpinning work under each side of the barrel arch, some strutting across the Causeway would be required to compensate for the loss of the soil resistance due to the Causeway lowering.
- Tunnelling through the wing walls for new pedestrian/cyclist sidewalk would likely be done by mining techniques in order to maintain traffic on the Prospect Point Drive above. Lots of unknowns, with high exposure risk would be reflected in the costs for these tunnels. In addition waterproofing, lighting and security monitoring installations within the tunnels would add to the cost.
- The construction of retaining walls adjacent to the sidewalks leading to the new tunnels would be required over an extensive length, likely on both sides of the sidewalk. Apart from the railings, which would be mandatory, additional lighting may also be required.
- General regrading of the existing vegetated slopes would be required (large number of daffodils on slope).

Under Scenario B

None of the items of work above would be required, but at least two specific technical issues to add to the complexity of this scenario:

- Staged construction. The span replacement would be done in two stages in order to maintain the vehicular and pedestrian traffic on the Prospect Point Drive.
- Demolition. Again done in two stages.

In addition to the technical issues associated with the two scenarios, other impacts and implications are:

Scenario A

- The majority of the work under this alternative would be done on the Causeway or in very close proximity to the Causeway. The traffic management would add to the difficulty and would certainly be reflected in the costs. With a limited number of weekend closures, the costs may escalate and the impact to traffic will be substantial.
- The security aspect of the sidewalk tunnels is always a concern but even more so in a relatively remote location surrounded by heavy brush. This issue is of a particular concern and may not be acceptable to the public.
- Direct and indirect impact will adversely affect trees located along this section of Causeway.

Scenario B

None of the above are involved.

Cost comparisons between these two scenarios are:

- **Scenario A** - The estimated cost of \$3.0 to \$3.5 million are listed in the Heritage Commission report appears to be rather optimistic in view of the technical difficulties and the limited engineering work undertaken to develop the feasibility of this scenario. Costs could easily exceed the \$3.5 million value and could reach the \$5.0 million level.
- **Scenario B** - The presented figure of \$1.5 to \$1.6 million is Class A construction cost based on a detailed design. The cost of construction staging and demolition is included.