ITE / Partnership for a Walkable America
Submission for 2003 Pedestrian Project Award
June 1st, 2003

FALSE CREEK PEDESTRIAN AND CYCLIST CROSSINGS STUDY

Project Objectives And Results

This submission for the Institute of Transportation Engineer's and the Partnership for a Walkable America 2003 Pedestrian Project Award describes the study that was conducted to analyze and identify the need and potential means for improved recreational and commuter pedestrian and cyclist crossings across False Creek in Vancouver, British Columbia. The scope included determining the existing and latent non-motorised demand, developing conceptual designs and preliminary cost estimates, and assessing the impacts of alternatives as they related to existing transportation facilities, land use, and communities.

Over 35 pedestrian and/or cyclist improvement options were generated ranging from upgrading existing facilities to creating new crossings. A screening process was used to determine a short list of options and a comparative assessment was performed based on the following criteria: Usage, Quality of Trip, Cost, Traffic Impacts, Neighbourhood Integration, and Urban Design/Appearance.

The study findings were used to develop a short and long term strategy to improving the safety and convenience of pedestrian and cyclist crossings across False Creek, including the priority and need for additional studies and sources of capital funding. In general, the study identified that it would be worthwhile to do a major crossing enhancement across False Creek in each bridge corridor over the long term.

Project Partners

This feasibility and design study was lead by City of Vancouver Engineering, Planning, and Park Board staff in partnership with a consultant team (Delcan Corporation in association with IBI Group, Ward Consultating Group, and dpl Consulting). Over 25 stakeholders representing a broad spectrum of the most affected and concerned groups were selected to participate in the study including: Putting Pedestrians First, Better Environmentally Sound Transportation, Vancouver Area Cycling Coalition, BC Coalition of People with Disabilities, and the Downtown Vancouver Business Improvement Association.

Project Cost and Duration

The False Creek Pedestrian and Cyclist Crossings Study was completed in just over a year for approximately $100,000, not including staff time. Actual costs included advertising and hosting three public open houses, consultant team fees, origin and destination surveys, and manual pedestrian and cyclist counts on the existing False Creek Bridges.

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INTRODUCTION

Located in southwestern British Columbia, the City of Vancouver and its 20 neighbouring municipalities are collectively known as Greater Vancouver, home to over two million people. With an estimated population of 560,000, Vancouver is the primary city of western Canada and the country's international face to the Pacific Rim. Surrounded by water and mountains on three sides, Vancouver is a very scenic city that has consistently been rated as one of the most liveable cities in the world.

The City of Vancouver is committed to improving pedestrians and cyclists' comfort and safety, including providing a safe and effective network of pedestrian and cycling routes to its Downtown Peninsula. The City's 1997 Transportation Plan included many initiatives to support an increase in walking and cycling (www.city.vancouver.bc.ca/engsvcs/transport/plan). In the morning peak period, non-motorised traffic already represents 11% of trips to the Downtown Peninsula. The City's target for 2021 is to increase walking and cycling trips during the peak period to 14%. In addition, promoting and creating pedestrian and cycling routes were important elements in the City's recently approved 2002 Downtown Transportation Plan (www.city.vancouver.bc.ca/dtp).

Presently, non-motorised users are able to cross False Creek into Downtown by use of three high-level bridges, or by private ferry systems. While these existing facilities are functional, many enhancements to the existing False Creek crossings would improve access from adjoining neighbourhoods and the safety and convenience to pedestrians and cyclists.

Figure 1: False Creek and Vancouver's Downtown Peninsula

The False Creek Pedestrian and Cyclist Crossings Study (www.city.vancouver.bc.ca/falsecreek) was conducted to analyze and identify the need and potential means for improved recreational and commuter pedestrian and cyclist crossings across False Creek. The scope included determining the existing and latent non-motorised demand, developing conceptual designs and preliminary cost estimates, and assessing the impacts of alternatives as they related to existing transportation facilities, land use, and communities.

The study was lead by City of Vancouver Engineering, Planning, and Park Board staff in partnership with a consultant team (Delcan Corporation in association with IBI Group, Ward Consultating Group, and dpl Consulting). Over 25 stakeholders representing a broad spectrum of the most affected and concerned groups also participated in the study including: Putting Pedestrians First, Better Environmentally Sound Transportation, Vancouver Area Cycling Coalition, BC Coalition of People with Disabilities, and the Downtown Vancouver Business Improvement Association.

EXISTING CONDITIONS

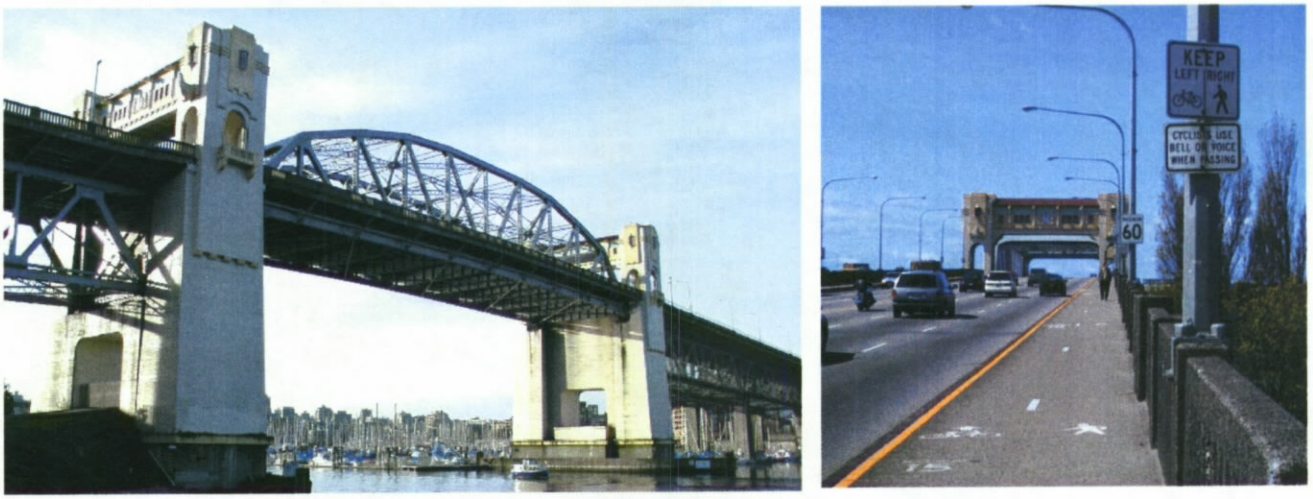


Figure 2: Burrard Bridge

Figure 3: Granville Bridge

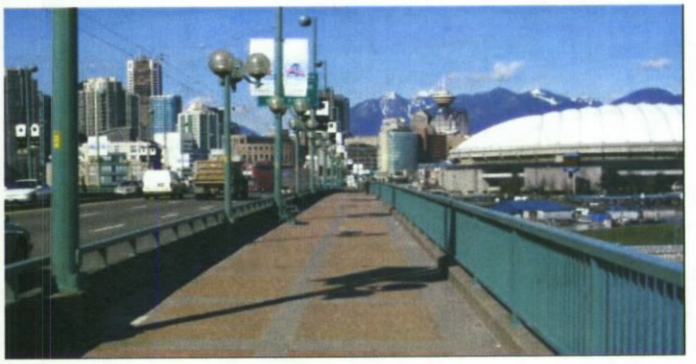


Figure 4: Cambie Bridge

Presently, approximately 50% of non-motorised traffic crossing False Creek use the Burrard Bridge, 35% use the Cambie Bridge, and 15% use the Granville Bridge. On a typical weekday, there has been approximately 30% growth between 1996 and 2002 and the total number of pedestrian and cyclist trips across False Creek are now over 8,000 per day.

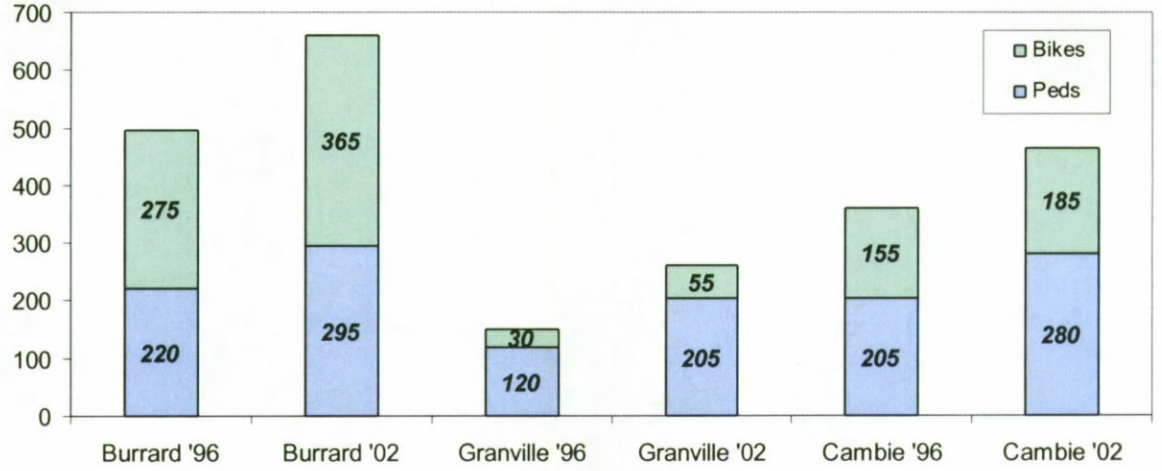


Figure 5: Two-Way Pedestrian and Cyclist Peak Hour Volumes

Current demand is becoming problematic given the mixed use on the provided sidewalks, the two-way usage of the existing facilities, and the existing sidewalk capacities. Given the results of traffic counts conducted during the most recent transit strike (i.e. 300% increase as compared to the base 1996 conditions), there appears to be no lack of latent demand if the walking and cycling conditions across False Creek became a more attractive mode

To develop a better understanding of the existing demand, the City conducted an extensive origin/destination survey of pedestrians and cyclists in May 2001. While the magnitude of the data did not represent actual conditions due to the transit strike, the relative results of the survey were useful in determining what the purpose of trip and origin/destination patterns are for pedestrians and cyclists traveling across False Creek. Findings indicated that 76% of non-motorized users surveyed were commuting to work while 11% were recreational users and the remaining 12% were making a trip across False Creek for other miscellaneous reasons.

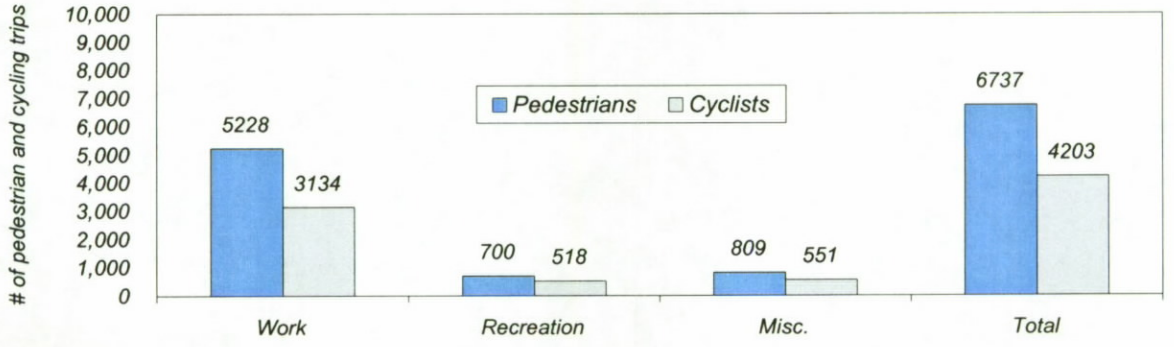


Figure 6: Pedestrian and Cyclist Trips by Purpose of Trip

The following figure is a sample of one of the many geographical maps that were created to further illustrate some of the origin and destination patterns.

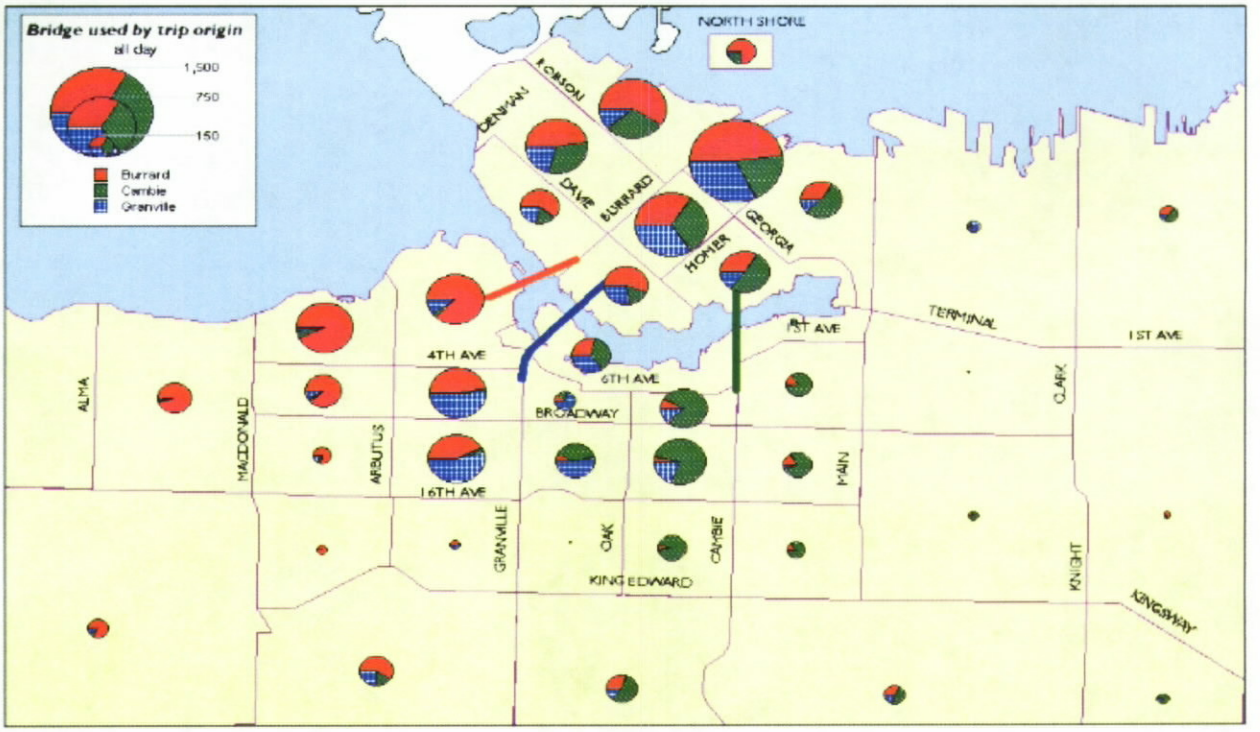


Figure 7: Bridge Used Across False Creek (O/D Surveys – May 2001)

OPTION DEVELOPMENT

The public, staff, and the consultant team generated over 35 pedestrian and/or cyclist improvement options ranging from upgrading existing facilities to creating new crossings, improving accessibility versus adding capacity, and providing recreational versus commuter oriented improvements. The challenge was to then consider each of these options individually and develop a process whereby the options could be 'screened' to best determine which options should be carried forward to the subsequent development phase of the study. Options that would not be short listed from the screening process would remain as potential improvement options that could be examined at a future date.

The screening process itself consisted of two levels. The first level of the screening process involved prioritizing the options in terms of feasibility and the study objectives. The second level involved performing a comparative assessment of the various improvement options based on the following six broad categories:

- ✓ Usage (demand, purpose, demographics, capacity, connectivity)
- ✓ Quality of Trip (travel time, efficiency, access, user safety, user comfort)
- ✓ Cost/Construction (capital, operating, user, environmental impacts, disruption)
- ✓ Traffic Impacts (private vehicles, transit, marine, ferry operators)
- ✓ Neighbourhood Integration (properties, land use, environmental, views, shadowing)
- ✓ Urban Design/Appearance (heritage, aesthetics, COV image, public space)

Based on the results of the screening process, a total of 18 out of 37 improvement options were carried forward for further assessment. To better understand the relative scope of the proposed improvements, the 18 remaining options were classified as either being major crossing options (7 options) or local improvements (11 options). Major crossing improvements involved increasing the existing pedestrian and cyclist capacity across False Creek while local improvements involved improving the access or connectivity to the existing crossings.

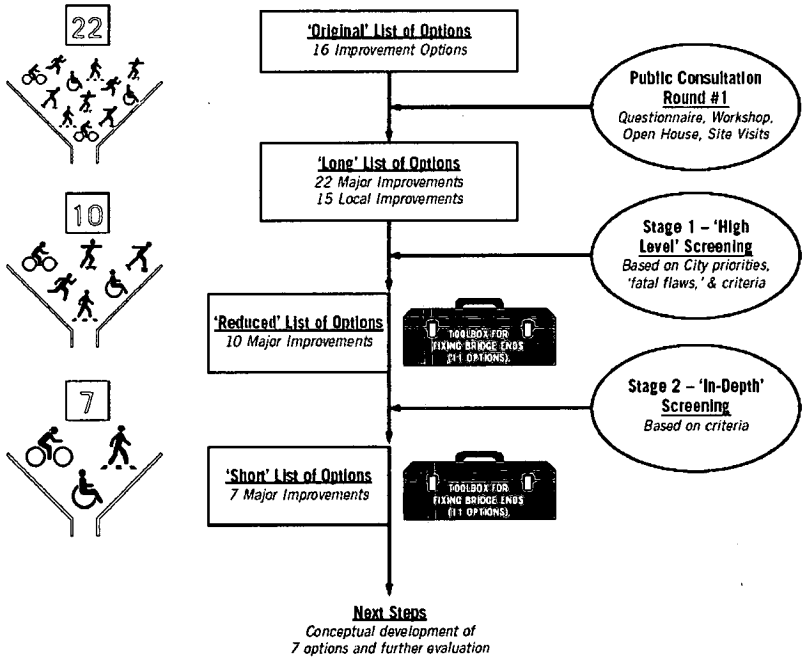


Figure 8: The Option Development and Two-Level Screening Process

The following is a brief description of each of the 7 major crossing improvement options:

- ✓ Burrard Bridge:
  - o Outward Sidewalk Extensions
  - o Inward Sidewalk Widening (Reduce the 6 lanes on the bridge to 5)
  - o Low Level Crossing Beneath the Bridge
- ✓ Granville Bridge
  - o Mid Level Crossing Beneath the Bridge
  - o Reduce the Number of Lanes to Provide Separate Bike Lanes
- ✓ Cambie Bridge
  - o Outward West Sidewalk Extension
  - o Adjust Lanes to Provide Southbound Bike Lane

The scope of work of the original study only provided for a limited number of the 7 major crossing options to be carried forward for detailed study. As such, subsequent design work concentrated on the evaluation and conceptual development of the five Burrard and Granville bridge major crossing improvement options. While absolutely necessary, the review of the two Cambie corridor options was deferred initially given that the significant increase in pedestrian and cyclist demand would occur in the future.

Figure 9: "Old Ideas, New Ideas, Your Ideas" Presentation Board for Public Open House

OVERALL STRATEGY

Overall, the process was an extremely valuable exercise in generating an impressive number of options and many were found to be worthwhile improvements to how the non-motorised public could make their way across False Creek and therefore should not be forgotten. In the long term, the study identified that it would be worthwhile to do a major crossing enhancement in each bridge corridor. As such, the study findings were used to develop the following strategy for improving the safety and convenience of pedestrian and cyclist crossings across False Creek:

- ✓ Improve the safety and capacity of pedestrian and cycling routes along the three bridge corridors (Burrard, Granville and Cambie)
- ✓ Identify and include street, bridge end, and Seawall connections as part of any proposed improvements to the bridges
- ✓ Favour solutions that optimize usage, safety, quality of trip, cost, and minimize negative impacts on traffic, heritage, urban design and neighbourhoods
- ✓ Support and encourage water-borne transportation to serve the diverse travel needs
- ✓ Undertake major improvements to the pedestrian and cycling environment on the deck or upper level of the Burrard Bridge 1st, Granville corridor 2nd, and Cambie 3rd with a report back for confirmation of these priorities after completion of the work on the Burrard Bridge

BURRARD BRIDGE CORRIDOR

As part of the overall strategy, Burrard Bridge was identified as the highest priority to improve the pedestrian and cycling environment and capacity across False Creek. The existing high pedestrian and bicycle demand on the Burrard Bridge and safety issues that persist due to the limited width and shared usage of the sidewalk clearly needs to be addressed now. Future increases in demand will only exacerbate these existing capacity and safety issues.

Low Level Crossing Beneath the Burrard Bridge

While a lower level option could work better for recreational users as it better connects the north and south seawalls, the priority for improvements is at the deck level of the bridge where commuter pedestrian and cyclist trips are, and will always be higher than recreational trips. As a low level crossing underneath the Burrard Bridge would be a "live" bridge that would open and close for marine traffic, the effective capacity of the crossing would be reduced whenever the bridge opens. A preliminary survey conducted on a sunny day in the summer of 2001 indicated that as many as 15 to 25 boats per hour would necessitate opening of the bridge.

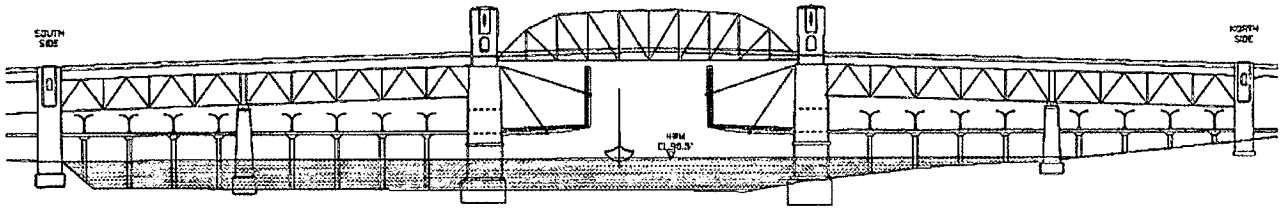


Figure 10: Burrard Bridge Conceptual Low Level Major Crossing Option – Open Position

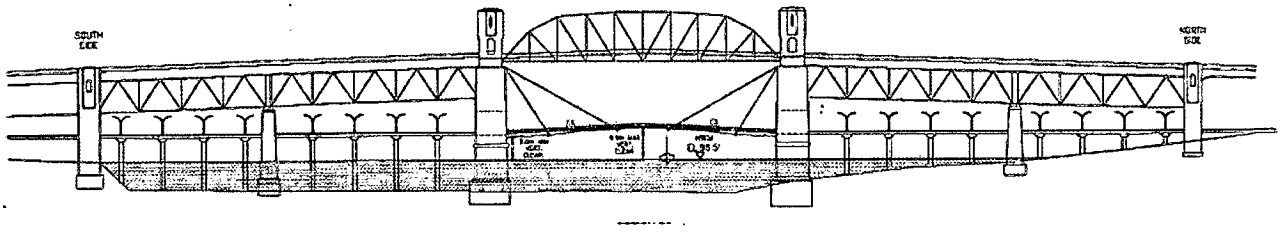
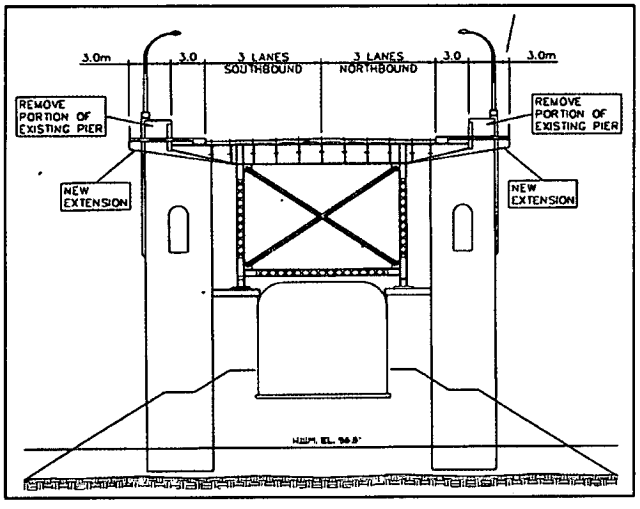


Figure 11: Burrard Bridge Conceptual Low Level Major Crossing Option – Closed Position

Additional analysis of the bridge opening and closing procedures indicated that it would take approximately 6 to 8 minutes to open and close the bridge for marine traffic. This delay combined with the potentially high number and randomness of marine traffic entering and exiting False Creek may deter users from this route as compared to the other options short-listed in the study. Another concern with a drawbridge option is that it requires operating costs (staffing and maintenance) estimated to be a minimum of $350,000 per year.

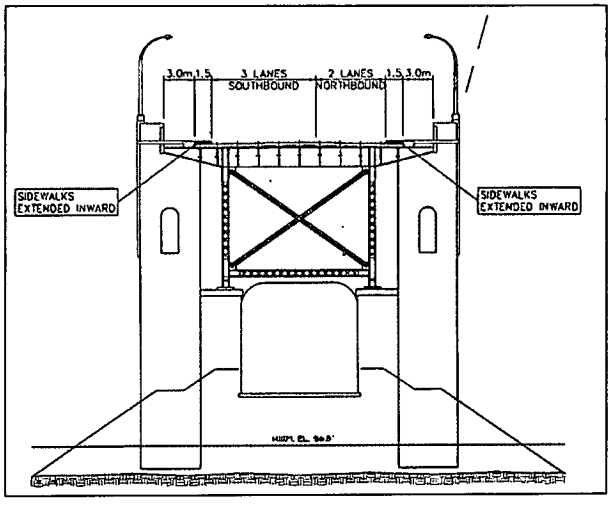
Deck Level of the Burrard Bridge

The following figures highlight the two deck level options for the Burrard Bridge Corridor:



Additional Capacity = 6 m (3m each side)
Capital Cost = $10.1 million

Figure 12: Outward Sidewalk Extensions



Additional Capacity = 3 m (1.5m each side)
Capital Cost = $3.25 million

Figure 13: Inward Sidewalk Widening (Reduce the 6 lanes on the bridge to 5)

Whatever improvements are made to the pedestrian and bicycle facilities to the Burrard Bridge should be considered permanent and long term. It is not unreasonable to expect that these improvements must meet the future transportation needs of the public in this corridor for the next 40 or 50 years.

Further, the bridge railings and lighting have to be replaced regardless of the ultimate design treatment because of their deteriorating condition. In conclusion, it was not recommended to proceed further with the inward sidewalk widening, which narrows the bridge deck from 6 lanes to 5, to the next stage of design development, for the following reasons:

1. Narrowing the bridge by one vehicle lane may not serve the long term transportation needs of this corridor to and from the Downtown Peninsula in terms of:

- ✓ Preserving existing road capacity and future flexibility for transit and/or vehicular traffic.
- ✓ Reducing the level of service for transit, goods movement vehicles, and general purpose traffic crossing the bridge.

2. Widening the sidewalks inward or providing bike lanes may be problematic and not adequately resolve the existing pedestrian and bicycle issues:

- ✓ The 1.5 metre bike lane widths would not provide room for faster cyclists to pass slower cyclists without encroaching into the adjacent vehicle lane
- ✓ The modest increase in width may not provide sufficient capacity for future increases in pedestrian and cyclist demand.

- ✓ The effectiveness of using the area through the centre of the bridge must be questioned. Cyclists would be riding between relatively fast moving vehicles and the centre span structure. This would be a very poor quality of trip for many users. It is likely many would choose to stay on the existing sidewalk, thus not resolving the existing situation.

Given that the Burrard Bridge was given the highest priority for improvements across False Creek, development of a more detailed and technical design that will provide additional sidewalk capacity at the deck or upper level of Burrard Bridge has been ongoing. The goal of this next step is to select a preferred design alternative and to then proceed to construction.

GRANVILLE BRIDGE AND CAMBIE BRIDGE CORRIDORS

The mid-level option suspended beneath the Granville Bridge would be a significant asset to improving access between Granville Island and the downtown and, from a recreational perspective, be a fairly direct connection between the north side and south-side seawalls. To determine if the option was feasible from a structural, geometric and urban design perspective, further study was also completed for this mid-level Granville option. While further pursuing of funding opportunities and stakeholder input is recommended before this option proceeds to detailed design and construction, preliminary designs have demonstrated that pedestrian and cyclist improvements on this bridge are feasible, functional and potentially aesthetically attractive.

Subsequent to completion of the False Creek Pedestrian and Cyclist Crossings Study, development of conceptual designs and cost estimates have also been completed for the Cambie Bridge Outward West Sidewalk Extension as part of the Southeast False Creek planning process. Preliminary findings indicate that there is sufficient reserve strength for widening the west sidewalk including allowing the use of concrete thereby ensuring that the existing character of the bridge can be retained. As recommended in the overall strategy for improvements, the identification and analysis of bridge connection options was also completed.

SUMMARY AND CONCLUSION

The False Creek Pedestrian and Cyclist Crossings Study was a useful exercise for the City of Vancouver to undertake to identify the need and priority for improved non-motorised crossings across False Creek. The study concluded that over the long term it would be worthwhile to do a major crossing enhancement across False Creek in each bridge corridor. Based on the approved overall strategy for improving the safety and convenience of pedestrians and cyclists crossing False Creek, further design work on each bridge corridor has helped each respective enhancement on Burrard, Granville, and Cambie bridges move closer towards implementation.

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