5752-3

CITY OF VANCOUVER
ENGINEERING SERVICES
T.R. Timm, P.Eng., General Manager/City Engineer

File Number: 120616

# MEMORANDUM

July 6, 2005

TO: Mayor and Council

CC: Judy Rogers, City Manager
Syd Baxter, City Clerk

FROM: Tom Timm, General Manager

SUBJECT: Burrard Bridge Report # 2877

Refers to Item #1
Transportation & Traffic
July 19, 2005

At the June 28, 2005 meeting of the Standing Committee on Transportation and Traffic a number of questions were raised regarding issues related to report #2877, *Burrard Bridge Sidewalk Capacity Improvements for Pedestrians and Cyclists*. This memo addresses those issues. Further delegations and Council's deliberations on this report have been scheduled for July 19, 2005.

## Option Benefits

The report discusses the weaknesses of the various options but does not specifically discuss benefits. It should be stressed that sidewalk widening, lane re-allocation or, if viable, an under-slung bike path would each provide excellent facilities for pedestrians and cyclists using the Burrard Bridge. The differences in the options are greatest in how they treat other aspects of the bridge (e.g. heritage) or other bridge users (e.g. transit riders, car drivers, boaters). There are no substantive differences in the benefits the three options provide to cyclists and pedestrians.

## Cost Estimates

The cost estimates for the sidewalk widening options were prepared in 2002 by the engineering and architectural consultants who developed the various sidewalk widening options. They represent the most accurate estimates possible given the level of design that has been done to date. Final detailed design (i.e. Recommendation A) would be required to yield more accurate cost estimates.

No such cost estimate has been done for the under-slung option, as the design is only conceptual at this time. Based on the estimates developed for the sidewalk widening, we believe that this option will cost over $15 million to build (2002 dollars).

The construction costs associated with the lane re-allocation are predominantly the cost of replacing the outside railings, which is approximately $2.5 million. Other costs bring the total to an estimated $3 million.

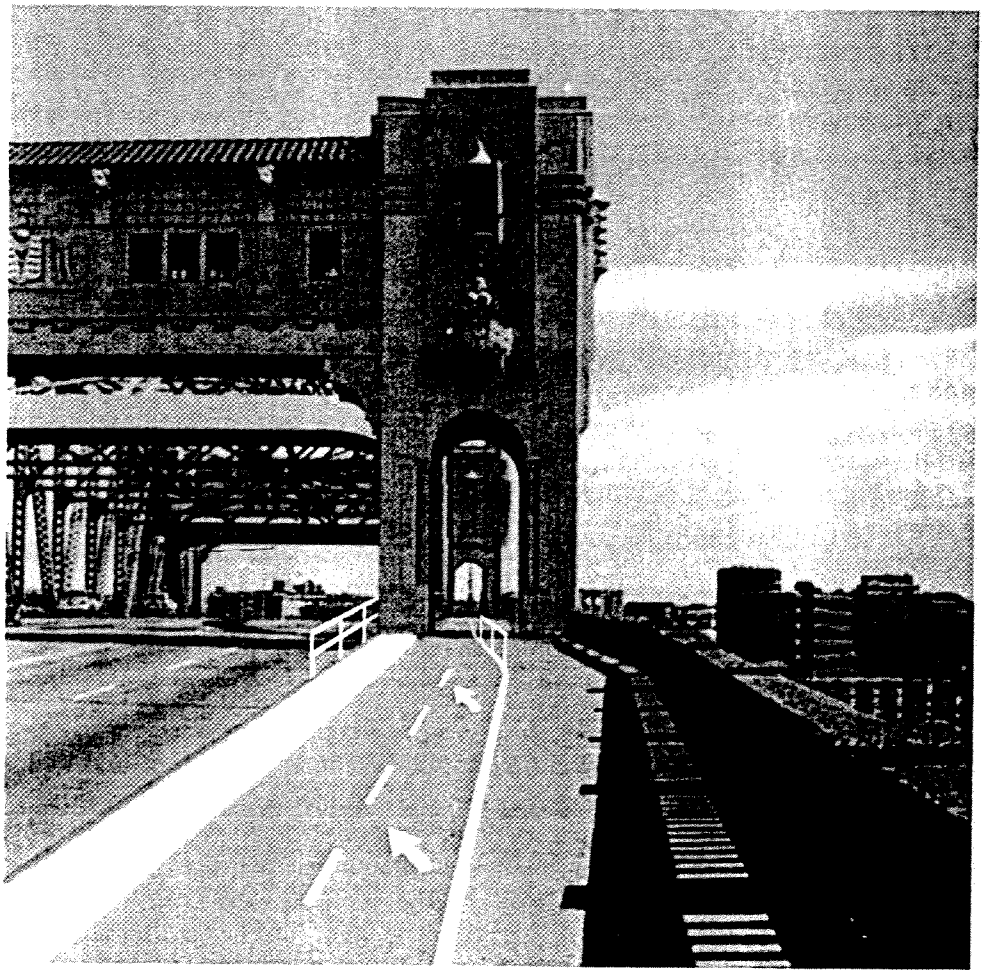
Since 2002, construction costs for similar work have increased 10-20%.

## Sidewalks through Towers ("pinch points")

The Burrard Bridge report does not provide details of proposed sidewalk treatments at the "pinch points" of the recommended sidewalk widening option. The figure below shows a concept which includes:

1. pavement markings to direct cyclists into single file as they approach the portals
2. a localized curb-side railing to protect cyclists from vehicular traffic
3. a localized railing between the cycling and walking paths to keep pedestrians from straying into the bike path as the sidewalk narrows, if it found to be necessary

These treatments are designed to address safety concerns at this location while maintaining the integrity of the main bridge towers.

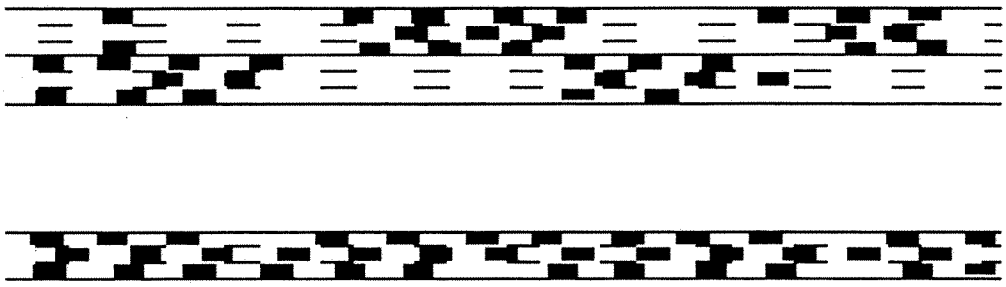


In contrast to a typical intersection, this treatment provides for a continuous flow of cycling and pedestrian traffic and physically separates user groups where a risk of conflict exists. The

"pinch points" are not considered to be a significant detriment to either cyclists or pedestrians. They do not represent a safety concern.

## Bridge Capacity

The vehicular capacity of a bridge is governed by the number of lanes and by the ability of the connecting road network to provide access and egress to and from those lanes. In the case of the Burrard Bridge, that connectivity is governed by intersections which allow north/south traffic onto and off the bridge roughly half the time - the remaining time being given to east/west traffic. The result is platoons of vehicles separated by gaps in traffic. In contrast, the Lions Gate Bridge, which carries similar traffic volumes, is fed from the north by a highway interchange and from the south by a 700 m transition from the 7 lanes on Georgia Street. This allows traffic to enter the 3-lane bridge/causeway section in a continuous stream. The effect of this on the bridge capacity is illustrated below.



Because of this platooning effect, bridges with bridgehead traffic signals will have roughly half the vehicle capacity of similar bridges with free-flow approaches.

## Bridgeheads and Traffic Analysis

All of the bridge options discussed in the report would require changes to the bridgehead intersections to accommodate proposed new cycling and pedestrian facilities. Although the report does not describe precise intersection details (e.g. lanes widths, exact curb locations), intersection configurations and signal timings were developed for each option that was subject to computer modelling. The results of the modelling as stated in the report were based on these optimized intersections, not on the existing intersection configuration and signal timing. This represents the best analysis possible at this time.

Once Council has selected an option, staff would complete the detailed design of intersection changes and connections to other facilities to further improve cyclist and pedestrian safety and convenience. These changes will include the elimination of the right-turn slip lanes at Burrard and Pacific.

Any questions regarding this project can be directed to David Rawsthorne in the Neighbourhood Transportation Branch (604-873-7343).

Tom Timm, P.Eng.
General Manager of Engineering Services

DR/dr