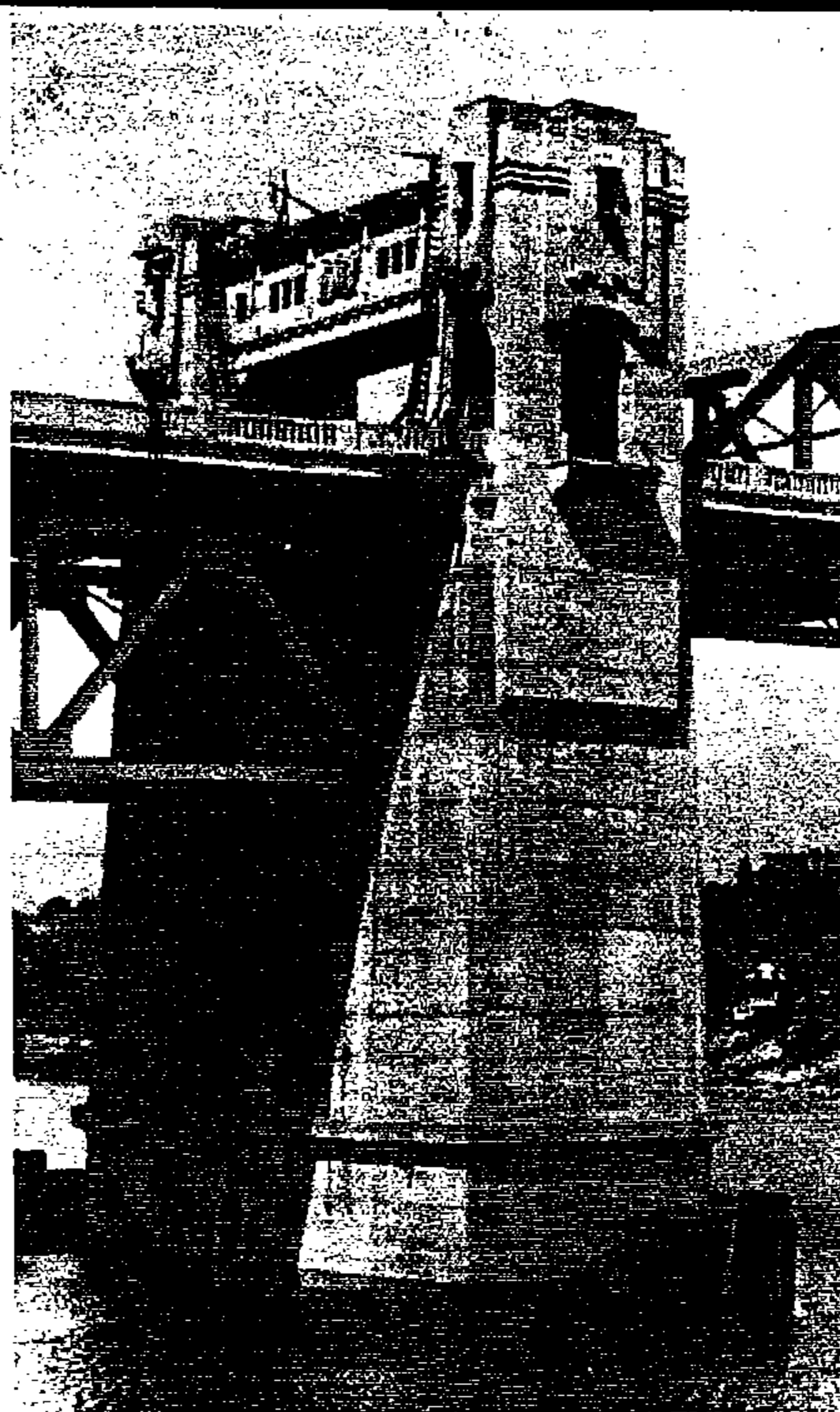


BURRARD BRIDGE UPGRADE

REDUCED OPTIONS

Information Package

Fall 1995

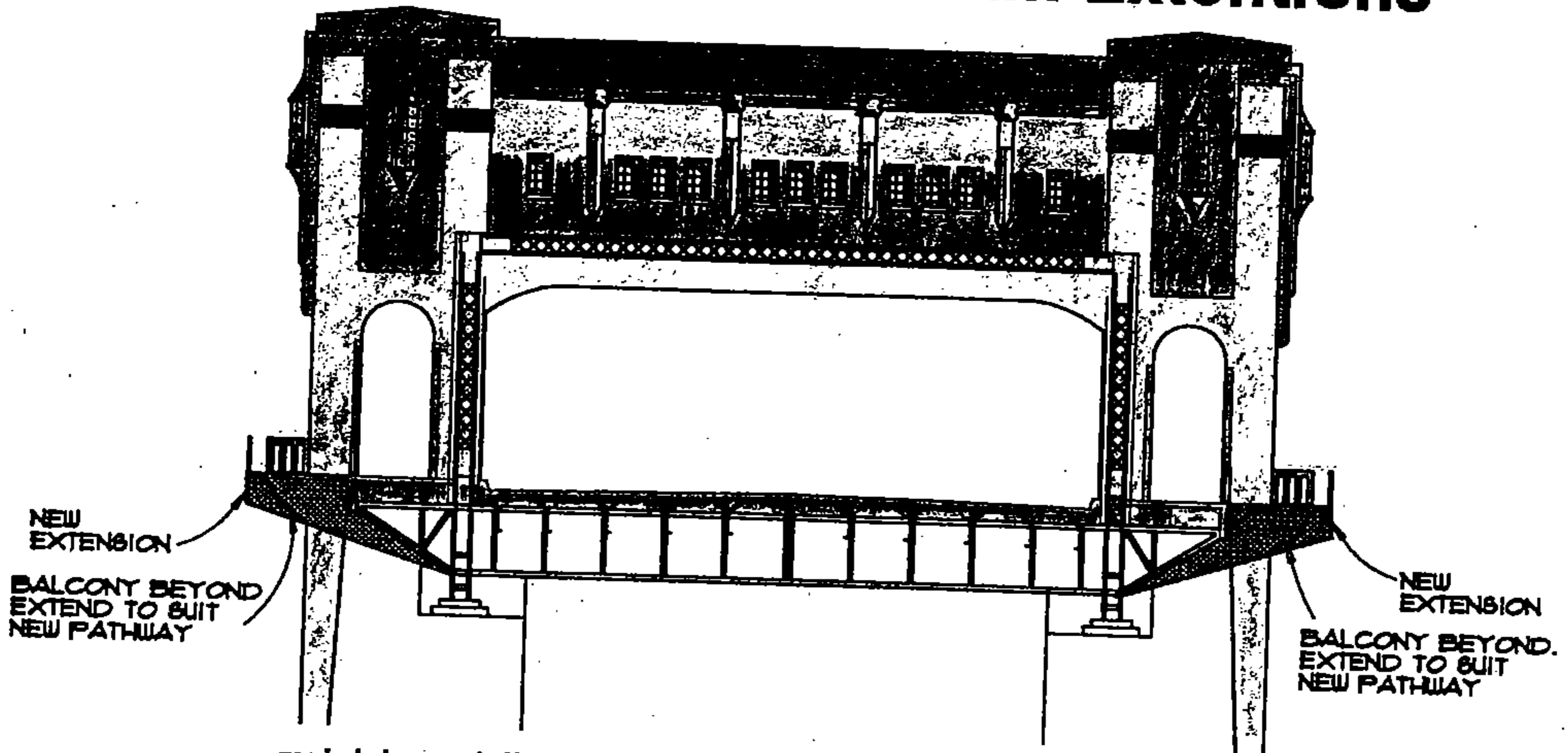


BURRARD BRIDGE

OPTION 1

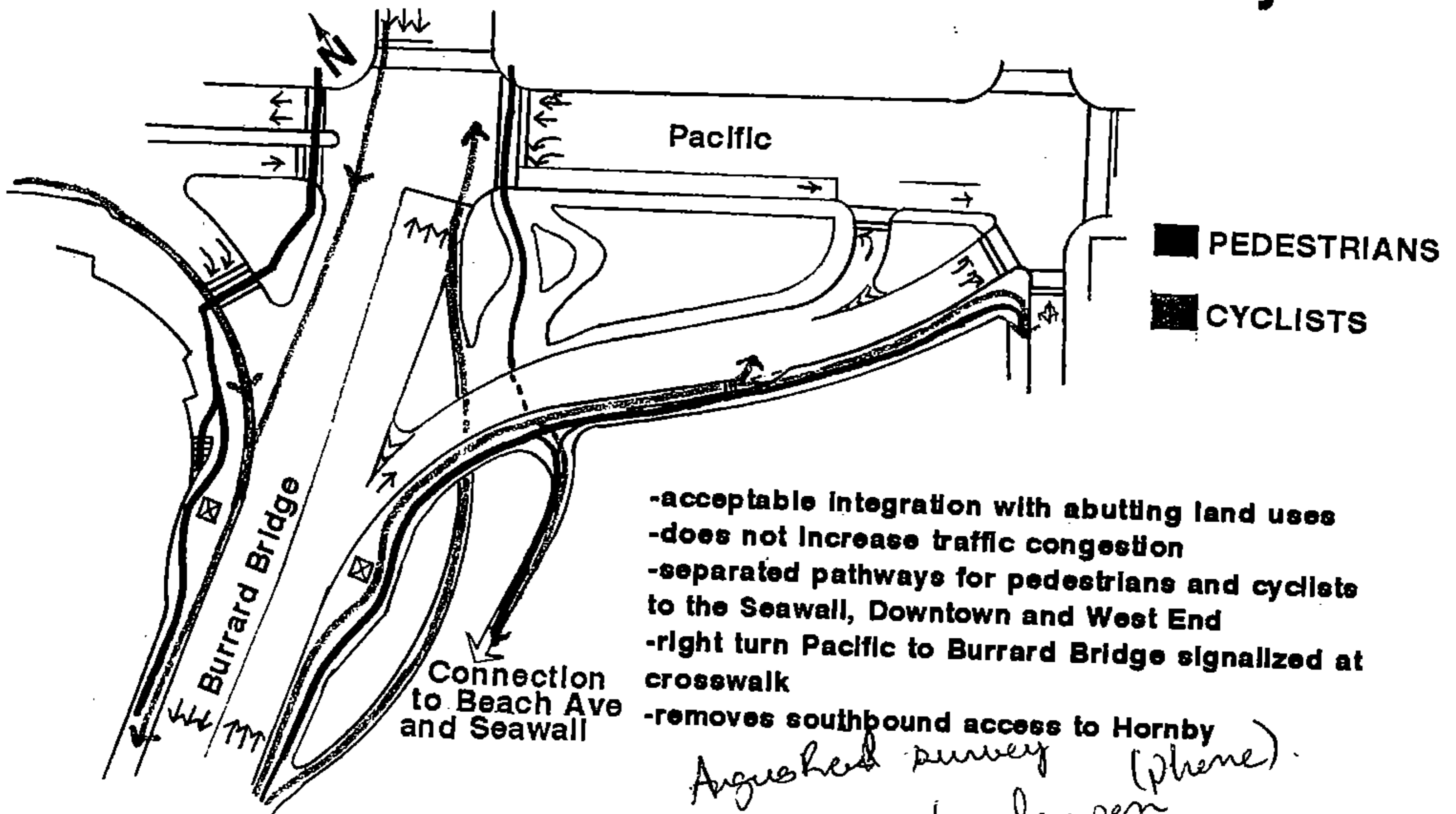
Bridge: Existing Lanes (6)

Outward Sidewalk Extensions



- maintains existing traffic capacity
- provides ample space for pedestrians, cyclists and skaters
- impacts heritage features, particularly the walkways and railings

North End: Indirect Connector to Hornby

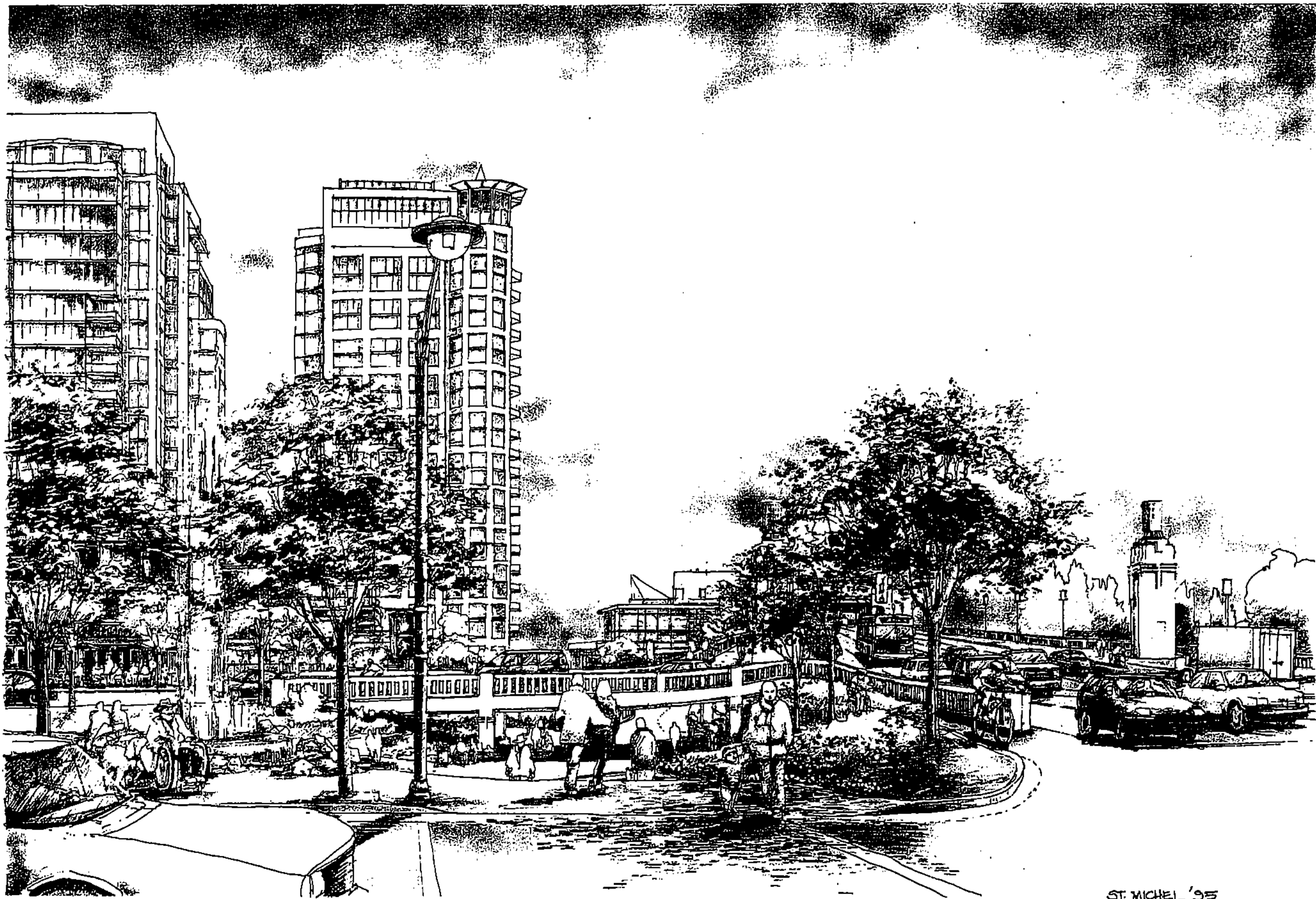


- acceptable integration with abutting land uses
- does not increase traffic congestion
- separated pathways for pedestrians and cyclists to the Seawall, Downtown and West End
- right turn Pacific to Burrard Bridge signaled at crosswalk
- removes southbound access to Hornby

*Augusht survey (phone)
- Dr. Henderson*

BURRARD BRIDGE OPTION 1 - DESCRIPTION

SYSTEMS	DESCRIPTION	DISCUSSION
<p>1. INDIRECT CONNECTOR AND SIDEWALK EXTENSIONS</p>	<p>INDIRECT CONNECTOR</p> <ul style="list-style-type: none"> • Left turn northbound at Hornby/ Connector • Three lanes per direction on Burrard at Pacific • Two lanes westbound on Pacific at Burrard • Indirect connection from Bridge northbound to Hornby • No southbound access to Hornby south of Pacific; Hornby one-way northbound • Signalized eastbound right turn at Burrard and Pacific • Pedestrian and cyclist routes separated from connector roadway <p>SIDEWALK EXTENSIONS</p> <ul style="list-style-type: none"> • Builds extensions on each side of the bridge for pedestrian and cyclist paths • Maintains existing three lanes southbound and three lanes northbound for vehicles 	<p>INDIRECT CONNECTOR</p> <ul style="list-style-type: none"> • Adds traffic on Pacific from Burrard to Jervis • Impacts security/ safety of pedestrians and cyclists underneath the connector roadway • Eliminates major pedestrian and cyclist conflicts with vehicles at ramps • Creates indirect pedestrian routes • Provides pedestrian and cyclist routes with grade changes • Impacts visual and heritage aspects • Requires land • Impacts existing and future development • Cost: \$3 million <p>SIDEWALK EXTENSIONS</p> <ul style="list-style-type: none"> • Provides good width for pedestrians and cyclists on pathways • Separates pedestrians, cyclists and vehicles • Maintains existing capacity of bridge for motorized traffic • Modifies the visual and heritage aspects of the bridge particularly the walkways and railings • Cost: \$6 million <p>TOTAL COST = \$9 million</p>

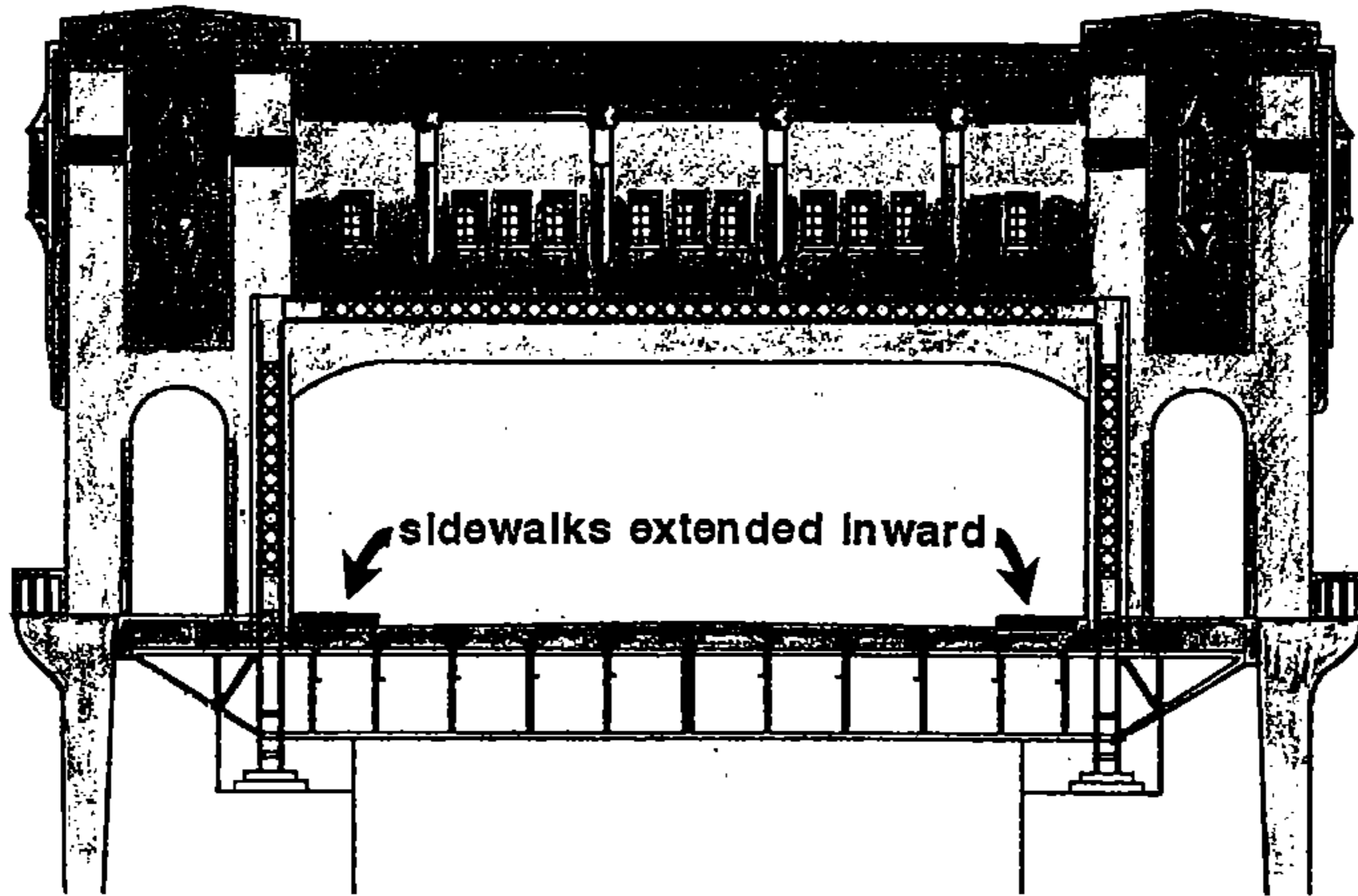


ST. MICHEL '95

OPTION 2

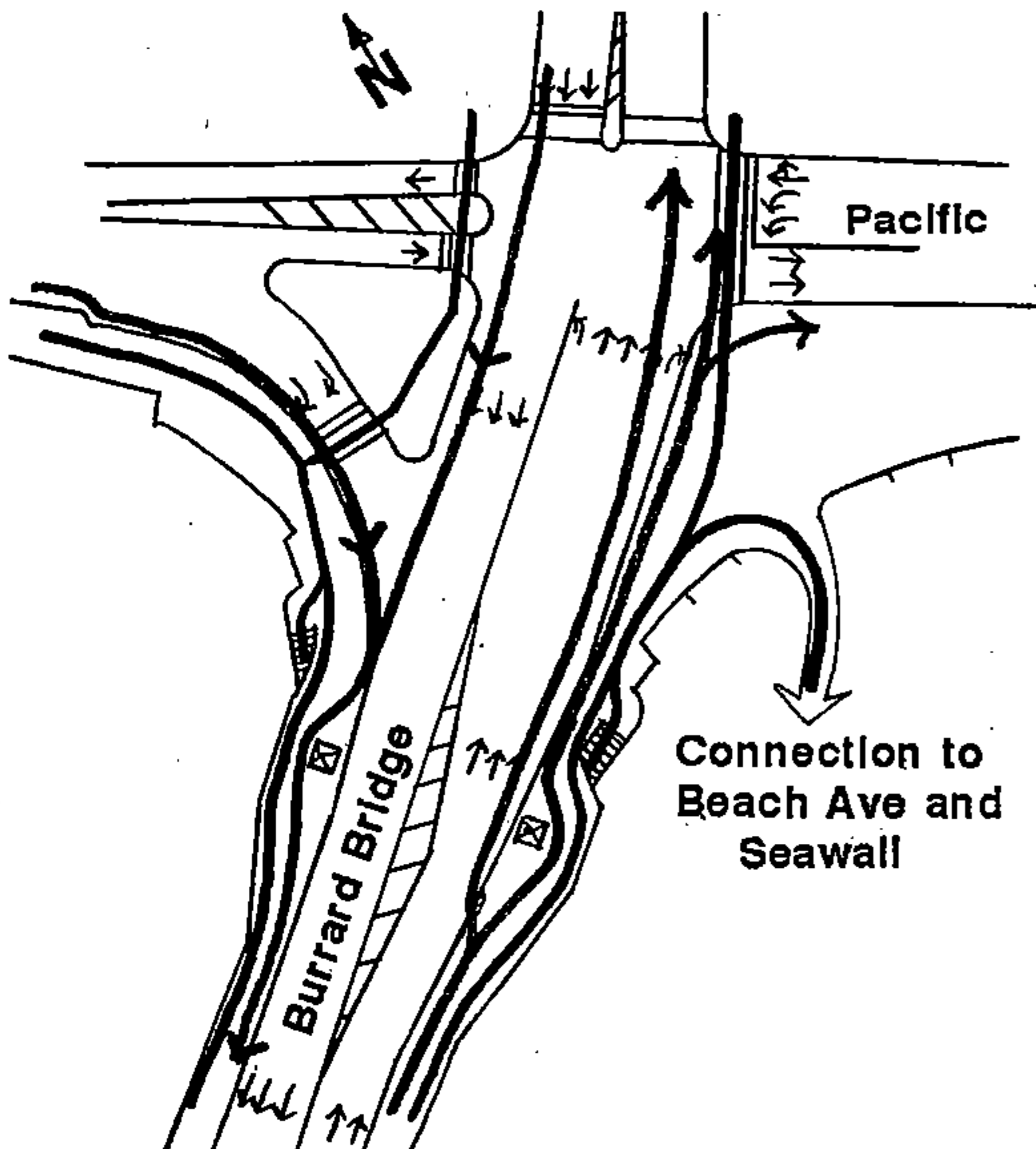
Bridge: One lane reduction

Inward sidewalk widening



- reduces traffic capacity into downtown
- widening of bridge required at ends
- provides reasonable space for pedestrians and cyclists
- preserves heritage features except walkways and railings at ends

North End: Modified Conventional Intersection



- PEDESTRIANS
- ▨ CYCLISTS

- conventional intersection
- right turn lane and left turn lane added for northbound Burrard. Right turn cut-off eliminated.
- reduced access into downtown
- grade level solution for pedestrians and cyclists to the Seawall, Downtown and West End
- right turn Pacific to Burrard Bridge signalized at crosswalk
- removes southbound access to Hornby

BURRARD BRIDGE OPTION 2 - DESCRIPTION

SYSTEMS	DESCRIPTION	DISCUSSION
<p>2. MODIFIED INTERSECTION AND ONE LANE REDUCTION</p>	<p>MODIFIED INTERSECTION</p> <ul style="list-style-type: none"> • Left turn northbound from Burrard to Pacific • Three lanes southbound and five lanes northbound on Burrard at Pacific • No southbound access to Hornby south of Pacific; Hornby one-way northbound • Signalized eastbound right turn at Burrard and Pacific <p>ONE LANE REDUCTION</p> <ul style="list-style-type: none"> • Replaces one lane of traffic with pedestrian and cyclist paths • Provides three lanes southbound and two lanes northbound for vehicles 	<p>MODIFIED INTERSECTION</p> <ul style="list-style-type: none"> • Adds traffic on Pacific from Burrard to Jervis and congestion on Hornby, Davie and Burrard • May create shortcutting through adjacent neighbourhoods • Sustains difficult vehicle merging on Pacific between Burrard and Hornby • Increases the size of the Burrard/ Pacific intersection • Eliminates major pedestrian and cyclist conflicts with vehicles at ramps • Provides direct pedestrian and cyclist routes • Requires no land • Creates some visual and heritage impacts on the ends • Creates no impact on existing and future development • Cost: \$0.75 million <p>ONE LANE REDUCTION</p> <ul style="list-style-type: none"> • Provides adequate width for pedestrian and cyclist paths • Separates pedestrians, cyclists and vehicles • Results in constricted section for cyclists at midspan between portals • Reduces the vehicular capacity of the bridge • Modifies the visual and heritage aspects of the bridge at the ends • Cost: \$2 million <p>TOTAL COST = \$2.75 million</p>



ST. MICHEL '95

**YOUR OPINION AND COMMENTS ABOUT THIS PROPOSAL
WOULD BE SINCERELY APPRECIATED:**

CALL: The Burrard Bridge Hotline 871-6250

WRITE: City of Vancouver
Engineering Services
Transportation Division
453 West 12th Ave
Vancouver, B.C.
V5Y 1V4

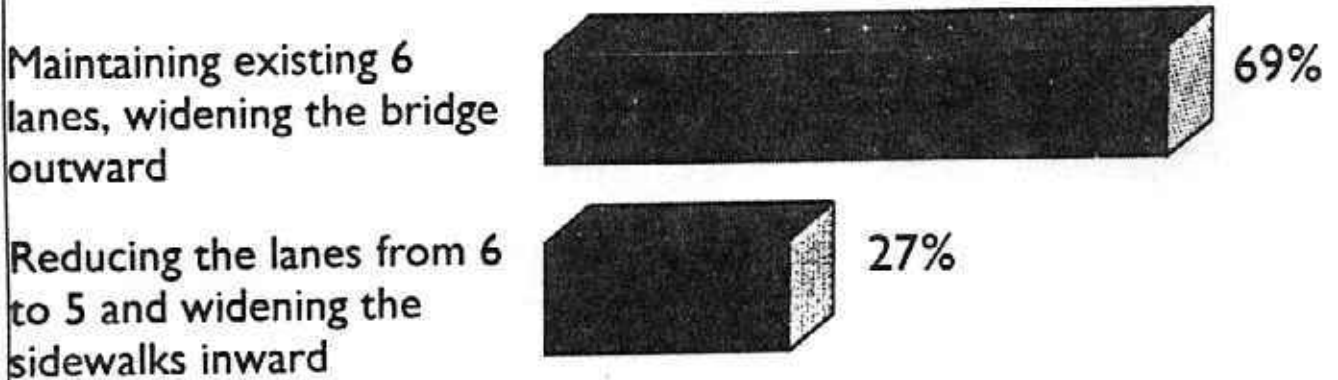
E-MAIL: transpor@city.vancouver.bc.ca

FAX: 871-6192

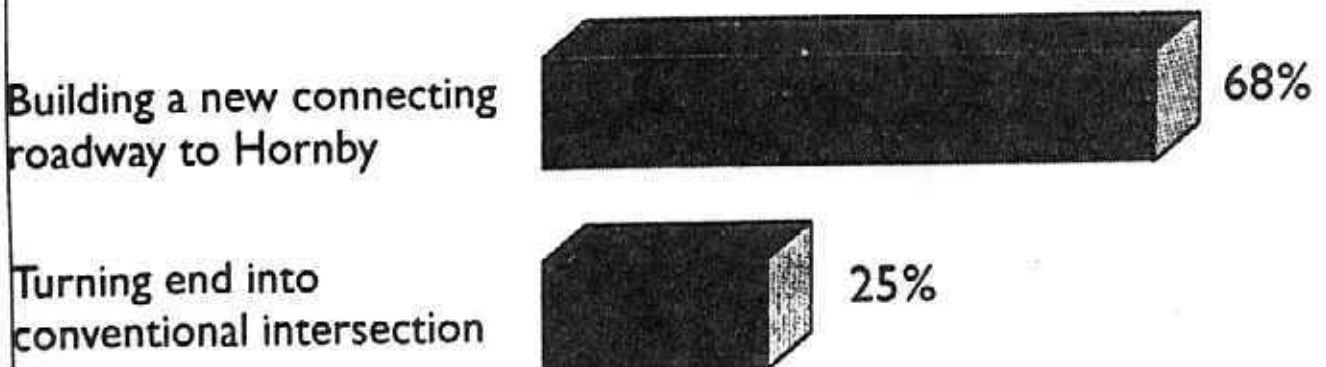
Support For Specific Upgrade Options

- % Very/Somewhat Supportive -

Number of Traffic Lanes



Traffic Pattern At Downtown End



February 14, 1996

BURRARD BRIDGE UPGRADE

MINOR CHANGES TO THE EXISTING BRIDGE
ADVANTAGES, CHALLENGES AND POSSIBILITIES

At a workshop in January the Burrard Bridge Advisory Group identified several possible changes as minor modifications to the existing bridge. At the close of the workshop it was decided that the project manager would put together the possible changes agreed on by the group, together with some analysis, for review by the Advisory Group. This is a look at the advantages, challenges and possibilities associated with each suggested change.

1. FULL TRAFFIC SIGNAL FOR EASTBOUND TO SOUTHBOUND TRAFFIC ENTERING THE BRIDGE AT THE SOUTH WEST CORNER OF THE BURRARD/PACIFIC INTERSECTION

Advantages

- signal and 'no right turn on red' will give cyclists and pedestrians protected crossing opportunities
- will remove conflicts between southbound drivers and drivers entering the bridge from the ramp
- eastbound and east to southbound movements proceed at the same time
- safer than existing

2. PEDESTRIAN/CYCLIST SIGNAL AT THE NORTHBOUND TO EASTBOUND EXIT RAMP TO PACIFIC

Advantages

- gives cyclists and pedestrians protected crossing opportunities

Challenges

- traffic control of combined through/right lane
- northbound traffic back-up on bridge during red
- may affect transit operation
- may have to be a fixed time signal to avoid eastbound conflicts
- would reduce conflicts at crossing location but may significantly increase delays for pedestrians and cyclists
- pedestrians and cyclists may not wait for the signal if crossing gaps are available

Possibilities

-make curb lane right turn only (except buses? Only 6-7% of all northbound peak hour through traffic uses lane 1)

3. **SPEED TABLE AT THE NORTHBOUND TO EASTBOUND EXIT RAMP TO PACIFIC**

Advantages

-may slow traffic at the crosswalk
 -gives appearance of cars having to cross the crosswalk instead of pedestrians and cyclists having to cross the road

Challenges

-signing to advise drivers of speed table in combined through/right turn lane
 -will drivers slow sufficiently before speed table especially when traffic volumes are low?
 -will drivers yield to pedestrians and cyclists more often than they do now?
 -pedestrians and cyclists do not have a controlled crossing opportunity
 -safety risks for drivers who do not slow sufficiently (loss of control on curve)
 -safety risk for cyclists on the roadway
 -liability

Possibilities

-make curb lane right turn only
 -install rumble strips and signs in advance of speed table and bollards at curb edge
 -careful design can reduce the risk to cyclists, but this may also reduce the effectiveness for cars

4. **IMPROVED SIGNAGE FOR ALL MODES**

Advantages

-clarifies bridge and sidewalk operation for all users
 -identifies other traffic routes

Challenges

-over-use of signs may reduce observance
 -may not alter fundamental behaviour

Possibilities

-paint additional pedestrian and cyclist symbols on the bridge sidewalks to further clarify sidewalk space

- install additional and more visible signs indicating to in-line skaters and cyclists which side of the bridge to use (and which side not to use ie. larger Do Not Enter signs)
- install signs to warn drivers of cyclist lane changes at the southbound cyclist ramp at the south end of the bridge
- install signs promoting the use of Drake St as an alternative to Pacific to get to Hornby St.

5. ALLOW CYCLISTS ON THE BRIDGE DECK

Advantages

- gives commuter cyclists an opportunity to ride at traffic speed
- removes faster cyclists from the sidewalk creating more space and comfort for other sidewalk users
- may result in slower traffic speeds in lane 1 and 2
- reinforces City policy of encouraging cycling as a legitimate form of transportation

Challenges

- narrow curb lanes and high traffic volumes
- high existing curbs
- more weaving from lane 1 to lane 2 around cyclists could increase accidents
- northbound cyclists must cross the northbound to eastbound exit ramp
- would impact transit operation
- keeping curb lanes free of debris becomes more important
- if curb lanes not wide enough, could be open to litigation

Possibilities

- regular sweeping of curb lanes
- implement for a trial period
- high use not expected
- install signs to let drivers know that cyclists are permitted on the road

6. ALLOW CYCLISTS ON THE BRIDGE DECK IN DEDICATED LANES ON SUMMER SUNDAYS AND HOLIDAYS

Advantages

- would create a pleasant recreational link or short-cut to the Seaside Route
- promotes recreational cycling, in-line skating and walking by giving each mode more space on busy days

Challenges

- does nothing for commuter cyclists
- may have to close the entrance and exit ramps at the north end of the bridge. If so would right turns be allowed from the northbound and eastbound stop lines at the Burrard / Pacific intersection?
- a very short term solution to address the very high peak period conditions. Stalls the 'inevitable' increase in pedestrian and bicycle volumes and is counter to City policy of promoting bicycles as an alternate means of transportation, not recreation
- cost of placing, retrieving and maintaining cones and barriers
- hours of operation on long weekends (overnight?)

Possibilities

- implement for a trial period
- if successful could be extended
- may give an indication of traffic operation of a 4 lane bridge for future reference

7. **SPEED CONTROL**Advantages

- would make the bridge more comfortable and safer for cyclists and pedestrians on the sidewalk and for cyclists on the roadway if allowed

Challenges

- enforcement

Possibilities

- reduce speed limit on the bridge from 60 to 50 km/h
- photo radar
- increased police enforcement of existing speed limit

8. **UPGRADE EXPANSION JOINTS AND SWEEP CURB REGULARLY**Possibilities

- bridge maintenance issue

9. **CHANGES TO THE SOUTHBOUND RAMP FOR CYCLISTS AT THE SOUTH END OF THE BRIDGE**Advantages

- relocating the ramp as far north as possible would give

cyclists more room to make the lane changes to southbound Burrard

-signing would inform drivers of this manoeuvre

Challenges

- the ramp may already be placed as far north as possible
- may have to reduce sidewalk width to move back further
- determine whether the benefits are worthy of the expense to move the ramp only a few metres

Possibilities

- cut into sidewalk and relocate beginning of ramp approx. 15m north of existing
- shorten ramp by changing slope
- install signs to warn drivers of the lane changes by cyclists
- planned improvements to the Burrard/Cornwall intersection may render the ramp changes unnecessary

SUMMARY

Existing Bridge with Minor Improvements - could include:

- full traffic signal for eastbound to southbound traffic
- northbound curb lane becomes right turn only near Pacific
- pedestrian/cyclist signal at the northbound to eastbound exit ramp
- additional pavement markings and signing on the bridge and sidewalks to clarify operation for all users
- signs promoting Drake St as an alternative to Pacific to get to Hornby
- allow cyclists on the bridge deck for a trial period and determine what affect this has on traffic speeds and accidents
- upgrade expansion joints
- sweep curbs regularly
- introduce curb lane closures on Sundays and Holidays in summer