



October 1, 2014

Mayor and Council  
District of North Vancouver  
355 West Queens Road  
North Vancouver, BC V7N 4N5

Cc: Shaun Loader, Keith Bridge Project Manager  
Erica Geddes, Transportation Section Manager  
David Desrochers, Engineering Development Services Section Manager  
Steve Ono, Engineering Services Manager/Deputy General Manager

### **Keith Bridge Project Cycling Facilities**

Dear Mayor and Councillors,

The HUB North Shore Committee would like to thank the Keith bridge project team for meeting with us in July and considering changes to the bridge design that would make cycling on Keith Road safer.

We have reviewed the proposed changes to the bridge layout, which separate cyclists from motor vehicles by moving the bike lanes behind concrete barriers. Physical separation is key to the safety of vulnerable road users on arterial streets.

We support the revised design of the bridge, although the bike lanes are too narrow at 1.5 metres with no shy distance to the concrete barrier. However, the revised design is a significant improvement from the previous version.

Additional recommendations for the cycling facilities on Keith Road between Mountain Highway and Lynnmouth Avenue are attached to this letter. We have suggestions regarding the following items:

- Separation of cyclists and pedestrians on the bridge
- Bike lane design off the bridge
- Intersection with Mountain Highway
- Intersection with Bridgman Park entrance

We look forward to seeing the design for the bike lanes off the bridge.

Sincerely,

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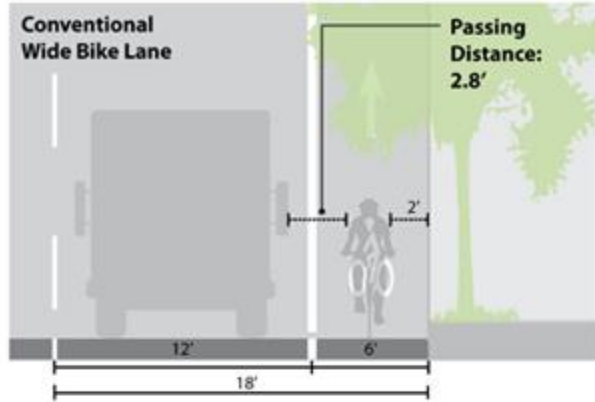
## Keith Bridge project cycling infrastructure recommendations

### Separation of cyclists and pedestrians on the bridge

- Since pedestrians usually walk on the outside of sidewalks away from traffic, a white line and multiple bike stencils should be sufficient for separation on the bridge.
- Consider different texture or colour for cycling and walking paths, but both must be smooth surface for the safety and comfort of users, especially people with mobility devices.

### Bike lane design off the bridge

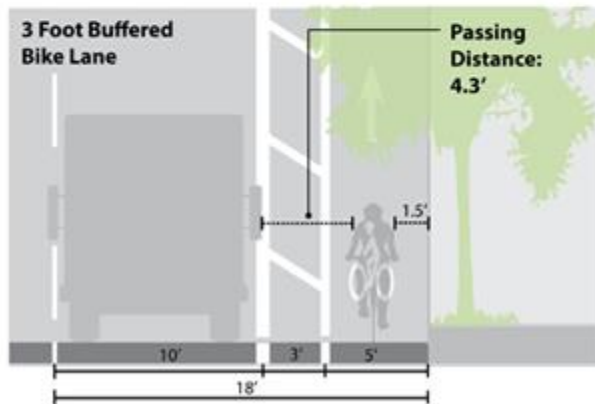
- Given the projected significant increase in traffic volume on Keith Road we recommend a physical barrier to protect the bike lanes from motor vehicle traffic.
- Traffic speeds are also likely to increase since the narrow old bridge and the 90 degree turn from Mountain Highway slows traffic. Higher traffic speeds decrease cycling safety.
- All major new roadway projects in the district should be “complete” streets, taking into consideration the needs of pedestrians, cyclists, transit users and drivers. A project of this size and projected length of service should not ignore the growing evidence regarding cyclist safety and the need for physical separation on arterial streets.
- If the bike lanes are not protected, they should at the very least be buffered to increase the passing distance between bikes and motor vehicles. We recommend a 1.5 metre bike lane with a 0.9 metre buffer to increase safety and use of the bike lanes.
- The figure on the next page shows that a 1.8 metre bike lane as originally planned for Keith Road, would provide a passing distance of less than 0.8 metres to buses and trucks (since the vehicle lane on Keith would be slightly narrower than in the figure). US states and countries with safe passing laws recommend a passing distance of at least 0.90 metres to 1.5 metres.



1.8 m bike lane without buffer  
3.65 m vehicle lane  
Passing distance: 0.85 m



1.5 m bike lane with 0.6 m buffer  
3.35 m vehicle lane  
Passing distance: 1.15 m



1.5 m bike lane with 0.9 m buffer  
3.05 m vehicle lane  
Passing distance: 1.3 m

Measurements assume 10.5' vehicle width and 2' bicyclist width, operating in the center of their lanes.

Source: NACTO Urban Bikeway Design Guide  
<http://nacto.org/cities-for-cycling/design-guide/bike-lanes/buffered-bike-lanes/>



### **Intersection with Mountain Highway**

- When cycling east to the Keith Road Extension multi-use path, bikes conflict with the right turn motor vehicle lane to Lower Mountain Highway.
- We recommend separating the two movements with signals: a right turn signal for cars and a bike signal for bikes going straight to the Keith Extension.
- For all signals at this intersection we recommend loop detectors in the bike lanes and for cyclists on the multi-use path. Push buttons are awkward when shared with pedestrians due to positioning and they often delay signal actuation compared to automatic loop detection.

### **Intersection with Bridgman Park entrance**

- At the intersection to the Bridgman Park entrance, the bike lane should be adjacent to the motor vehicle lane so that drivers turning into the park have a clear view of approaching cyclists.
- We also recommend striping the bike lane through the intersection (broken lines) and marking the bike lane in green to reduce the potential for car-bike collisions.
- The left-turn access from Keith Road into the park should be removed to increase cyclists and pedestrian safety.