



Your Cycling Connection

March 18, 2016

Geoff Freer
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BC Ministry of Transportation and Infrastructure
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Dear Mr. Freer:

**Re: Massey Tunnel Replacement Project
Cycling improvements in Highway 99 Corridor - 2016 Update**

Introduction

This document is an update to the HUB Cycling submission (2014) which was made to the MoTI project team in July, 2014. Since 2014, we have had much feedback from the cycling community about the proposed bridge and Highway 99 corridor changes. We have reviewed the latest design proposals from the project team and have refined our suggestions.

In the 2014 submission, we recommended that a high quality safe and convenient bikeway be created between the Oak Street Bridge and the US border on or parallel to Highway 99. After the latest round of public consultation which indicated limited scope for improved cycling along or in close proximity to the 44 km length of the project, HUB Cycling sent a letter to Patrick Livolsi requesting that **the scope of the cycling portion of the project be increased to the same geographic coverage of the motor vehicle and transit portions. This is aligned with the [BC Ministry of Transportation and Infrastructure Cycling Policy](#)** to provide cycling facilities with all new and improved highways. We look forward to participate in the working group which was announced to be established to deal with the scope issue.

This project offers a great opportunity to remove significant gaps in the regional and local cycling networks by creating a “Cycling Highway” along Highway 99 which will attract many more people to cycle and will be a boon to cycle tourism as well as commuting, family, recreational and sport cycling.

Objectives and Targets

As this promises to be the largest transportation project ever in British Columbia and as it is a large percentage of the capital budget for transportation over the next decade, every effort

should be made to ensure that this project makes a significant contribution to other key provincial priorities including the BC Road Safety Strategy and the Climate Leadership Plan.

As such, we recommend that the project have clear cycling goals, and measurable targets relating to cycling mode share and safety, which will help ensure that this project makes a contribution to these initiatives proportional to its cost.

Summary of Key Recommendations

- A Cycling Highway be constructed along Hwy 99 for the entire project scope between the Hwy 91 interchange in Delta and Van Horne Road in Richmond
- Access improvements should be implemented to other cycling routes north and south of the bridge
- Cycling infrastructure improvements (physically separated bikeways and crossings) should also be included in all intersection/interchange/overpass upgrades which are part of the project
- The project should collect baseline cycling usage data and have clear cycling goals, and measurable targets relating to cycling mode share and safety, consistent with regional and provincial plans and a High Shift Cycling Scenario
- Design of the bikeways should use one-way bikeways, designed appropriately for cycling speeds, with sufficient width, smooth surfaces, separation from other modes, and free of obstacles
- Install signage that meets TransLink regional cycling wayfinding standards

Cycling Highway

A Cycling Highway is a high quality bikeway consisting of cycling facilities physically protected from motor vehicle traffic. It is designed for safe, direct and longer distance cycling. Cycling Highways are largely unhindered by stop lights or stop signs, having no or few at-grade intersections and as such are very similar to a controlled access highway for motor vehicles. Cycling Highways are being established in London, England and in several other European countries. Norway is about to invest \$1.25 billion into Cycling Highways to connect suburban areas to city centres¹.

¹ <http://www.citylab.com/cityfixer/2016/03/norway-bike-highways-billion-dollars/472059/>



A Cycling Highway in the Netherlands. “Fietssnelweg” is the Dutch word for Cycling Highway

We recommend that a Cycling Highway be constructed along Hwy 99 for the entire project scope between the Hwy 91 interchange in Delta and Van Horne Road in Richmond. In light of City of Vancouver’s recent acquisition of Arbutus Rail Corridor, we also recommend access improvements to the Oak Street Bridge that would help facilitate direct connections to the planned Arbutus Greenway. Cycling infrastructure improvements (physically separated bikeways and crossings) should also be included in all intersection/interchange/overpass upgrades which are part of the project. Also, adjacent municipalities should be provided with funding to build safe and convenient cycling connections to the proposed Cycling Highway.

In addition, with higher employment density occurring in the commercial/industrial centres of Richmond and Delta (e.g. Tilbury, Boundary Bay Airport), providing a safe and efficient cycling corridor encourages a growing number of commuters to travel to work using an active mode of transportation – one that reduces the number of vehicles on the road, alleviating congestion for the benefit of goods movement and other commuters. This is consistent with the Ministry’s 2014 *B.C. On the Move* 10-Year Transportation Plan.

Safety

It is imperative that cycling safety be a key design consideration for the proposed bridge and approaches. The goal should be zero cycling fatalities and serious injuries in order to make the project consistent with the BC Road Safety Strategy.

One-way Bikeways on Bridge

Travelling downhill on bikeway on the bridge, cyclists’ speed is likely to be high enough to cause serious injury or fatalities in head-on collisions. On the Stanley Park Causeway, MoTI clocked the average speed of cyclists at 50km/h with top speeds of 60km/h. As is the case with motor vehicle traffic, the most effective way to prevent head-on collisions is by

physically separating the opposing traffic. A cyclist was fatally injured in a collision with an inline skater on the steep path in the Seymour Recreation Area. The only serious cycling injury on Burrard Bridge separated bike lane involved a head-on collision caused by a cyclist illegally cycling against the flow of cycling traffic on the wrong side of the bridge.

The use of two-way cycling on the bridge is likely to result in serious injuries or fatalities and thus is inconsistent with BC Road Safety Strategy's goal of zero serious injuries or fatalities. We are pleased that the project team is seriously considering one-way bikeways on both sides of the bridge.

Due to the elimination of intersections, a protected bikeway along the Highway 99 corridor, either in or adjacent to the highway right-of-way, between the Highway 91 interchange and the bridges to Vancouver that is grade separated from access ramps and cross streets, will be much safer than other possible routes. According to ICBC, 84% of cycling crashes in the Lower Mainland involving motor vehicles happen at intersections. A route without intersections will dramatically reduce the chance of fatalities and serious injuries.

Design Speeds

- Downhill sections should have a design speed based on the slope and length of the downhill segment. For example, if the grade is 5%, longer sections should have a design speed of 60km/h.
- Flat sections should have a design speed of at least 35 km/h.
- Uphill one-way sections should have a design speed of at least 30 km/h.
- The design should have turning radii and lines of sight appropriate for the speed.

Protected Intersections

At grade Intersections that are rebuilt as part of the project should be upgraded to protected intersections². Such intersections protect cyclists and pedestrians from collisions with motor vehicles through the signalization of turning movements that prevents the turning of vehicles across the paths of people walking and cycling. Burrard/Cornwall is the first such intersection in Canada.

Cycling Trips and Trip Distance Targets

The project should be designed to dramatically increase cycling and walking trips and trip distances in and through Richmond and Delta. Ambitious and specific targets for both numbers of trips and average trip distance should be included.

We recommend that the project team work with TransLink and the municipalities to develop cycling mode share targets consistent with regional and provincial plans and a High Shift Cycling Scenario (see below).

Using the existing Origin/Destination survey, the National Household Survey and the Regional Trip Diary, it should be possible to determine the average distance cycled and average overall commuting distances to establish baseline data. This, combined with

² <http://www.protectedintersection.com/>

regional mode share targets can help determine the potential for cycling trips on the new bridge, and inform target levels.

Cycling for Everyone - Metro Vancouver Regional Cycling Strategy

The TransLink Regional Cycling Strategy Implementation Plan³ has the goal that by 2040, at least 10% of all trips in the region will be made by cycling. The City of Richmond also has a target of 10% of trips by bicycle by 2040. The Strategy finds that nearly two-thirds of all trips made within the Metro Vancouver region are less than 8km—a comfortable cycling distance for many. TransLink’s research indicates that 41% more people would cycle if they felt it was safer and more convenient. Approximately 24% of all motorized trips in the region are well-suited for cycling. If just half of these 1.3 million trips were made by bicycle, the regional mode share would increase to 10%.

High Shift Cycling Scenario (HSC)

A Global High Shift Cycling Scenario (HSC)⁴, was released in mid November, 2015. The study by the Institute for Transportation & Development Policy and the University of California, Davis, confirms the significant potential for cycling and electric bicycle use to significantly reduce GHG emissions while providing significant cost savings to individuals and government.

For Canada, the report projects a HSC cycling mode share of 12% for 2030 and 16% for 2050. The cycling commute mode share for Richmond/Delta of 1.2% is only marginally lower than Canada’s 1.3%. However, the lack of convenient bicycle access across the Fraser River is likely contributing to a lower cycling mode share than would otherwise be expected. As such, we would expect the potential HSC cycling mode share of Richmond and Delta to be greater than that of Canada as a whole and especially greater than 12% for 2030 and 16% for 2050.

While the travel distances for many trips across the bridge will be longer than typically assumed to be reasonable for cycling, as the terrain is flat and cycling routes have few traffic signals, we expect people are willing and able to cycle longer distances especially if a grade separated route is built. E-bikes will make even longer trips entirely feasible.

According to the Project Definition Report, in 2014, 46% of northbound weekday motor vehicle traffic originated in South Delta while 59% was destined for Richmond. 17% of trips originated from Ladner so around 10% was going from Ladner to Richmond. Driving on Highway 99 is around twice as fast as driving on the roads through Richmond. Assuming cycling along the Highway 99 corridor is twice as fast as cycling on neighbourhood roads through Richmond, this effectively makes the majority of Richmond within reasonable cycling distance from Ladner. South Delta is flat with few traffic signals so the southern and middle portion of Richmond could be in reasonable cycling distance especially for electric bikes. The Tilbury industrial area is within easy cycling distance of Richmond.

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http://www.translink.ca/~media/Documents/cycling/regional_cycling_strategy/rcs_implementation_plan_june_2013.ashx

⁴ https://www.itdp.org/wp-content/uploads/2015/11/A-Global-High-Shift-Cycling-Scenario_Nov-2015.pdf

Bridge Design

Recommended features for bikeways associated with the new bridge:

- One-way bikeways constructed on both sides of the bridge, with direct and convenient access ramps provided from all approach directions at both ends of the bridge.
- Ramps should be direct, safe and convenient and should be integrated into the bridge and approaches to the same extent that vehicle and dedicated transit routes are. Spiral ramps and switchbacks should be avoided since they are neither direct nor convenient. For safety, momentum obtained from going down the bridge should be preserved in the direction of travel thus spiral ramps and switchbacks should be avoided.
- All approach bikeways should be grade separated at every road crossing.
- Intersecting cycling, pedestrian and mixed use paths should be avoided for safety reasons.
- Good integration with nearby municipal and regional bike routes.
- Sufficient width ($\geq 3.2\text{m}$ for one way bikeway). Few bridges in Metro Vancouver have bikeways of sufficient width. Bikeway widths should be wider near the ends of the bridge due to higher speeds.
- Smooth surface.
- Grade of bikeways should preferably be at or below 3% for both the bridge deck and ramps. In no case should the grade exceed 5%.
- Bikeways should be free of obstacles including but not limited to utility poles, signage that intersects into the bikeway) that may pose threat to cyclists, particularly along descent sections where speeds will be greater.
- For user safety, bikeways should be barrier-separated from vehicular traffic and fence-separated along the Fraser River edge (other bridges have retrofitted bikeways to meet these safety concerns, at far greater expense than if originally included in design)
- We recommend consideration of placement of the bike and pedestrian deck below the car deck as is done on the Canada Line Bridge. This will reduce the elevation change. Also, those walking and cycling will be subject to less noise and pollution. If partially or totally under the bridge deck, the bikeway would be shielded from the elements and would provide easier connections at both ends. Appropriate lighting and safety measures would also need to be incorporated.
- Superior signage should be provided including wayfinding signage to key destinations including destination names, kms distance, average cycling time to those destinations. For consistent bike signage across Metro Vancouver, we recommend use of the TransLink wayfinding standards.

Improvements North of Westminster Highway

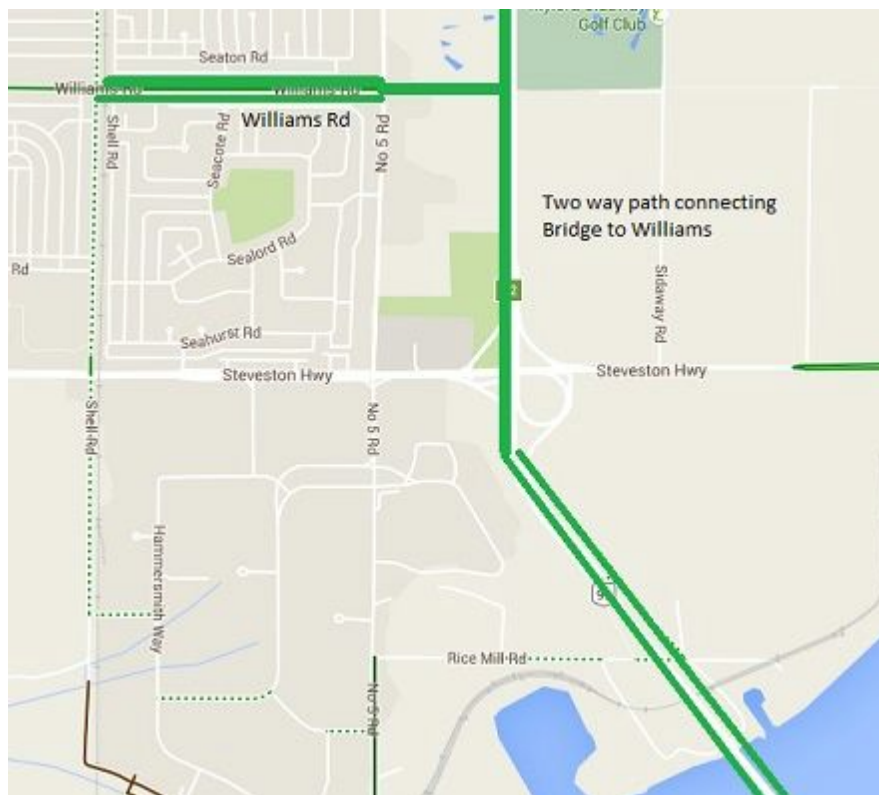
There is currently a major gap in the regional cycling network between the intersection of Shell Road with Highway 99 and the Oak Street and Canada Line bridges. Filling this gap with proper cycling infrastructure should be included into the scope of the project. This could be done by adding a bikeway inside the Highway 99 corridor which is separated from motor

vehicle traffic. Note that cycling access to the Oak Street Bridge - especially the east sidewalk - is now neither safe nor convenient and should be improved.

Improved Connections to Williams Road and Westminster Hwy

The current access routes to the north end of the Massey Tunnel are neither safe nor convenient for those cycling. Routing is either via Shell Road with connections through an industrial park to Rice Mill Road or via Sidaway. Connections from the Shuttle stop near Rice Mill Road to Sidaway northbound are reasonable but connections from Sidaway Southbound to the Tunnel require a dangerous cycle along Steveston Hwy and No 5 Road.

In order to improve connections to the proposed bridge, we suggest that a two-way bikeway be added to the west side of the Hwy 99 corridor between the proposed bridge and Westminster Highway. A connecting bikeway should be added to the 'Williams Road corridor as far as the intersection of Williams and No 5 Road. Also, the proposed bikeway should be integrated into the modified interchange at Westminster Hwy.



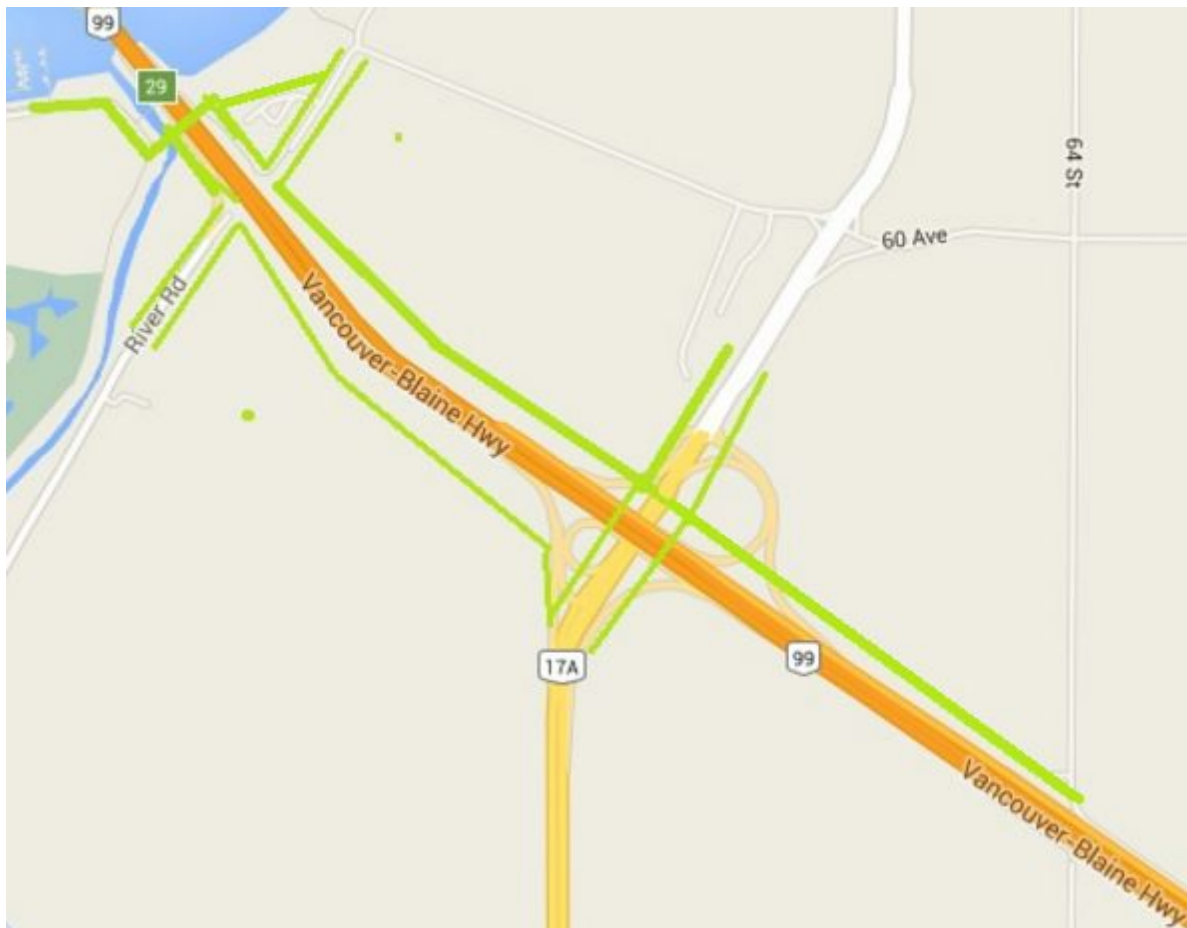
Proposed connection to Williams Road

Improvements at south end of bridge

Proposed changes to the intersection with Hwy 17A provide an opportunity to integrate the cycling network into the intersection design, including safe and convenient access to the proposed integrated transit stops. We recommend the following improvements:

- Connection to and retaining of the Millennium Trail, with a more direct connection to the segment to the west of the freeway.
- Connection to River Road and improved cycle safety on the Vasey Road / 60 Avenue corridor.

- Add a one-way bikeway along the west side of Hwy 99 as far as the Hwy 17A exit.
- Add two-way bikeway along the east side of Hwy 99 at least as far as Burns Drive/64th St. with grade separation at all road crossings. Routing should be as direct as that afforded to freeway motor vehicle traffic.
- Provide separated bikeways on any new freeway overpasses.
- A nice to have addition: The new bridge provides a great opportunity to provide improved access to Deas Island for those walking and cycling. This could be accomplished by adding a pedestrian/cycling ramp which connects the west end of Deas Island to the Massey Tunnel replacement bridge. This ramp would allow more direct cycling and walking access to Deas Island for the residents of Ladner.



Cycling routing at south end of bridge

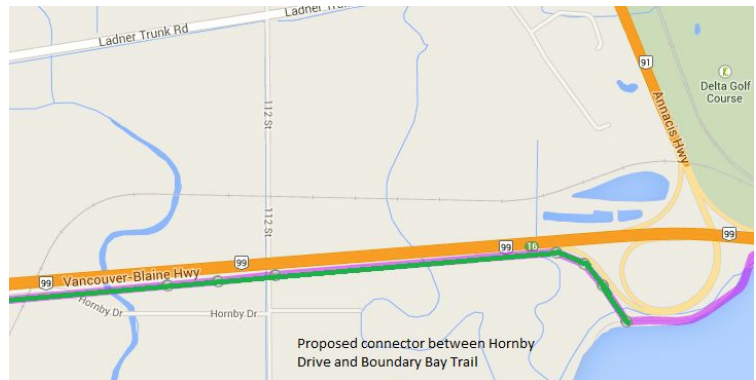
Improvements South of Hwy 17

The cycling community appreciates the completion of Burns Drive between Hwy 17 and Ladner Trunk Road as this removes a gap in the cycling network. Ladner Trunk Road freeway overpass is currently very dangerous for those cycling and this should be corrected if the overpass is replaced.

There is currently a gap between Ladner Trunk Road and the Boundary Bay dyke path. This gap could be removed by adding separated bikeways parallel to the freeway between Ladner Trunk Road and the Boundary Bay dike path.

At Hornby Drive and 112th St., there is a short gap between Hornby Drive and the Boundary Bay Dike Trail.

Suggested addition: We recommend that a MUP be constructed on the north side of Hornby Drive between Ladner Trunk Rd. and the railway overpass and then in the Hwy 99 right of way between the railway overpass and the Hwy 91 interchange. We also recommend that a more direct connector bikeway be established between this new bikeway and those which are parallel to Hwy 91. All new bikeway should be paved, as this improves safety and provides access to a larger breadth of people and types of bicycles.



Also, a connection between the Boundary Bay dike path and the bikeway on the east side of Hwy 91 would be very desirable for efficient bike travel to North Delta and Surrey.

Impacts during Construction

During construction, access should be maintained along the Millennium Trail as there are few alternatives.

HUB Cycling recommends that bikeway construction be completed within the same time window as the motor vehicle and transit portions so that habit shifts can be maximized to sustainable transportation modes with the opening of the new bridge to all users.

Conclusion

We appreciate that bikeways are part of the design of the proposed bridge. In order to leverage this investment and to meet the Ministry of Transportation's policy commitment to provide cycling facilities along with all new and improved highways, it is necessary to have good cycling routes connecting to the bridge at both ends. This project represents an opportunity to remove significant gaps in the regional cycling network by building a Cycling Highway in or parallel to the Hwy 99 corridor. Such a Cycling Highway will attract many more people to cycle and will be a boon to cycle tourism as well as commuting, family, recreational and sport cycling. We recommend that a Cycling Highway constructed with the considerations documented in this letter be included in the project scope.

We would appreciate the opportunity to work more closely with the project team in order to help to achieve the best possible cycling designs for this important transportation project. We are available at any stage of the planning and design process to provide feedback, input and support wherever possible. Our contact information is below.

Sincerely,

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Cc Patrick Livolsi, Assistant Deputy Minister, Ministry of Transportation and Infrastructure

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<http://bikehub.ca>