



**To:** Public Works and Transportation Committee      **Date:** June 6, 2017  
**From:** Victor Wei, P. Eng.  
 Director, Transportation      **File:** 10-6450-09-01/2017-  
 Vol 01  
**Re:** **River Road - Proposed Road Safety Enhancement Measures**

**Staff Recommendation**

1. That the proposed traffic enhancement measures on River Road between No. 6 Road and Westminster Highway, except for the installation of speed humps, as described in the staff report titled "River Road – Proposed Road Safety Enhancement Measures" dated June 6, 2017 from the Director, Transportation, be endorsed for implementation as part of the on-going city-wide effort to improve safety for road users.
2. That staff be directed to consult with the area residents and businesses on River Road between No. 6 Road and Westminster Highway on the proposed installation of speed humps and report back with the outcome.
3. That staff review the feasibility of widening River Road between No. 6 Road and Westminster Highway with a view to further enhancing road safety as part of the long-term concept for the phased Dike Master Plan process.

Victor Wei, P. Eng.  
 Director, Transportation  
 (604-276-4131)  
 Att. 1

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Parks	<input checked="" type="checkbox"/>	
Engineering	<input checked="" type="checkbox"/>	
RCMP	<input checked="" type="checkbox"/>	
Fire-Rescue	<input checked="" type="checkbox"/>	
Finance	<input checked="" type="checkbox"/>	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO 

## Staff Report

### Origin

At the November 7, 2016 General Purposes Committee, staff were directed to “examine the circumstances and the area around the accident that occurred on River Road on November 6, 2016 and report back.” This report responds to the referral and recommends the implementation of a package of measures as an immediate step to improve traffic safety in this location.

This report supports Council’s 2014-2018 Term Goal #1 A Safe Community:

*Maintain emphasis on community safety to ensure Richmond continues to be a safe community.*

This report supports Council’s 2014-2018 Term Goal #3 A Well-Planned Community:

*3.3. Effective transportation and mobility networks.*

### Analysis

#### Richmond RCMP Investigations

The Richmond RCMP investigation of the November 6, 2016 crash on River Road is substantially completed. The investigation concluded that roadway design did not play a factor in the crash and the likely cause is driver error.

Subsequent to the November 6, 2016 crash, two separate single vehicle off-road crashes occurred on January 9, 2017 in the section of River Road between the CN Rail Bridge and Westminster Highway. Richmond RCMP indicate that icy road conditions were a factor in both crashes.

#### Current Conditions on River Road

River Road between No. 6 Road and Westminster Highway is a collector road approximately 8.5 km in length used by local residents as well as large truck operators and employees accessing industrial properties on the south bank of the North Arm of the Fraser River. On weekdays, some commuters may use the route to avoid traffic congestion on Highway 91 and Westminster Highway while on weekends the roadway is a popular destination for cyclists, particularly cycling clubs with larger groups of cyclists. The typical pavement width is 6.5 m. Maximum speed limits are 50 km/h for cars and 30 km/h for trucks and a 9-tonne load limit is in effect between No. 7 Road and Westminster Highway.

During the five year period of 2011 to 2015 (the most recent available crash data from ICBC), a total of 94 crashes (injury, fatality and property damage only) were recorded within this section of River Road with approximately 70 per cent of these crashes occurring between No. 6 Road and No. 7 Road (including 25 crashes at No. 6 Road) and 30 percent between No. 7 Road and Westminster Highway (including 16 crashes at Westminster Highway).

Richmond RCMP further advise that from 2011 to present, there have been four driving-related fatalities on this same section of roadway with one occurring each year in 2013 to 2016

inclusive. Of these fatalities, speed was a factor in two crashes (including impairment in one crash) and driver error was attributed to the other two crashes.

Over the past 15 years, as part of the City's continual efforts to enhance traffic safety, a number of traffic and pedestrian safety measures have been implemented along this corridor including:

- Installation of additional road signs, hazard markers and delineator posts to advise drivers of potential traffic conditions and hazards. Oversized speed limit signs are used at the start of all speed limit zones to increase driver awareness.
- Servicing and re-lamping of existing streetlights leased from BC Hydro to improve street lighting levels.
- Removal of on-street parking from sections of River Road where the shoulder of the roadway is narrow and any parked vehicles would impede through traffic.
- Construction of an asphalt walkway (1.2 metres wide, 300 metres in length) on the south side of the 22,000-block of River Road that provides safer pedestrian access to the Queen Road right-of-way for area residents.
- Installation of six speed humps in the 18,000-block of River Road where a 30 km/h speed zone is in effect.

### Proposed Road Safety Measures

This section of River Road is one of few rural-like roadways in the Lower Mainland that is regarded as a popular scenic route for weekend touring cyclists. Accordingly, in evaluating possible options of improvements, staff applied the primary principle of retaining the roadway as such while exploring cost-effective measures that could be implemented immediately to enhance its safety for both cyclists and motorists.

Given that the crash investigation report from Richmond RCMP did not identify roadway design as a factor and the potential challenges of widening River Road (discussed further below), staff reviewed the existing signage, road markings and other safety measures along the section of River Road between No. 6 Road and Westminster Highway and have identified the following combination of cost-effective road safety measures that are proposed for implementation as part of the City's on-going effort to enhance road safety:

- (1) Replacement of existing "Share the Road" signage with new "Single File" signage at more frequent intervals (e.g., every 400 m) along with complementary "sharrow" pavement markings (Attachment 1). The new signage would advise motorists that the travel lanes are too narrow for side-by-side operation and that they should change lanes safely to pass cyclists.
- (2) Conversion of the existing solid double yellow centreline to a dashed single yellow centreline at select locations where it is safe for motorists to change lanes safely to pass.
- (3) Installation of new "Caution" signs at suitable intervals (e.g., every 1 km) to advise motorists to expect large volumes of cyclists on the roadway during weekends (Attachment 1).
- (4) Removal of remaining raised pavement markers (cat's eyes) that are located adjacent to the white edge line along the north side of the roadway as contact with the raised surface when riding can potentially cause cyclists, especially with touring bikes with narrow tires, to lose their balance. As the markers were installed to help highlight the edge of the roadway

during foggy conditions, they would be replaced with reflective delineator posts mounted in the gravel shoulder with adequate shy distance away from the travelled paved portion.

Staff discussed these proposed immediate measures with the Richmond Active Transportation Committee (advisory committee to Council) as well as representatives of other cycling organizations and clubs (including HUB Cycling, BC Cycling Coalition, Velo Vets). The proposed signage incorporates refinements suggested by the groups, who are supportive of the implementation of the proposed measures.

*Recommendation:* Staff recommend that the proposed measures in this section of River Road be endorsed for implementation as part of the City's on-going effort to improve road safety. Should they be endorsed, the effectiveness of the "Single File" and "Caution" signage would be monitored, including seeking feedback from cyclists, and if judged effective, would be deployed on other two-lane rural roads in Richmond that are known to be frequented by cycling groups on weekends (e.g., Sidaway Road, Dyke Road, Finn Road).

### Potential Future Road Safety Improvements

Staff also reviewed the feasibility of the following additional potential road safety improvements for this section of River Road.

#### *Speed Humps*

Feedback from cyclists and area residents has consistently identified vehicle speeds as a primary concern. Speed humps are a proven albeit permanent measure to help ensure that motorists respect the 50 km/h speed limit. A spacing of 300 m for the speed humps is recommended based on feedback from Richmond Fire-Rescue, as a closer spacing (e.g., every 150 m) would dramatically affect response times. Based on this spacing, the number of speed humps required would be 12 with an estimated total cost of \$42,000.

*Recommendation:* Staff recommend that residents and businesses in the affected roadway section be consulted and given an opportunity to provide their feedback. Staff would report back on the results with recommendations prior to any further action.

#### *Widened and Paved Road Shoulders*

Based on a high-level review of the feasibility of adding paved shoulders to River Road in this section, staff identified the following road geometric challenges:

- The physical constraints of the North Arm of the Fraser River to the north and the large canal to the south may limit the extent to which any road widening can be achieved. The open canal on the south side is used by adjacent cranberry farmers during harvesting.
- The roadway is located on top of the City's perimeter dike system such that any widening would be significantly more complex and costly.
- The foreshore along the entire length is a designated Environmentally Sensitive Area and the roadway is within a designated Riparian Management Area.
- High potential for private property impacts including the need to reconstruct driveways on the south side.

- Potential for a significant loss of trees, particularly on the north side.

Recommendation: The majority of River Road between No. 6 Road and Westminster Highway sits on top of the dike. This section of dike will be reviewed in Phase 4 of the Dike Master Plan process, which is scheduled to begin in 2018 following the completion of Phases 2 and 3. The review process will develop options for the complete reconstruction of River Road to further improve road safety and facilitate dike raising over the 30-year time frame.

**Financial Impact**

As shown in Table 2, the proposed road safety measures for implementation have a total estimated cost of \$67,000 and would be funded from the following existing approved budgets.

Table 2: Cost Estimates and Funding Sources

Item	Cost Estimate	Funding Source
Signage	\$25,000	2015 Active Transportation Improvement Program
Pavement Markings ("Sharrows")	\$12,000	
Removal of Pavement Markers & New Roadside Delineator Posts	\$30,000	2016 Traffic Calming Program
<b>Total</b>	<b>\$67,000</b>	

**Conclusion**

The proposed signage and pavement markings would raise the awareness for both motorists and cyclists that River Road between No. 6 Road and Westminster Highway is a popular cycling route, particularly on weekends, and remind both road users to proceed safely when sharing the road. The removal of the raised pavement markers would further enhance cycling safety.

Staff will report back on the future potential installation of additional speed humps on River Road as a further road safety improvement, along with the associated costs.



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Att. 1: Illustration of Proposed Road Safety Signage and Pavement Markings

Proposed Signage and Pavement Markings for  
River Road: No. 6 Road-Westminster Highway



Existing "Share the Road"  
Signage



New "Single File" Signage



Caution Signage



"Sharrow" Pavement  
Marking