



City of Richmond

Report to Committee

To: General Purposes Committee

Date: April 3, 2018

From: Victor Wei, P. Eng.
Director, Transportation

File: 10-6450-09-01/2018-
Vol 01

Re: River Road – Proposed Implementation of Selected Road Safety Measures

Staff Recommendation

That the proposed road safety measures on River Road between No. 6 Road and Westminster Highway as outlined in the staff report titled “River Road – Proposed Implementation of Selected Road Safety Measures”, dated April 3, 2018 from the Director, Transportation be endorsed for implementation prior to Fall 2018.

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

Att. 2

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

10-6450-09-01-2018-001

Staff Report

Origin

At the March 21, 2018 Public Works and Transportation Committee meeting, discussion occurred regarding the implementation in the near term of potential road safety measures along River Road between No. 6 Road and Westminster Highway. As a result, the following referral was carried:

That staff provide a report back on the feasibility of implementing the various traffic safety enhancements on River Road, with the exception of speed humps, prior to RCMP reporting back on its enforcement efforts in Fall of this year.

This report responds to the referral.

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.

Analysis

Proposed Implementation of Selected Road Safety Measures

In response to the March 21, 2018 referral, staff first compiled a full list of potential road safety measures on River Road east of No. 6 Road that could be implemented in the short-term comprised of:

- (1) measures identified by staff and approved by Council at its June 26, 2017 meeting;
- (2) proposed short-term measures identified by the independent consultant as listed in the staff report presented at the February 21, 2018 Public Works and Transportation Committee meeting; and
- (3) measures suggested by delegations to the March 14, 2018 Community Safety Community meeting and the March 21, 2018 Public Works and Transportation Committee meeting.



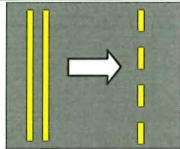


Staff then met with eight area residents and property owners on March 26, 2018 to obtain their feedback on each of the potential measures. Attachment 1 identifies each measure and summarizes the comments from the residents and staff's resulting recommendation and rationale. Proposed measures that have mutual support include:


- reduce the number and increase the size of some of the cycling-related signs including relocation of some of the signs;
- install speed reader boards;
- retrofit the centreline at appropriate locations;
- install shoulder-mounted reflective delineators at selected locations; and
- increase roadway maintenance.

Based on the area residents' feedback and staff's analysis, Table 1 summarizes staff's recommendations regarding a sub-set of the road safety measures proposed to be implemented

prior to staff reporting back in Fall 2018 on the outcome of increased RCMP enforcement, which include proposed revisions to road safety measures already installed (i.e., “single file” and “caution” cycling-related signage). These recommendations are generally consistent with the suggestions made by the eight area residents at the meeting which are intended to improve the safety of all road users and not exclusively residents or cyclists.

Table 1: Recommended Road Safety Measures to be Implemented

| Proposed Road Safety Measure | Status | Staff Recommendation and Rationale | Example |
|--|--|---|---|
| Reduce the number of “Single File” signage | Installed (24 signs in each direction) | <ul style="list-style-type: none"> Reduce to 8 signs in each direction (1 at each end, 1 at No. 7 Road, 1 at No. 8 Road, and remaining 4 spaced accordingly), as warning signs can be placed at longer spacing intervals Increase sign size and font size of text (top portion of sign) at gateway locations at each end (No. 6 Road and Westminster Hwy) to enhance visibility and legibility Where feasible, co-locate near hydro poles to minimize new stand-alone installations |  |
| Revise and reduce the number of “Caution” signage | Installed (8 signs in each direction) | <ul style="list-style-type: none"> Revise shape from square to diamond (warning sign) Reduce to 4 signs in each direction (1 at each end, 1 at No. 7 Road, 1 near CN Rail bridge), as warning signs can be placed at longer spacing intervals Revise text from “High Cycling Activity on Weekends” to “Watch for Cyclists” to enhance legibility and be inclusive of all cycling activity (not just on weekends) Where feasible, co-locate near hydro poles to minimize new stand-alone installations |  |
| Convert solid double yellow centreline to dashed single yellow centreline | Not yet implemented | <ul style="list-style-type: none"> Implement at 6 locations where it is safe for motorists to change lanes safely to pass Will allow motorists to legally change lanes to pass vehicles or cyclists |  |
| Remove raised pavement markers (RPMs) and install shoulder-mounted reflective delineator posts at selected locations | Not yet implemented | <ul style="list-style-type: none"> Install delineator posts at transitions to No. 6 Road and Westminster Hwy to help highlight the curves and edge of the roadway particularly during periods with poor visibility (e.g., foggy conditions) at selected locations such as curved sections Remove RPMs where delineator posts are installed Retain all other remaining RPMs only if they do not pose a safety concern for road users including cyclists |  |
| Install 4 movable speed reader boards | Not yet implemented | <ul style="list-style-type: none"> At this time, install 2 movable speed reader boards (one in each direction) near No. 6 Road (at Valmont Way) where the installations would not impact the Riparian Management Area (RMA) on the south side nor the dike core on the north side Should Council approve the staff recommendation, initiate provincial permit process to conduct works in the RMA and dike in order to establish additional 4 locations (2 in each direction with one near Westminster Hwy and one in the middle) When all locations are established, rotate the 4 movable speed reader boards amongst the 6 sites |  |

| Proposed Road Safety Measure | Status | Staff Recommendation and Rationale | Example |
|---|-----------|--|---|
| Relocate "Bike Route" sign on westbound Westminster Hwy | Installed | <ul style="list-style-type: none"> Relocate sign further westbound on Westminster Hwy (past River Road) to clarify that Westminster Hwy is a designated bike route (i.e., has cycling-specific facilities such as bike lanes or off-street multi-use pathway) |  |

Attachment 2 displays a map that indicates the locations of each of the road safety measures proposed for installation and/or revision.

Additional Suggested Measures to Improve Road Safety

At staff's meeting with area residents and property owners, other road safety concerns and suggested measures were identified. Staff provide the following comments on these items.

Increase Enforcement of Trucks and Truck Weight Limit

Residents identified continued concerns with truck operations on River Road, particularly turning trucks (drivers may cross the centreline) or drivers apparently failing to respect the posted load limit signage. They emphasized the importance of increased enforcement to address what, in their opinion, is the primary road safety concern.

There is a 9-tonne load limit in effect on River Road between No. 7 Road and Westminster Highway. Richmond RCMP advise that joint enforcement operations are regularly conducted with Community Bylaws staff, who have primary responsibility for enforcement of trucks on weight-limited roads. Most recently, Richmond RCMP conducted a joint operation with Community Bylaws on March 16, 2018 where City bylaw officers issued 18 bylaw infraction municipal tickets to 15 separate truck drivers on River Road, in addition to 24 RCMP-issued speeding tickets to other vehicle drivers. Richmond RCMP and Community Bylaws will continue to regularly conduct joint operations.

Widen Roadway and Provide Cycling and Pedestrian Facilities

For the long term, residents indicated a desire to widen the road to an arterial standard with separate provision for cyclists and pedestrians. Staff note that 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 long term 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

Table 2 outlines the estimated cost and funding source for each of the proposed road safety measures. All funding sources have been previously approved by Council as part of past annual capital budgets. If approved for implementation, staff would also submit the proposed measures

to ICBC's 2018 *Road Improvement Program* for funding contributions. Should any submitted measures receive funding from ICBC, the City's portion of the total capital cost would be reduced accordingly.

Table 2: Estimated Cost and Funding Source for Recommended Road Safety Measures

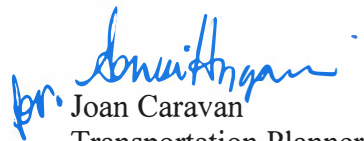
| Proposed Road Safety Measure | Estimated Cost | Funding Source |
|---|-----------------|----------------------------------|
| Revise "Single File" signage | \$17,000 | Approved Traffic Calming Program |
| Revise "Caution" signage | | |
| Convert solid double yellow centreline to dashed single yellow centreline at 6 locations | \$21,600 | |
| Remove raised pavement markers (RPMs) and install shoulder-mounted reflective delineator posts along curves at each end | \$10,500 | |
| Purchase 4 and install 2 movable speed reader boards | \$38,500 | |
| Relocate "Bike Route" sign on westbound Westminster Hwy | \$200 | |
| Total | \$87,800 | |

Conclusion

As directed by the Public Works and Transportation Committee, staff have developed a package of road safety measures (excluding speed humps) proposed for immediate implementation on River Road east of No. 6 Road prior to staff reporting back in Fall 2018 on the outcome of increased Richmond RCMP enforcement during Summer 2018. The recommended measures reflect staff's consideration of feedback from area residents regarding each of the measures and are intended to improve the safety of all road users, not exclusively residents or cyclists.



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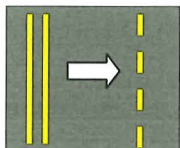


Joan Caravan
Transportation Planner
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Att. 1: Assessment of Potential Road Safety Measures to be Implemented Prior to Fall 2018

Att. 2: Approximate Location of Recommended Road Safety Measures to be Implemented Prior to Fall 2018





Assessment of Potential Road Safety Measures to be Implemented Prior to Fall 2018

| Potential Road Safety Measure | Status | Resident Comments ⁽¹⁾ | Staff Comments and Rationale |
|--|--|---|---|
| <p>"Single File" signage</p>  | Approved by Council: Installation Complete | <ul style="list-style-type: none"> Too many signs, which is distracting Too much text and difficult to comprehend at 50 km/h Suggest retain only 2 signs (1 at each end) Suggest retain only 2 signs (1 in each direction) at location where delineator posts are mounted in centreline | <ul style="list-style-type: none"> Retain signage as it is appropriate for a lane width less than 4.0 m per national Transportation Association of Canada guidelines Reduce number from 24 to 8 in each direction, as warning signs can be placed at longer spacing intervals Increase size of signs at gateway locations at each end (No. 6 Road and Westminster Hwy) to enhance visibility Increase font size of text (tab portion of sign) to enhance legibility Where feasible, co-locate near hydro poles to minimize new stand-alone installations |
| <p>"Caution" signage</p>  | Approved by Council: Installation Complete | <ul style="list-style-type: none"> Text ignores weekday commuter cyclists Deploy fewer signs (1 at either end plus 1 at No. 7 Road or rail bridge) Deploy 4 signs only on a temporary basis for duration of special events | <ul style="list-style-type: none"> Retain signage Revise text from "High Cycling Activity on Weekends" to "Watch for Cyclists" to enhance legibility and be inclusive of all cycling activity (not just on weekends) Revise shape from square to diamond (i.e., warning sign) Reduce number from 8 to 4 in each direction, as warning signs can be placed at longer spacing intervals Where feasible, co-locate near hydro poles to minimize new stand-alone installations |
| <p>"Sharrows" pavement markings</p>  | Approved by Council: Installation Pending | <ul style="list-style-type: none"> Do not implement Would be distracting for motorists If placed in centre of lane, suggest it would be contradictory to Motor Vehicle Act | <ul style="list-style-type: none"> Considered complementary to "Single File" signage Do not implement at this time to allow assessment and confirmation of location of "Single File" signage Consider implementation next to "Single File" signage (8 in each direction) as part of report back in Fall 2018 |
| <p>Convert solid double yellow centreline to dashed single yellow centreline</p>  | Approved by Council: Installation Pending | <ul style="list-style-type: none"> Implement at selected locations where safe to pass | <ul style="list-style-type: none"> Implement at 6 locations where it is safe for motorists to change lanes safely to pass Will allow motorists to legally change lanes to pass cyclists |

Assessment of Potential Road Safety Measures to be Implemented Prior to Fall 2018

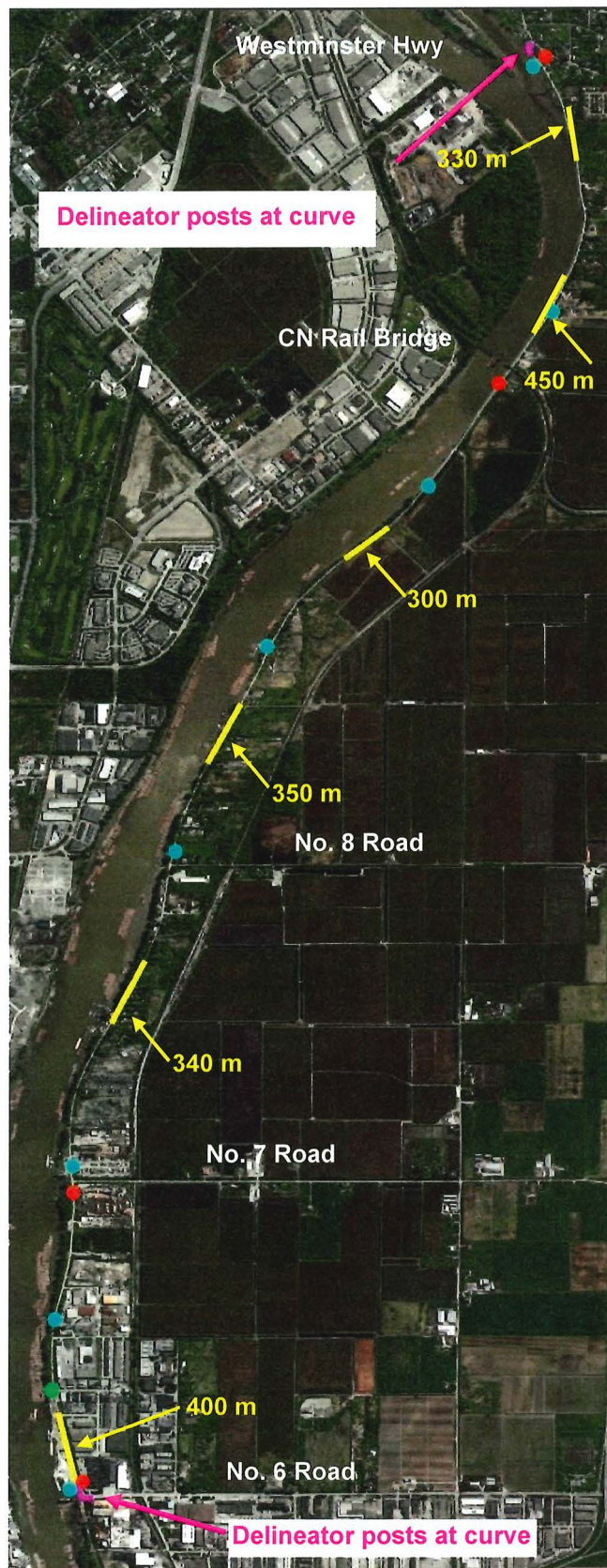
| Potential Road Safety Measure | Status | Resident Comments ⁽¹⁾ | Staff Comments and Rationale |
|---|---|---|--|
| Remove remaining raised pavement markers (RPMs)  | Approved by Council: Installation Pending | <ul style="list-style-type: none"> Do not remove Reinstate all missing RPMs Consider flush-mounted RPMs Consider RPMs that alert drivers to presence of black ice | <ul style="list-style-type: none"> Remove RPMs at selected locations where shoulder-mounted reflective delineator posts are installed Retain all other remaining RPMs only if they do not pose a safety concern for cyclists |
| Install shoulder-mounted reflective delineator posts  | Approved by Council: Installation Pending | <ul style="list-style-type: none"> Do not install in place of RPMs Install in addition to RPMs where hydro poles are close to pavement edge and at train bridge | <ul style="list-style-type: none"> Install delineator posts at transitions to No. 6 Road and Westminster Hwy to help highlight the curves and edge of the roadway particularly during periods with poor visibility (e.g., foggy conditions) |
| Install 4 movable speed reader boards  | Proposed by Consultant: Installation Pending | <ul style="list-style-type: none"> Install at permanent locations Consider signs that can be programmed with messages Install traffic radar data collection units | <ul style="list-style-type: none"> At this time, install 2 movable speed reader boards (one in each direction) near No. 6 Road (at Valmont Way) where the installations would not impact the Riparian Management Area (RMA) on the south side nor the dike core on the north side Should Council approve the staff recommendation, initiate permit process to establish additional 4 locations (2 in each direction with one near Westminster Hwy and one in the middle), as these would impact RMA and dike When all locations are established, rotate the 4 movable speed reader boards amongst the 6 sites |
| Install signage treatments at 90° curves including chevron warning signs (potential LED)  | Proposed by Consultant: Installation Pending | <ul style="list-style-type: none"> Unnecessary Existing signage is sufficient | <ul style="list-style-type: none"> Do not implement in 2018 due to insufficient funding Consider as part of report back in Fall 2018 |
| Apply anti-skid pavement treatments at 90° curves  | Proposed by Consultant: Installation Pending | <ul style="list-style-type: none"> Unnecessary Likely not effective | <ul style="list-style-type: none"> Do not implement in 2018 due to insufficient funding Consider as part of report back in Fall 2018 |

Assessment of Potential Road Safety Measures to be Implemented Prior to Fall 2018


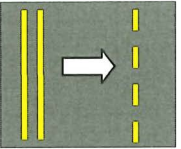








| Potential Road Safety Measure | Status | Resident Comments ⁽¹⁾ | Staff Comments and Rationale |
|---|--|--|--|
| Increase road cleaning and refreshing of pavement markings  | Proposed by Consultant: Installation Pending | <ul style="list-style-type: none"> Implement Undertake on an on-going basis as required (including washing of signs) | <ul style="list-style-type: none"> Do not implement in 2018 as the incremental increased maintenance costs (\$15,000) cannot be absorbed as part of current operating budget cycle The additional Operating Budget Impact can be proposed for Council's consideration as part of the 2019 Operating Budget |
| Replace single file signage with side-by-side signage  | Request of Delegation | <ul style="list-style-type: none"> Implement Conveys that cyclists must ride as far to the right as practicable | <ul style="list-style-type: none"> Do not implement Requested signage not appropriate for lane width less than 4.0 m per national Transportation Association of Canada guidelines Retain reduced number of existing "Single File" signage |
| Bury sign post concrete bases  | Request of Delegation | <ul style="list-style-type: none"> Existing bases are too numerous and too close to the edge of the road Burying concrete base will lower signage, which is currently too high for line of sight of motorists Place next to hydro poles where there is typically a wider shoulder | <ul style="list-style-type: none"> Retain existing installation method On the south side, required installation depth would compromise ability of road shoulder to support a sign post On the north side, required installation depth would impact and may compromise dike core, and require permits from provincial dike inspector Co-locate signage and bases next to hydro poles where feasible to minimize new stand-alone installations |
| Relocate Bike Route sign on westbound Westminster Hwy  | Request of Delegation | <ul style="list-style-type: none"> Remove sign or add arrow to direct cyclists straight ahead (i.e., remain on Westminster Highway) | <ul style="list-style-type: none"> Relocate sign further westbound on Westminster Hwy (past River Road) to clarify that Westminster Hwy is a designated bike route (i.e., has cycling-specific facilities such as bike lanes or off-street multi-use pathway) |

(1) Includes delegations to March 14, 2018 Community Safety Community meeting and March 21, 2018 Public Works and Transportation Committee meeting.

Approximate Locations of Road Safety Measures Recommended to be Implemented Prior to Fall 2018



LEGEND

| | | |
|---|--|---|
|  | Conversion of double yellow centreline to single dashed centreline |  |
|  | Installation of shoulder-mounted delineator posts along curve |  |
|  | "Single File" Signage (8 signs in each direction) |  |
|  | "Caution" Signage (4 signs in each direction) |  |
|  | 2 Speed Reader Boards (1 in each direction at Valmont Way) |  |