



October 19, 2016

To Mayor and Council Pitt Meadows

cc: Forrest Smith, fsmith@pittmeadows.bc.ca
Katia Robichaud, krobichaud@pittmeadows.bc.ca

Re: **Pitt Meadows Traffic Calming Policy;**
Open House Oct. 3, 2016

Dear Mayor and Council,

Thank you for giving our HUB Maple Ridge/Pitt Meadows Committee the opportunity to provide input into the Pitt Meadows Traffic Calming Policy. We're happy to see that traffic calming is being taken seriously in Pitt Meadows. If done well, it helps keep all road users - but especially cyclists and pedestrians - safer and also helps to improve livability in the City.

We would like to provide a few comments for your consideration.

- **Curb extensions** can result in decreased safety for people on bikes. When they are used on any roads other than quiet residential streets, it's important that curb extensions not extend into the cyclist's space, i.e. into the bike lane or shoulder. If a curb extension does extend into the bike lane or shoulder, or reduces the road width so that cyclists are forced into the path of faster moving traffic, it would be preferable to use cut-outs for people on bikes.
- **Traffic circles** can also lead to decreased safety for people on bikes. Like curb extensions, traffic circles tend to force people on bikes in front of faster moving cars. According to ICBC statistics (see table on next page), about 5% of all crashes involving cyclists between 2007 and 2012 happened at traffic circles. As about 50% of all crashes involving cyclists happen at intersections, those that occur at traffic circles comprise about 10% of that. This is actually a fairly high percentage in view of the fact that traffic circles comprise a rather small percentage of all intersections, depending on municipality (about 2% in Vancouver).

According to the [Cycling Safety Study](#) done in Vancouver in 2015,

- *Traffic circles appear to be a localized issue for collisions with motor vehicles based on ICBC data; however, the [BICE](#) Injury crash data found that approximately half of the injuries at traffic circles did not involve motor vehicles but involved falls during collision avoidance manoeuvres or hitting the curb or slipping when the cyclist was trying to go around the traffic circle. This suggests that the design treatments and intersection geometry should be carefully considered with traffic circles.*
- *The majority of cycling collisions (80%) occurred at traffic circles located on a local street bikeway. These are also the routes with the majority of traffic circles, as 66% of all traffic circles in the City of Vancouver are located on local street bikeways.*



Table 5.1
Cycling Collision Classification and Frequency (2007 – 2012)
Source: ICBC Collision Data (2007-2012)

Collision Description	Number of Collisions	Proportion of All Collisions	Rank
Intersection Location			
Vehicle Turns Left			
Cyclist crosses at Signal with Right of way	152	5.4%	6
Cyclist crosses at Signal without Right of way	7	0.2%	34
Cyclist crosses at Half-Signal with Right of way	24	0.9%	23
Cyclist crosses at 2-Way Stop with Right of way	130	4.6%	9
Cyclist crosses at 2-Way Stop without Right of way	11	0.4%	30
Cyclist crosses intersection when Right of way is Unclear	96	3.4%	12
TOTAL LEFT MOVEMENTS	420	14.9%	
Vehicle Turns Right			
Cyclist crosses at Signal with Right of way	184	6.5%	3
Cyclist crosses at Signal without Right of way	3	0.1%	29
Cyclist crosses at Half-Signal with Right of way	26	0.9%	22
Cyclist crosses at 2-Way Stop with Right of way	50	1.8%	16
Cyclist crosses intersection when Right of way is Unclear	78	2.8%	14
Cyclist rear ends vehicle as vehicle is turning right	14	0.5%	28
TOTAL RIGHT MOVEMENTS	355	12.6%	
Vehicle Goes Straight			
Cyclist crosses at Signal with Right of way	20	0.7%	24
Cyclist crosses at Signal without Right of way	13	0.5%	35
Cyclist crosses at Half-Signal with Right of way	33	1.2%	21
Cyclist crosses at Half-Signal without Right of way	16	0.6%	25
Cyclist crosses at 2-Way Stop with Right of way	128	4.5%	10
Cyclist crosses at 2-Way Stop without Right of way	46	1.6%	17
Cyclist crosses intersection when Right of way is Unclear	146	5.2%	7
TOTAL STRAIGHT MOVEMENTS	402	14.3%	
Other Actions in Intersection			
Cyclist is stopped at intersection	39	1.4%	19
Cyclist turns left at intersection	15	0.5%	26
Vehicle hits cyclist while changing lanes in an intersection	44	1.6%	18
Cyclist collides with stopped vehicle at intersection	9	0.3%	31
Vehicle and cyclist collided in traffic circle	137	4.9%	8
SUBTOTAL INTERSECTION	1421	50.5%	

The *Cycling Safety Study* makes mention of the study "[Comparing the Effects of Infrastructure on Bicycling Injury at Intersections and Non-Intersections using a Case Cross-Over Design](#)" (2013), by Harris et al, which concluded that "traffic circles on local streets increased the risk" and "traffic circles were more hazardous than all other intersection types (traffic lights, two-way stops, four-way stops and uncontrolled intersections)".

Kay Teschke, one of the lead researchers of this study, provided us with the attached comments related to traffic circles, and gave some suggestions to possibly improve safety of traffic circles, and explained that more research on traffic circle safety is still ongoing.

In view of the above, we would recommend safety of cyclists be carefully considered when opting for and designing both curb extensions and traffic circles as a means of traffic calming.



And finally, we would also like to point out that it's very important to allow smooth cycling traffic flow on designated bike routes, which means that stop signs along the route should be avoided as much as possible, which of course needs to be balanced with the need to prevent rat-running and to reduce car volumes on those routes. As Kay Teschke suggested, traffic diverters could in certain cases be a preferred alternative.

Thank you for consideration of our recommendations.

Kind regards,

Ivan Chow, Co-Chair
HUB Cycling
Maple Ridge/Pitt Meadows Chapter

Attachment: comments Kay Teschke

E-mail from Kay Teschke <kteschke@mac.com>(Cycling researcher with UBC School of Population and Public Health) to HUB Maple Ridge/Pitt Meadows, dated Oct. 12, 2016 re traffic circles

I definitely don't think the traffic circle issue is settled. But worthy of caution ...

Great that you've looked at Anne Harris' paper from our study. We saw a huge increased risk with traffic circles on local streets compared to local streets with stop signs. Jerry Dobrovoly from the City thought it might be the result of them installing traffic circles where there already were problems. But they checked one of the traffic circle intersections with multiple crashes in our study against historical ICBC data. They found that in 7(?) years before it was installed, there were no bicycle-car crashes reported but 17 in the same period after installation. Needless to say, they removed it!

Our results showed about half the crashes at traffic circles were bike-car crashes, and about half were bike-only crashes. The bike-car collisions often resulted after a dance of neither knowing who had the right of way and then both proceeding at once. Given the small distance between streets at these intersections, this easily resulted in a collision. The bike-only crashes resulted when cyclists didn't make the turn properly - so either hit the curb of the circle or slipped out as they were turning.

Vancouver (where our study took place) uses fairly unique signage on its traffic circles and it doesn't explain the right of way, as here:



Some other MetroVan municipalities use different signage that does indicate the right of way. I don't think the one below is it, but Stu Ramsey in Burnaby might be able to provide an example. Stuart.Ramsey@burnaby.ca

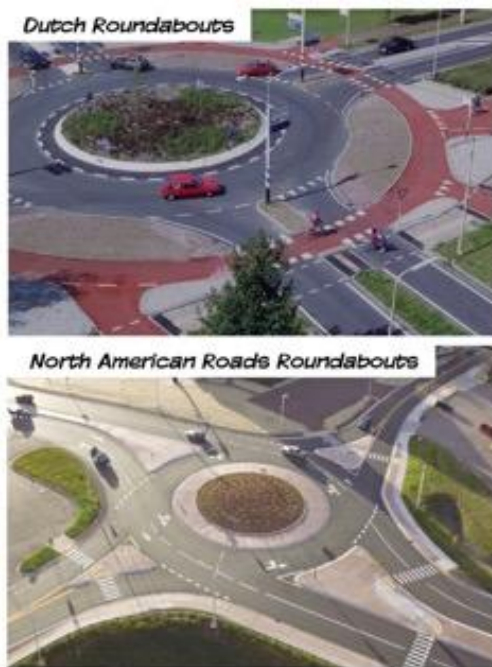


Clearer signage might help for the car-bike collisions.

For the bike-only collisions, downhill slopes entering the traffic circle might be an issue. The circle that the City took out had a slight slope from one direction. Another way to help might be to NOT put sharp curbs around the traffic circle.

As far as traffic circles reducing crashes overall - that would be expected, so I am happy that Seattle is finding that benefit. I just checked Google Streetview and it seems that most Seattle local street intersections are “uncontrolled”, i.e., no stop signs. So the before-after comparison needs to be taken in that light. A couple of decades (?) ago, Vancouver had a huge problem with crashes at uncontrolled local street intersections and now has stop signs (or traffic circles) at all local street intersections.

It is certainly well established that the much larger circles - roundabouts at intersections of arterials - reduce car-car collisions substantially (compared to the same intersections with traffic lights!). They have not been so successful for bikes and that’s why in Holland they are very carefully designed with an outer ring for people on bikes or on foot, as below:



A question to ask for your situation in Maple Ridge, Jackie, is whether a traffic diverter would work instead. We found them to be wonderful for reducing injuries on local street bike routes. Here is a photo of a new one in Vancouver - a very elaborate one that is also a mini park. I bet the neighbours love it!



The City of Vancouver recently gave me a huge ICBC data file on local street intersection crashes (bike-car, pedestrian-car, and car-car) to have a more detailed look at traffic circles. I am hoping to be able to look at all three types of crashes ... though still waiting for more data about each intersection to be able to do it. Lots still to know.

Kay