



December 5, 2015

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

**RE: Safety issues on Spirit Trail near Pemberton Avenue**

Dear Mayor and Council,

HUB is a charitable organization working to get more people cycling, more often, safely. Safe and accessible infrastructure plays an important role in getting more people on bikes. The HUB North Shore Committee has heard from members who are concerned about the obstacle (baffle) installed on the Spirit Trail west of Pemberton Avenue a few months ago. We understand that the District of North Vancouver is monitoring the baffle.

With this letter we would like to support the District's evaluation of the baffle. We have attached guidelines and best practices on the use of baffles and bollards from other jurisdictions since little design guidance exists in Canada. Included are user experiences with the current design of the Spirit Trail between Welch strip and 1<sup>st</sup> Street.

Below please find our suggestions how to make the Spirit Trail safer for all users, specifically where the path runs directly in front of businesses and across lanes and driveways.



Figure 1: Baffle on Spirit Trail near Pemberton Avenue

We believe the conflict between people in cars, on bikes and on foot on this section of the Spirit Trail is for the most part not due to 'bad' behaviour by either party. The path crossings may not be obvious to either cyclists or drivers, and the bollards in the path at driveways and lanes draw cyclists' attention away from any approaching cars and pedestrians.



The new baffle has created additional hazards, including the risk of falls, collisions and injuries. Users frequently switch from the Spirit Trail to the Welch roadway to circumvent the baffle, increasing the risk of collisions with cars on Welch. The baffle also impedes path access for intended Spirit Trail users, such as people with child trailers, trail-a-bikes, tricycles, tandem bikes and double strollers.

### Improvement recommendations

- Remove the baffle and all steel bollards between Welch strip park and 1<sup>st</sup> Street. This will restore accessibility for all intended path users, improve safety for cyclists, pedestrians and drivers, and allow better winter maintenance of the path.
- Where the bollards are now next to lanes and driveways, mark path with pedestrian/bike stencils instead. For consistency, consider using the same stencil pattern that the City of North Vancouver recently applied on the Spirit Trail along Esplanade and above Low Level Road.
- Only if cars frequently drive or park on the Spirit Trail consider installing a bollard. Bollards should be well away from any path crossings and curves. We do not believe bollards are necessary if the path is clearly marked for walking and cycling. Sporadic vehicle use of the Spirit Trail may be annoying but is less hazardous than steel bollards every day.
- Where the Spirit Trail crosses lanes and driveways, mark the path green. This has proven successful in Vancouver to alert drivers to look out for cyclists. It also alerts cyclists that a crossing and potential conflict zone with cars is ahead. Pavement markings are clearer, easier to see and more effective than the current overhead signs.
- Prune or remove the shrubs near the bench west of the Pemberton lane. It blocks the view for drivers coming out of the lane and eastbound cyclists cannot see whether cars approach from the lane. Remove the bollards in the path curve.
- Consider applying a yellow centre line on the Spirit Trail. The City has done this in 2015 on their paved greenways at the request of residents (unfortunately using white instead of the standard yellow). It appears successful in reducing conflict among all users. The line would also be an effective visual reminder to drivers that the path is not a parking area or vehicle road.
- Ensure that the dance studio on Welch and other businesses do not put signs or other obstacles on the path, especially not near vehicle and pedestrian crossings where cyclists need to look out for other path and road users.



In the longer term and as the number of cyclists on the Spirit Trail increases, we recommend separating cyclists and pedestrians on the Spirit Trail between Garden Avenue and Pemberton Avenue. A separated bike path on Welch could be the Spirit Trail for wheeled users (bikes, skateboards and electric mobility devices), while walkers and runners would use the current path. Norgate residents would have better enjoyment of Welch strip park without cyclists. All road and path users would be safer.

Sincerely,

Tony Valente  
Chair, HUB North Shore Committee  
[northshore@bikehub.ca](mailto:northshore@bikehub.ca)

Attachments:

- A. Obstacles on Spirit Trail
- B. Bollards
- C. Baffles
- D. Pavement markings



**A. Obstacles on Spirit Trail between Welch strip park and 1st Street**

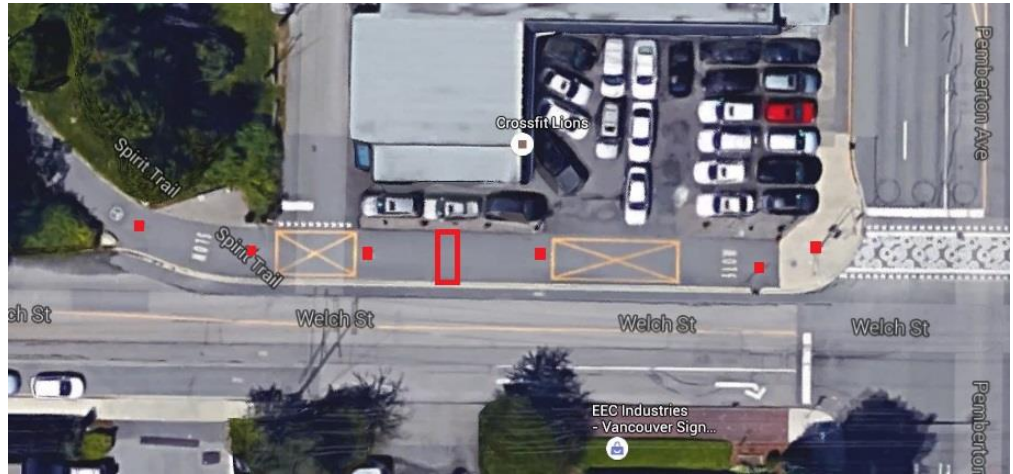


Figure 2: Obstacles (red) on 40m Spirit Trail section west of Pemberton Avenue (4 steel bollards, one baffle, one sign post and one signal post). Note location of bollards near vehicle crossings and at bend in pathway where sightlines are poor.

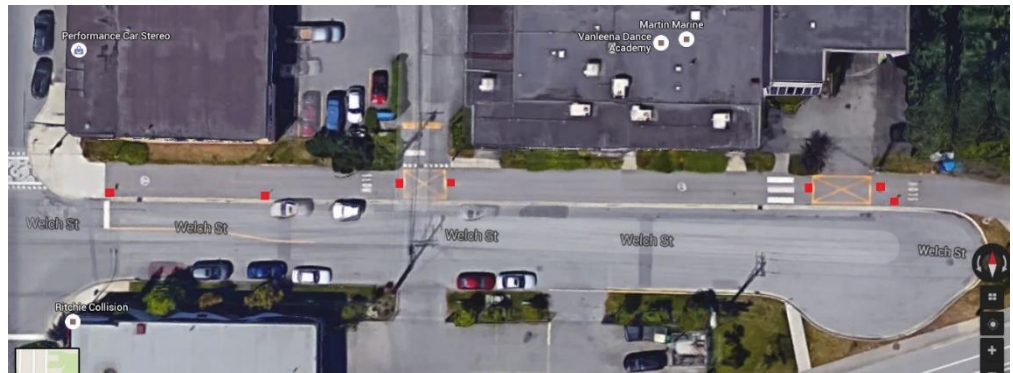


Figure 3: Obstacles (red) on 60m Spirit Trail section east of Pemberton Avenue (4 steel bollards and 3 sign posts)



Figure 4: Additional private obstacles (signs and cones set up by the dance studio) on the Spirit Trail at driveway crossing and crosswalk



## B. Bollards

- Steel bollards are a significant crash and injury hazard to cyclists. Bollards and street furniture contributed to the high cyclist injury risk and injury severity found on multi-use paths in Vancouver and Toronto<sup>12</sup>. In these studies multi-use paths had the highest crash and injury rates of all route types, except major roads without any cycling infrastructure.
- The placement of bollards at the lane and driveway crossings on this section of the Spirit Trail is especially hazardous. Cyclists look at the bollards to avoid them, so it is difficult for them to look out at the same time for approaching cars. This a particular problem for children who have less spatial awareness and may either not see cars and other path users or they crash with a bollard.
- Bollards should be avoided on paths used by cyclists whenever possible. Design guidelines from other jurisdictions are clear about the hazards posed by bollards. For example, the Washington State DOT manual for shared use paths recommends<sup>3</sup>:

*“Install bollards at entrances to shared-use paths to discourage motor vehicles from entering. Do not use bollards to divert or slow path traffic.”*

*A preferred method of restricting entry of motor vehicles is to split the entry way into two sections separated by low landscaping, thereby splitting a path into two channels at roadway intersections. This method essentially creates an island in the middle of the path rather than installing a bollard.”*

California officials recommend a three-step approach<sup>4</sup>:

1. *Install markings/signs identifying path*
2. *Design path entry to discourage vehicle access.*
3. *Use barriers only if vehicle entry risks exceed barrier risks to bicyclists.*

<sup>1</sup> <http://www.biomedcentral.com/content/pdf/1471-2458-14-1205.pdf>

<sup>2</sup> <http://bmjopen.bmj.com/content/5/1/e006654.full.pdf+html>

<sup>3</sup> <http://www.wsdot.wa.gov/publications/manuals/fulltext/M22-01/1515.pdf>

<sup>4</sup> [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/guidance/bollards/index1.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/bollards/index1.cfm)



### C. Baffles

- Baffle gates should not be used on paths to divert or slow path traffic, even if marked and lit. The purpose of baffle gates is to prevent motor vehicles from entering pathways and trails, where necessary. Like bollards, baffles constitute a serious hazard to cyclists. Especially older and very young cyclists and people who ride infrequently can lose balance while navigating the baffle or they collide with other path users.
- Additionally, baffles are a barrier to cycling, especially for families. They are difficult if not impassable for bikes with trailers, trail-a-bikes (attached children's bikes), tandems, cargo bikes and adult tricycles. People with wide strollers also have a difficult time getting through the baffle on the Spirit Trail.
- The Spirit Trail baffle has increased conflict between path users because it creates a bottleneck. Westbound cyclists end up on the 'wrong' side in the path of eastbound cyclists coming around a curve with poor visibility. Walkers often need to wait for cyclists to go through the baffle and vice versa, or they simply walk or bike around the baffle on the road. Without using the roadway people would have to line up on both sides of the baffle and one by one walk and bike through, which is impractical and unrealistic at the best of times.
- We recommend that staff spends some time observing the movement of cyclists, pedestrians and cars near the baffle during morning or afternoon rush hour.



#### D. Pavement markings

- In conjunction with removing the baffle and bollards, we recommend the following pavement markings to clarify path usage and conflict zones.



Figure 6: Green marking at lane and driveway crossings to alert drivers and cyclists (York Street, City of Vancouver)



Figure 7: Yellow centre line and stencils to reduce user conflict (Seawall at Beach Avenue, City of Vancouver). The City of North Vancouver uses walk/bike stencils the same way on the Spirit Trail.



Figure 8: Yellow centre line on two-way multi-use path at Lions Gate Bridge cloverleaf, West Vancouver. Note no centre line is marked on one-way path from Marine Drive (bottom right).