



Your Cycling Connection

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Wendy Itagawa. P.Eng.  
Executive Project Director  
Pattullo Bridge Replacement Project  
BC Transportation Investment Corporation

September 8, 2022

Dear Wendy,

Further to our previous communications (attached), HUB Cycling surveyed people who cycle to determine the level of concern regarding the design of the means prevention barrier planned for the new bridge which will replace the Pattullo Bridge.

We are now writing to ask that the means prevention barrier planned for the new bridge be re-designed. This will ensure that people cycling, running, walking and using wheeled micro-mobility devices are not hindered by the strobing effect. Active transportation users have experienced this effect on the Iron Workers Memorial Bridge and the Golden Ears Bridge.

We understand the main point of the fencing is means prevention. We fully support this and understand the need for it from a public health perspective. We are concerned about this *particular vertical pipe type of fencing*, due to the strobing effect when the sun is shining and is lower in the sky. User's vision can be impeded and collisions can occur as a result. There are other types of fencing that are effective for means prevention that do not introduce this kind of safety hazard.

HUB surveyed the cycling community earlier this summer to confirm whether this is a serious matter. A significant proportion of the 439 respondents expressed concern about the flashing effect, about half thought it was a serious problem.

In light of this data, we urge you and your team to consider alternatives to the vertical pipe-style barrier when building the new bridge. On the following pages, you can read comments we received from survey respondents.

Sincerely,

Erin O'Melinn, Executive Director, HUB Cycling

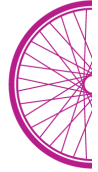
Garey Carlson, Co-Chair, New Westminster Local Committee, HUB Cycling

Tim Yzerman, Co-Chair, Surrey-White Rock Local Committee, HUB Cycling



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Cc: Hon. Rob Fleming, Minister of Transportation and Infrastructure  
Hon. Bowinn Ma, Minister of State for Infrastructure  
Hon. Jennifer Whiteside, MLA New Westminster  
Mayor and Council, City of New Westminster  
Mayor and Council, City of Surrey

### <Addendum - Survey Comments>

We asked survey respondents whether they had any concerns or issues riding past pipe-style means prevention fencing on the Ironworker's or Queensborough bridges, or elsewhere.

Here are some of the (unedited) comments we received:

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The bright strobing/flushing is disorienting and distracting and makes it difficult to watch the path straight ahead.

I find it hard to see during the morning hours, I have to look down or my eyes get flashes of light which can sometimes feel blinding. Not looking up and in front of me isn't the safest way to ride.

It can be blinding to have intermittent flashes of light (if the sun is low)

When the sun is low and bright, the bars create a strobing effect than makes it extremely difficult to ride.

The flicker/strobe is disorienting and strains my eyes. Riding a large cargo bike, I only got a couple inches of clearance on Queensborough bridge, any misalignment from being blinded can lead to serious wreck

Strobing effect during low angle sunlight from railing on Burrard Bridge that is disorienting... other bridges likely worse!

strobing is real and distracting!

flashes of light between these poles give me a headache

The flickering light makes me feel nauseous. In order to mitigate the effects of the flickering I ride with one hand shading my eyes. I have to ride slower and am conscious that other cyclists may try to pass me so I stop at every pull out and check behind me. I know choose the times that I cycle over the 2nd Narrows Bridge so that I can avoid this from happening.



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Strobe light effect when sun is shining through pipes is very irritating and can be disorientating. The flashing sunlight is disorienting. Having to look away.

When the Sun gets lower in the sky and shines through the bars it's like a strobe light and is extremely disorienting which is an unsafe condition to be in on a bicycle. This happens to me on the second arrows bridge.

It's a serious problem. They should use a different kind of fencing

Some recumbent bikes, particularly those with under-seat steering, can have handlebars that extend out and to some degree forward. These can get caught by upright pipes and pushed backwards. Resulting in a sharp right turn into the fencing. This in turn can cause a sharp right turn with bike and body crashing into the fencing.

When I lived in NW I often rode over Queens B bridge. I hated it during certain times of day & depending on the sun. I had to be very careful where I looked & let my eyes focus. Drove me nuts sometimes. Please avoid this type of fence if you can. It is not pleasant to ride beside.

I experienced vertigo and had to ride with my right hand up to avoid the strobing.

Shadows then bright sun shine so I can't focus properly

Strobe effect is distracting. On Pattullo bridge the contrast at sunset makes detecting the edge of the path ledge difficult. On the Queensborough it makes it hard to see on coming bike traffic at sunset. I have not had a problem on the Ironworkers but usually I ride on the east side after the sun has passed.

The strobe effect. I've noticed this on part of the Queensborough and (especially) Golden Ears bridges.

Flashing, strobing sunlight that is distracting, I've experienced this as a car passenger on the iron workers bridge and as a driver (repeated flashing)

Disorientation, difficulty seeing

Disorientation sensation with the flickering of light while cycling next to the fencing of the bridge. There is no way to avoid or escape it.

In the early morning or late afternoon the sunlight shining through the pipes causes an annoying flashing effect that can be quite disturbing.

This is a great question. Thank you for asking it. I live very close to the Pattullo bridge and am really looking forward to the new more bicycle-friendly bridge.

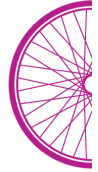
Disorientation, difficulty seeing

Thanks for collecting this feedback! I am shocked they would consider this design given the obvious deficiencies with the Ironworkers. Means prevention fencing is important to protect people from jumping. Please tell them to consider the Burrard Bridge, Don Valley Viaduct (Toronto), and Granville Bridge Connector as examples of fencing that do not cause the strobe effect.



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Is there any sort of mitigation strategy for people who might be affected or signing to warn people. Different speeds may make it better or worse. For example, the gaps on the Burrard bridge visually disappear at 50 km/h and appear transparent.

This style of barrier is being promoted elsewhere in Canada and it shouldn't be:  
<https://pub-niagararegion.escribemeetings.com/filestream.ashx?DocumentId=2973> If we need science to back our concerns, perhaps we should commission the engineering students at UBC to look into this. Maybe engineers can convince engineers that a bad idea is in fact a bad idea.

Visual Narrowing; Vertigo; Accidents causing significant injury.

Distracting and I have one other friend who gets migraines from the light / dark flashing if the sun is out.

It is very distracting and hard on the eyes, even with sunglasses

Light flash can be nauseating, triggering migraines or seizures.

I am an expert cyclist, so perhaps I'm not as sensitive to the strobing as others. I do find it a bit disorienting at times, but I manage fine. The wind through the fence can be an issue at times though.

Someone on an e-scooter passed us and commented about the strobing effect that the shadows created making it hard to judge distance and see. Noted it hid some bumps, etc.

Need to blink a lot and look away

My husband commuted on the iron workers daily (pre-covid) and complained about this all the time

disrupts views and causes a bit of vertigo

Flicker vertigo

Actually had a fellow cyclist on a group ride hit the railing and fall down from the distracting flashing of sunlight just before dawn (dusk?) when sun was setting.

strobing light was blinding

On Ironworkers Northbound in the morning and southbound in the evening, the visual effect of the sun between the posts is dazzling and very disorienting. It's difficult for cyclists to focus on riding safely.

Please do not use this on other bridges! It's very unfriendly to people on bikes!

Stop installing these fences.

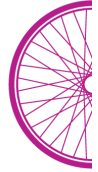
Optical issues in low sun. Sense of vertigo and disorientation.

When the sun is low in the sky (often in the fall/winter), it causes a strobe effect which is incredibly uncomfortable. I have mild epileptic tendencies and I have to shield my eyes while riding up and down the bridge southbound, which is not only difficult but also dangerous.



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Disorienting, nauseating, blinding, distracting

sense of vertigo, difficulty in seeing where I am going as I am essentially flash-blinded every few seconds, over and over.

Most of my experience with this fencing is on the Golden ears bridge. I would prefer to put up with the strobe light than have people jumping off the bridge or have the views ruined.

Even though I have no unusual sensitivities, the strobe effect is definitely a problem. I can understand how it might affect certain people negatively.

Strobe light effect is very disturbing and uncomfortable. Even if you are riding slow.

I use Lions Gate to avoid the strobe. Or only head south on iron workers in the morning and North in the afternoon.

It hurts my eyes, I have to block my vision with one hand.

“The strobe of the light source fluctuates due to the intensity of the light radiation of the light source, causing frequent and harmful flicker interference to the human eye, and infringes and interferes with the activity of the human brain.”

Can't ride in a straight line, eye fatigue

Really annoying on the eyes. Have to look left and away from the bridge.

The strobe effect makes it almost impossible to ride. I've had to stop sometimes and had headaches.

The strobe effect is distracting and I often have to look up to the sky to avoid it which could cause me to miss something on the road.

Strobe effect is difficult to ride through

The flickering gives a feeling of a lack of security, is disorienting so I feel like I can fall easier. The flickering is uncomfortable.

Please consider the comfort and safety of people cycling over these bridges. Some are cycling for transportation, and not just leisure.

Hard to focus on the bike path, gives me vertigo, and is migraine-inducing

Headaches

I haven't had too much problem from the fences but I haven't ridden them at a time of day when it would be a problem as there isn't a bridge that I cross that currently has them (Alex Fraser, Port Mann, Pattullo). I have had my eyes get sore from the strobing of light passing through trees though while driving.

Disorientation, tough on the eyes. It could be possible to crash into the fence as a result.



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The 216 street overpass over Hwy 1 has a nice alternative barrier

I find the strobe effect caused by the fence on Ironworkers to be disorienting and dangerous. I've had to stop and walk at times because of it because I've felt dizzy.

Difficult to see properly with the flashing lights.

The strobe effect makes cycling dangerous for me

Strobe effect with the sun makes it hard to see, ride safely and it makes me feel ill

The strobe lighting affect makes it hard to ride safely and watch where you are going, it makes me feel nauseous as well.

It is dizzying when riding past on a sunny day because it's a fair stretch/distance of repetitive and fast flickering images

distracting when riding

The fencing creates shadows that are extremely distracting at lower light angles - coincidentally during peak commuting hours for much of the year.

disorientation, and discomfort. I can't look to the side, and have to keep my head down to avoid this, which reduces my ability to look at what's ahead of me.

It hurts my eyes and brain so much some mornings and afternoons that I have to close my eyes for a bit while riding, which isn't safe. The alternating bright-dark effect with direct sun at sunrise or sunset is especially strong some times of the year, depending on the path of the sun relative to the bridge orientation. I have stopped and walked my bike a couple of times when the strobing made me feel especially nauseated, but most times I just keep riding while only barely glancing up ahead of me (looking away from the fence as much as possible) or closing my eyes entirely while looking away for as long as my balance can manage. Those times I'm not really able to "keep my eyes on the road."

That it hurts their eyes, or ruins the view, which I agree with. The view is ruined for running and walking as well. It would be nice to have at least intermittent thin horizontal "windows" that have an unimpeded view, so when you're walking, jogging, or rolling across you can appreciate nature and try to block out the extremely loud and exhaust-smelling traffic on the other side of you.

Some people are more sensory/neurologically sensitive than others (people with Autism Spectrum Disorder for example), and we need to keep in mind that overwhelming their senses with things like unnecessary strobing will wear them down faster than other people, setting them up for conflict with bad infrastructure or with bad drivers/cyclists/walkers down the path. Not everyone is built the same, and overstimulation and neurological exhaustion is a real problem for a lot of people, and then also for the people who have to interact with them soon after.

The light flashing in my peripheral vision is extremely annoying. I always turn my vision towards the bridge deck side and low down, and sometimes lift my right hand off my handlebars and put it



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immediately beside my right eye to block that flashing. I do not suffer from epileptic seizures. I dont know if there is another solution for this type of piping??

A while back, because the Queensborough Bridge pathways are so narrow, my bar end got stuck in between two pipes which caused me to fall. I was trying to stay as far right as possible to allow faster riders to pass me. The design of the fencing can easily make this happen if a handlebar gets caught, especially with wider handlebars.

Headache/eye pain and difficulty with seeing when it's bright. The light coming through the pipes can become very painful and I've had to get off my bike.

The visual effect of these vertical bars impacts my depth perception

Creates a vertigo impression in ones head, Very disturbing.

causes disorientation and dizziness which can lead to a fall and difficulty judging space and balance

The Burrard street bridge has vertical bars - on sunny mornings going downtown I have to ride with my eyes partially closed and put my hand up to block the view because I am afraid I am going to get too dizzy otherwise.

I thought I was the only one who had this problem with the vertical bars affecting my balance! Glad to know I'm not. On Burrard it's only a problem for a few weeks during the year -- but perhaps it would be worse on Pattulo.

I've only experienced riding on a bridge with the pipe-style fencing a handful of times. I certainly try to avoid it now as I find it impossible to look away from the strobe effect. I'd describe it as a nuisance and a moderate barrier to cycling but ultimately I could manage for select trips. If this was unavoidable along my main commute I feel I would be more outspoken about the issue so I'm trying to do my part here for advocating for those who might be more impacted.

disorientation due to pipes and sun/shadows

I whacked my handlebars and nearly fell off

This style of fencing causes vertigo. Can be extremely dangerous.

Identifying a problem is easy - lets also identify a viable alternative that is equally effective across all parameters (suicide prevention, longevity, maintenance, installation cost, and aesthetics for example). What are other solutions used around the world?

During evening commute the strobing effect can be quite strong. It is necessary to shield your eyes with one hand which makes it challenging to navigate the narrow sidewalk used by many pedestrians and cyclists.

Its a common problem. Most cyclists know about the issue and unfortunately put up with it but its very uncomfortable for riding.



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Even as someone without any related medical conditions, the "sun strobe" effect is very disorienting. In addition, the thicker supporting uprights create an additional hazard during cross wind conditions.

Sunlight strobing through the slats creates a disorienting effect, causing a headache and making it difficult to focus.

It makes you a bit dizzy depending how the light hits it at certain times of the day.

Very disorienting and stress causing, especially in sunny conditions. Also big concern for instant migraine headache.

When the sun is low enough to shine through the pipes, it flickers like a strobe light and I have to close that eye on the that side to side clearly.

it made me dizzy and caused my vision to flicker

Causes disorientation, dizziness,

Flickering lights can trigger migraines for me, is difficult to focus on the road while cycling

Cyclists and runners need to squint and/or avert their eyes, especially when the sun is shining through the fencing. This makes it a safety issue as well as visually disturbing.

On sunny days, when cycling over the Ironworkers Bridge, I feel disoriented to the point of nausea by the intense stroboscopic effect created by this fencing. It strikes me as a potentially dangerous trigger for cyclists and perhaps even pedestrians with epilepsy. Plus, I find this kind of fencing to be really ugly, and it's too bad they chose it for the Ironworkers upgrade. There's gotta be a better solution!

Dizziness, nausea, etc. and I have a couple of friends who won't cycle over the Ironworkers Bridge when it's sunny because it's a seizure trigger (one of them won't even walk across it on sunny days).