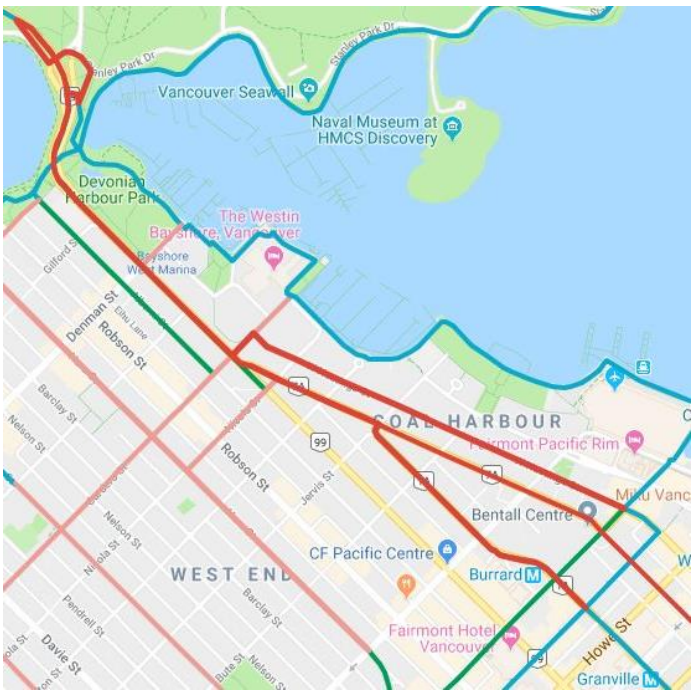
Pender Corridor Bikeway Proposal

Prepared by the Vancouver UBC Committee of HUB Cycling

Project Vision

The creation of an All Ages and Abilities (AAA) Bike Route running east-west from the Dunsmuir Protected Lanes at Hornby to the Stanley Park Causeway bike paths



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Hub Cycling Vancouver/UBC Committee
vancouver@bikehub.ca

Why Is This Important?

The Pender Corridor from Hornby to the Stanley Park Causeway constitutes a significant gap for cycling connections in this part of Vancouver. The route provides a link to Stanley Park, one of the largest transportation destinations in the region, as well as regional connections to and from the North Shore via Lions Gate Bridge. There are seaside paths in this area, but no adequate safe and direct transportation cycling connections. This results in congestion on the seaside paths, as people on bikes avoid the busy streets that would provide more direct connections. City of Vancouver documents for the Georgia Gateway Project[1] note the importance of this route as an entrance to the City.

This proposal is consistent with the goals of Transportation 2040[2], relating to making two thirds of all trips by sustainable means by 2040, and moving towards zero traffic related fatalities. The West End Community Plan[3], adopted in 2013, states that the population of the West End is estimated to grow from 45,000 to over 52,000 residents in the next 30 years. Much of this growth is expected to occur near Georgia Street. The Renewable City Strategy[4], adopted in 2015, is also aligned with this proposal.

In this report we propose that the City of Vancouver upgrade this corridor to All Ages and Abilities (AAA) infrastructure, over its complete length from Hornby to the Stanley Park Causeway paths, with connections to existing cycling infrastructure along the route. The Georgia Gateway Project that the City of Vancouver has initiated planning on will provide a significant improvement for a portion of this route when it is implemented. However, there are multiple sections requiring improvement, and the Georgia Gateway project will not cover the complete length. We urge the City of Vancouver to proceed with improvements from Hornby through to Cardero in the short term, to connect to the improved infrastructure planned for Georgia. We also urge the City to work collaboratively with both the Ministry of Transportation and Infrastructure (MoTI) and the Vancouver Board of Parks and Recreation, who share responsibility for the connections to the causeway paths, to ensure that this route is continuous from Hornby to the existing paths on the causeway.

In this proposal, we break the Pender Corridor route down into four sections, and discuss each one separately::

1) Hornby to Burrard
2) Burrard to Cardero
3) Cardero to Chilco
4) Chilco to the Causeway paths

[1] https://vancouver.ca/files/cov/georgia-gateway-open-house-presentation-boards-2017-11-15.pdf
[2] https://vancouver.ca/files/cov/Transportation_2040_Plan_as_adopted_by_Council.pdf
[3] https://vancouver.ca/files/cov/west-end-community-plan.pdf
[4] https://vancouver.ca/files/cov/renewable-city-strategy-booklet-2015.pdf

Section 1 - Hornby to Burrard

Figure 1 - Dunsmuir from Hornby to Burrard

This section connects directly to the bidirectional protected lanes along Dunsmuir that end at Hornby. There is currently a painted lane on Dunsmuir for this block, but it is unidirectional. This results in people on bikes riding east (in the wrong direction) to reach the protected lanes starting at Hornby. There is also a dangerous mixing zone in the curb (right turn) lane at Burrard for people on bikes travelling west in this painted lane. Burrard represents a significant employment and shopping hub, and so should be connected directly to Hornby along Dunsmuir, to the same standard as the lanes on Dunsmuir from Hornby. This route also makes sense as one leg of a safer and more comfortable route to Georgia. Resolving this one block gap could be completed well in advance of other improvements along this corridor, with immediate benefits for people on bikes.

Figure 2 - Dunsmuir painted bike lane westbound at Hornby, leading from the protected bike lane

Section 2 - Burrard to Cardero

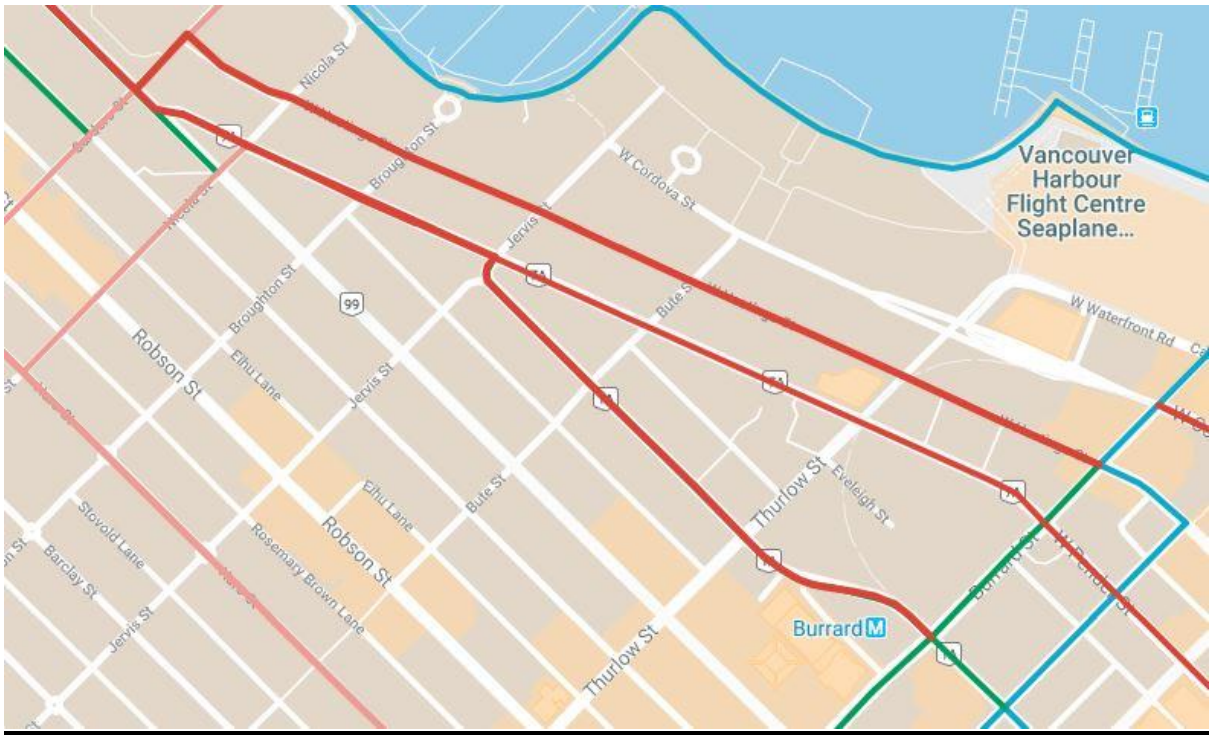

Figure 3 - Route Options from Burrard to Cardero

This section presents three potential route options, namely Melville St., Pender St., and Hastings St.

On Melville, there is an existing unidirectional painted lane with no buffer zone. There is a busy loading/unloading area near the Bentall towers (figure 4). The photos were taken early on a Saturday morning, and so do not show typical traffic volumes.

Figure 4 - Melville painted bike lane at Burrard, with transit stops

Melville has more grade change than the alternate routes of Pender and Hastings. It doesn't appear daunting going west, but if Melville included an eastbound bike lane, the hill from Pender would likely discourage use of it. Vehicles stopping at the curb along Melville have been observed to be blocking the bike lane (Figure 5). At the intersection of Melville/Jervis and Pender, there is a painted green bike box (figure 6). Given the sharpness of the left turn (because of the geometry of Pender) it can be uncomfortable to make this turn on a bike with left turning vehicles on the left.

Figure 5 - Melville painted bike lane being used for taxi pickup near Bute

Figure 6 - Melville at Jervis and Pender, showing left turn lane

Melville joins Pender at Jervis. People riding on Pender share the road with parked and moving vehicles, as well as transit buses (figure 7). The shared bike lanes depend on time of day, with signs instructing people on bikes to ride to the left of parked cars at certain times, and to share the lane with vehicles or transit buses at other times (figure 8). Given vehicle volumes and speeds, this section would require protected lanes for people on bikes; that is expected to be a challenge with current traffic volumes and lane capacities, particularly during busy periods.

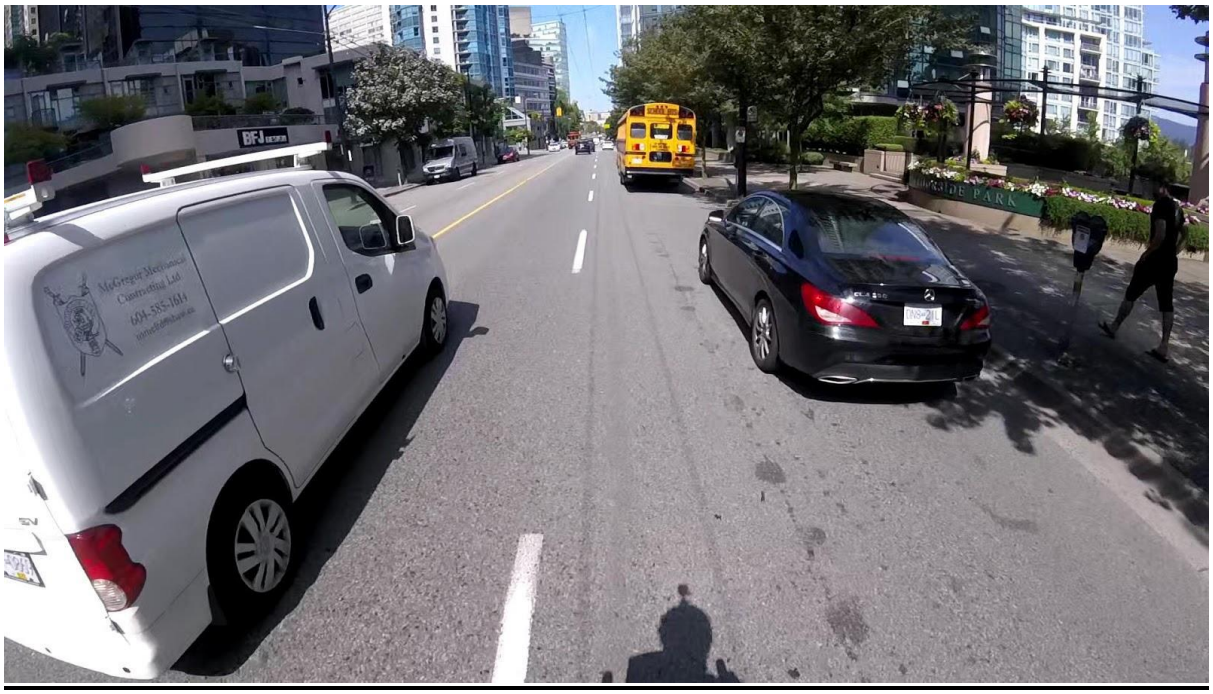

Figure 7 - Pender westbound near Broughton showing parked vehicles and lane width

Figure 8 - Pender westbound at Nicola showing where the shared bike/transit lane begins

Pender currently has designated shared bike lanes. While Pender represents a direct connection between Georgia at Cardero, and Burrard, and is relatively flat, vehicle volumes and speeds as well as the seven transit stops, combined with the limited road width, make it a less attractive option for improved cycling infrastructure.

Hastings is not an obvious alternative, but investigation reveals several advantages to considering Hastings for improved cycling infrastructure in this corridor. There is a good connection at Cardero, avoiding the more complicated intersection at Georgia and Pender with Nicola. There is a direct connection at Burrard to the existing bidirectional protected bike lanes on Hastings. A new protected lane west of Burrard would also resolve the confusing intersection and bike crossing of Burrard at Hastings. From Cardero to Nicola, Hastings is currently closed to vehicles due to construction, while remaining open to people on bikes (figure 9). This results in relatively less vehicle traffic on Hastings. Hastings also runs alongside the Coal Harbour community centre and park.

Figure 9 - Hastings westbound at Nicola - eastbound lane temporarily closed for construction work

While Hastings has less vehicle volume, and is quieter than Pender, there are currently conflicts apparent with vehicles stopping for loading and unloading (figures 10 and 11), particularly in the two block stretch from Burrard to Bute, which contains several hotels. One area to investigate would be to consider making Hastings a one way street westbound in this stretch, with a bidirectional protected bike lane on one side. This would allow for taxi drop off and pick up zones while avoiding conflicts with people on bikes. Analysis of vehicle volumes in each block would determine the need for that protected lane to carry on west, or whether a calmed and shared street would suffice, utilizing traffic diversions to reduce vehicle volumes.

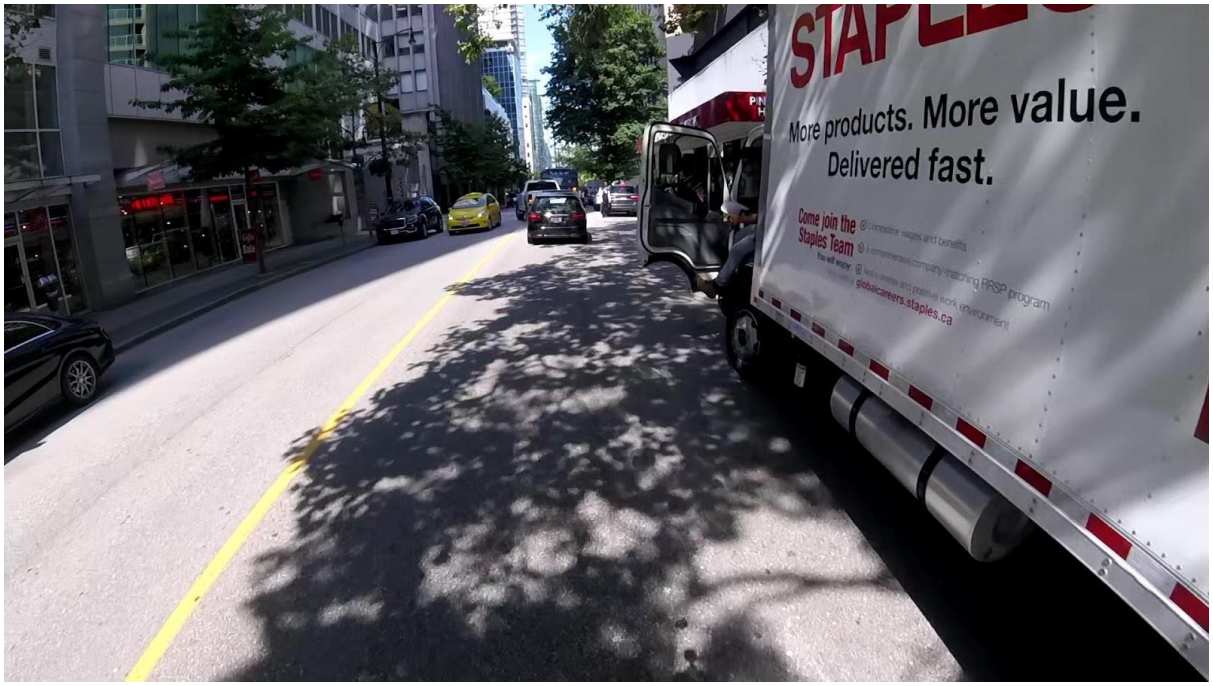

Figure 10 - Hastings westbound at Bute showing dooring risk

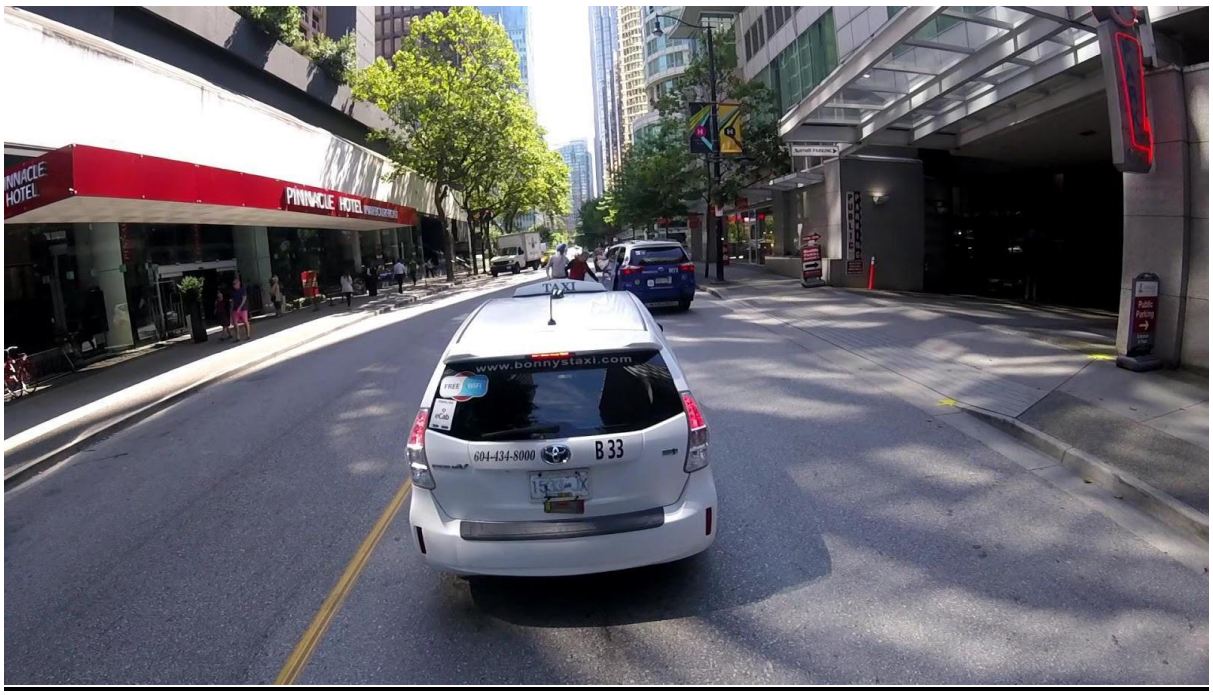

Figure 11- Hastings eastbound at Thurlow showing taxi loading in the opposite side traffic lane

Section 3 - Cardero to Chilco

Figure 12 - Georgia St from Cardero to Chilco

This section is expected to be addressed in future by the Georgia Gateway project. This project envisions protected bike lanes on each side of Georgia St., separated from both traffic and from people walking (figure 13).

Figure 13 - Georgia Gateway concept drawing

Current conflicts with transit stops along Georgia (figures 14 and 15) would be eliminated with the Gateway project, thus improving transit service reliability and moving more people more efficiently. Due to the planned improvement in transit lanes along Georgia, consideration has been given in this proposal to avoiding impacting transit movements along Pender, so as not to create bottlenecks.

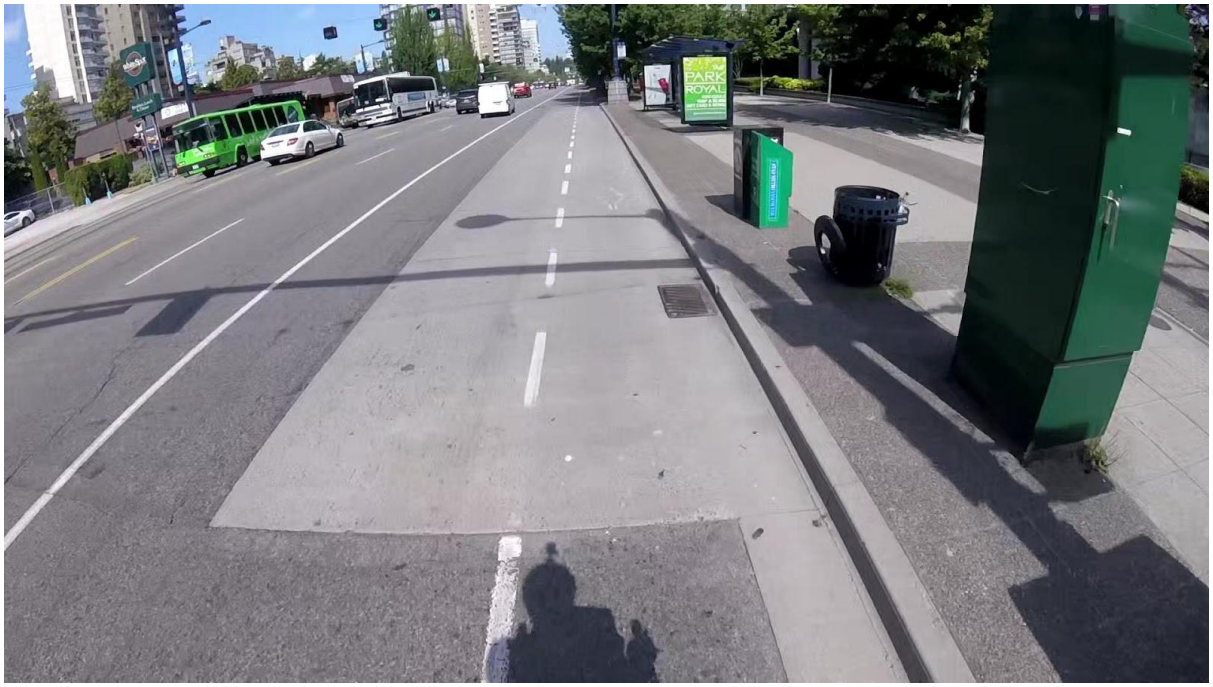

Figure 14 - Georgia westbound at Cardero - painted bike lane and transit stop

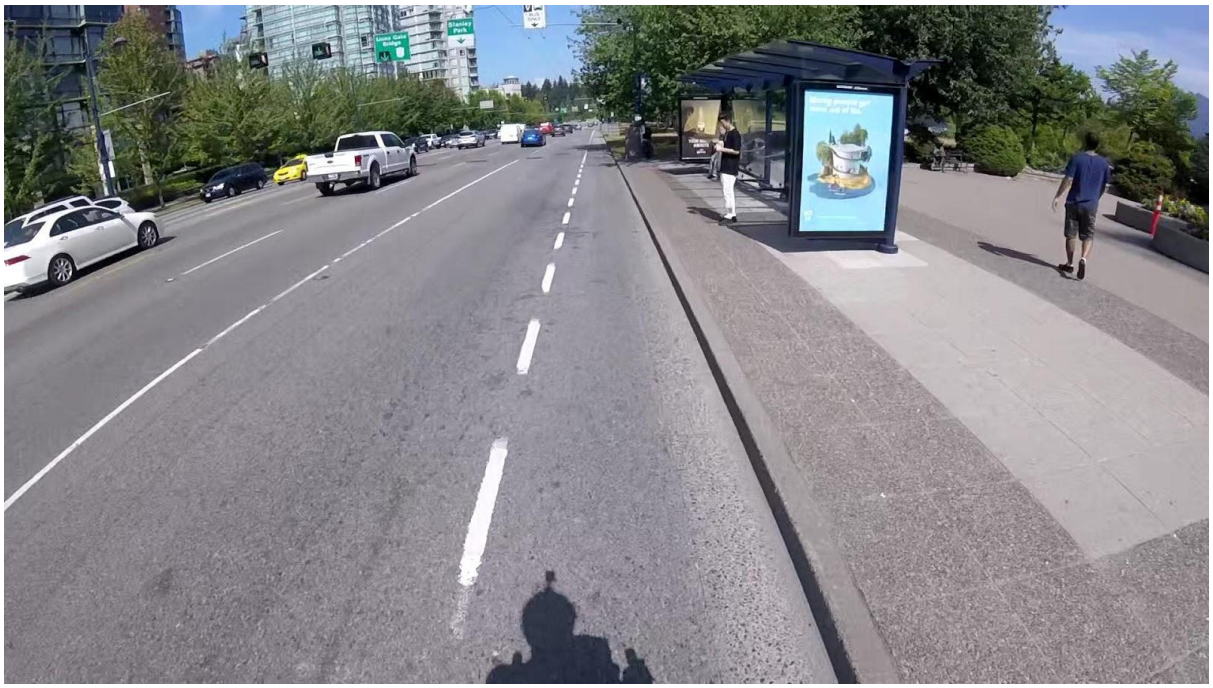

Figure 15 - Georgia westbound at Denman - painted bike lane and transit stop

Section 4 - Chilco to the Causeway bike paths

Figure 16 - Connections from Georgia at Chilco to the Causeway Paths

This section is characterized by high vehicle volumes, significant transit volumes, merging traffic, and shared responsibility between the City of Vancouver, the Board of Parks and Recreation, and MoTI. People on bikes travelling west are required to cross a slip road to the causeway sidewalk to reach the start of the northbound protected bike paths (figure 17). A safer and more comfortable connection from Georgia is required.

Figure 17 - Causeway northbound exit to Park Drive with bike lane and crossing to northbound path

At the south end of the protected bike path on the Causeway, people on bikes are forced to choose between a narrow path down to Lagoon Drive (which doesn't continue beyond Lagoon Drive) or to carry on in a painted bike lane around a blind corner (figure 18), contend with traffic (figure 19), then cross an entrance slip road from Lagoon Drive (figure 20), to reach Georgia. This is very uncomfortable for people riding, and must be a high priority to resolve. Physical separation is required given the traffic volumes and vehicle speeds. It is expected that direct connections will be resolved with the implementation of the Georgia Gateway project, and the joint cooperation of the Board of Parks and Recreation, and MoTI. Alternate connections are available using Lagoon Drive and off street paths, and should be investigated for short term improvements.

Figure 18 - Causeway painted bike lane southbound leading from the end of the protected bike path

Figure 19 - Causeway painted bike lane southbound showing proximity to vehicle traffic

Figure 20 - Causeway painted bike lane southbound at Lagoon Drive slip road showing crossing

Summary

- With the Complete Street plans recently proposed for the Georgia Gateway project , there is an opportunity to connect right through from the Causeway paths to Hornby. Georgia would constitute a significant stretch of this route, but decisions will be required on the route for the remainder of the route, east of Cardero or Nicola.
- Using Melville for a bidirectional route may be possible, but would involve a hill eastbound that may discourage use. It would also require careful attention to intersection design. The current painted lanes would need to be upgraded to protected lanes.
- Using Pender for the primary connection would require protected bike lanes given the volume and speed of motor vehicles. This would likely impact parking, and transit operations
- Using Hastings to connect from Cardero to Hornby presents the best option for further investigation. The grade is less steep. Street design would require attention to loading and pickup and dropoff zones. One option to investigate is to consider making a several block section of Hastings one way westbound. That would allow space for a bidirectional protected lane on the north side (aligning and connecting with the bidirectional protected bike lane that currently exists on W Hastings east of Burrard), and multiple pickup/dropoff bays, while accommodating traffic flow.

Appendix 1 - A Current Route Evaluation (proceeding east to west):

Ride notes from a HUB Cycling assessment ride conducted on July 21, 2018.

Dunsmuir Westbound - Hornby to Burrard.

The bidirectional protected bike lanes end at Hornby. From Hornby to Burrard there is a unidirectional (westbound) painted lane on the north side of Dunsmuir. People on bicycles have been observed riding the wrong way in this painted lane (due to the lack of an eastbound lane) to access the Dunsmuir protected lanes from Burrard. There is a conflict zone with westbound vehicles turning right at Burrard.

Melville Westbound - Burrard to Pender

Melville is one way (westbound) along this stretch. There is a painted bike lane with no buffer zone. There is a busy loading/unloading area near the Bentall towers. Melville has more of a hill than the alternate routes of Pender and Hastings. If Melville had an eastbound bike lane, the hill from Pender would likely discourage use of it. Vehicles stopping at the curb were observed to be blocking the bike lane. At the intersection of Melville/Jervis and Pender, there is a painted green bike box. Given the acute geometry of the left turn (because of the geometry of Pender) it can be uncomfortable to make this turn on a bike with left turning vehicles on the left. Left turning lane lines painted with dashed lines through the intersection may help here.

Pender Westbound - Melville to Georgia

Pender feels like a busy street when riding along it. It appears to be used more as a throughway than a local street with destinations along it. There are transit stops for the #19 bus all along Pender. There are four lanes, with two lanes dedicated to parking apart from rush hour periods. When vehicles are parked, there is space to ride in the door zone unless the parked vehicle is a bus or truck. When there is no parking permitted, the street can be busy with traffic in all lanes, creating an even more uncomfortable environment for cyclists. There are faded sharrows painted near the curbs and centre lanes. A blue sign is placed periodically along Pender, indicating that people cycling are required to ride nearest to the curb lane from 3pm to 6pm and to the left of parked cars during all other times. Pender is designated for cycling as Shared Lanes by the City of Vancouver. This is the same designation applied to Main Street, and Dunbar. The designation doesn't appear to be in use any longer for new routes, and a case can be made that all current Shared Lanes should be addressed by the City to bring them up to current design standards. Near Nicola the curb lane becomes a shared bike/transit lane for one block.

Georgia Westbound - Cardero to Chilco

There are painted bike lanes on both sides of Georgia. In places, the bike lanes are shared with transit lanes. While there is allocated space other than the transit stops, there is no protection, and motor vehicles tend to be moving quickly. There are

drainage grates in the bike lane, the pavement is of poor quality in places, there are unfinished seams in the roadway (some running in the direction of travel) and the lanes feel narrow. The plans for the Georgia Gateway indicate protected bike lanes on the other side of a line of trees, and these are also separated from the sidewalks. This would be much more comfortable for people riding, due to both the proximity to vehicles, and the traffic noise.

There are conflict zones with turning vehicles westbound at Cardero and Denman, and eastbound at Denman, Cardero, and Nicola.

Georgia Westbound at Chilco to the Causeway Northbound Protected Bike Path
The west end of Georgia is complicated by merging vehicles queuing for the Lions Gate Bridge, a bus lane that extends around the bend towards Stanley Park, an exit slip road to Stanley Park, and a shared/painted bike lane on the slip road. Part way along the slip road people on bikes are required to cross the slip road to the causeway sidewalk to reach the start of the northbound protected bike paths. A safer and more comfortable connection from Georgia is required.

Causeway Protected Bike Path Southbound to Georgia Eastbound at Chilco
At the south end of the protected bike path on the Causeway, people on bikes are forced to choose between a narrow path down to Lagoon Drive (which doesn't continue beyond Lagoon Drive) or to carry on in a painted bike lane around a blind corner, contend with traffic, then cross an entrance slip road from Lagoon Drive, to reach Georgia. This is very uncomfortable for people riding, and must be a high priority to resolve. Physical separation is required.

Georgia Eastbound - Chilco to Nicola
There is significant traffic eastbound along Georgia. Traffic is also moving more quickly as the causeway has just ended. There are frequent transit stops, where buses completely block the bike lane with virtually no opportunity to go round during busy times. There is significant conflict with turning vehicles at Denman. The painted lane ends at Nicola.

Nicola
There is a bike box on Nicola for left-turning cyclists from Georgia, and a push button for the crossing signal. When Georgia is backed up there are often stopped vehicles blocking the intersection. There is a forced right turn on to Pender for all except bikes, but there is no indication of how a person on a bike could cross Pender to access Hastings or the Seawall paths. A signal controlled crossing should be considered. Currently, the Nicola bike route ends at Pender.

Pender - Nicola to Hornby
Pender feels busy along this stretch. The geometry is as noted above. At several points vehicles were observed turning left, with following vehicles using the right lane

to overtake them. This is legal, but the right lane was being used by people on bikes and conflicts were noted. At Burrard, there is a significant conflict zone with vehicles turning right. From Burrard to Hornby, the lanes narrow.

Hastings Westbound - Hornby to Cardero

Hastings feels calmer than Pender along this stretch. There are a number of hotels and so there are taxis and shuttles picking up and dropping off. There is a tree canopy. At the east end, at Burrard, a transition is required from the bidirectional bike lane on the north side to what is planned for Hastings west of Burrard. This could address the awkward triangular green cross-bike. It was noted by an assessment ride participant that the 1000 block (Burrard to Thurlow) is very often used for movie shoots, and at least partially closed 30 to 50 days a year, mostly nights and weekends. Closures range from very short (2 to 5 minutes per take) up to full 12-hour night closures, may be totally off limits or require walking one's bike on the sidewalk. At those times, Cordova or Pender would be likely alternatives, although the northernmost lane of the 1000 block of Pender is often occupied by trailers and caterers associated with the shoot.

Along Hastings, the lanes felt narrower and it was noted that there was more of a risk of dooring from parked vehicles. At the Marriott Hotel, buses and taxis were observed loading and unloading in the travel lanes, in both directions (figure 31). West of this point, the street is notably calmer. From Jervis there are four way stops at intersections. Lower speeds are evident in 1300 block (Jervis to Broughton), where two speed bumps with a geometry optimized for 15-20 km/h are very effective at slowing down MVs while allowing normal cycling speeds. From Nicola to Cardero, Hastings has a centre boulevard and two narrow travel lanes. One is currently closed due to construction at Cardero and Hastings, and the other (north side) has been repurposed as a bidirectional bike lane. As at other points along this route, there should be a safe and comfortable connection north to the Seawall route.

Along this stretch of Hastings, a bidirectional protected bike lane on the northside of Hastings would provide continuity from Hastings east of Burrard.

Cardero - Hastings to Georgia

To access Pender or Georgia from Hastings there is an short incline southbound. While it is steeper at Cardero than Nicola, using Nicola would involve using the intersection of Pender and Georgia, while using Cardero would bypass that zone, accessing Georgia where it becomes wider. It is recommended that Cardero be the primary connection westbound. Attention will be required to motor vehicle volumes at this connector during afternoon rush hours. One solution would be a pedestrian plus bike crossing on Cardero covering the width of Hastings St, which signs to prevent the crosswalk being blocked by vehicles queueing for Georgia.

Hastings Eastbound - Cardero to Hornby

Hastings has a gentle grade along this stretch. There are a number of hotels and so there are taxis and shuttles picking up and dropping off. At Burrard, a transition is required to the protected bi directional bike lane on the northside of Hastings.

Appendix 2 - Bicycle Collision Statistics

There is a lack of comprehensive historical data on bicycle crashes on routes in Vancouver. ICBC does provide the Cyclist Crash Map, which includes bicycle collisions involving motor vehicles and claims made against ICBC insured drivers. Crashes have been reported at practically every intersection along this corridor.

The ICBC Crash Map[5] for cyclists showing number of cyclist crashes at key intersections

Figure 21 - ICBC Cyclist Crashes 2013 - 2017

More Information

HUB Cycling, 312 Main Street (2nd Floor), Vancouver BC, V6A 2T2 604 558 2002

Vancouver UBC Local Committee: vancouver@bikehub.ca

[5] https://www.icbc.com/about-icbc/newsroom/Pages/Statistics.aspx