



ADMINISTRATIVE REPORT

Report Date: January 8, 2018
Contact: Lon LaClaire
Contact No.: 604.873.7336
RTS No.: 12293
VanRIMS No.: 08-2000-20
Meeting Date: January 17, 2018

TO: Standing Committee on Policy and Strategic Priorities
FROM: General Manager of Engineering Services
SUBJECT: Cambie Bridge Interim Active Transportation Improvements

RECOMMENDATION

- A. THAT Council approve the interim active transportation improvements to the Cambie Street Bridge as generally described in this report.
- B. THAT Council direct staff to execute actions as described in this report within the current approved Capital Budget (Annual Capital Expenditure Budget and Multi-Year Capital Project Budget) for Active Transportation Corridors and Spot Improvements, to monitor the changes brought by this report; and to provide a memo reporting back to Council on outcomes in 2019.

REPORT SUMMARY

The Cambie Bridge east shared path is frequently too busy for those walking and cycling to feel safe and comfortable sharing the same space. This report proposes a new southbound protected bike lane to reduce conflicts and improve safety.

The new protected bike lane would be achieved by reallocating a section of one of the bridge's three southbound travel lanes and a portion of the extra width on the southbound-to-westbound vehicle ramp at the south end of the bridge. Since the motor vehicle capacity of the bridge is governed by the capacity of the traffic signals at either end, this change would have a minimal impact on motor vehicle capacity.

If approved, the project would be constructed in the first half of 2018.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

In 2012, Council adopted the Transportation 2040 plan, which identifies the False Creek Bridges as critical walking and cycling links to be improved in the near term to help meet the City's sustainable travel mode share goals. Specifically, the plan's walking actions section identifies the False Creek bridges among the high-priority locations, while the cycling priorities map identifies the Cambie Bridge along with connections to Beatty Street and the Heather Bikeway via Ash Street.

In 2015, City staff presented an updated cycling priorities map to Council, which included new bikeways on Smithe and Nelson Streets, portions of which were completed in 2016 along with Beatty Street upgrades.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager and General Manager of Engineering Services support the recommendations of this report.

REPORT

Background/Context

The current Cambie Bridge was constructed in 1985. At approximately 4m wide, the bridge's east sidewalk was built significantly wider than that on the west side to accommodate heavy foot traffic to and from BC Place during events.

When the City of Vancouver began explicitly designating bicycle routes and paths in the early-to-mid 1990's, the wide east sidewalk was opened to people cycling as a shared path. As transportation plans developed through the years, the Cambie Bridge and Smithe/Nelson Streets have been regularly identified for cycling improvements to directly connect downtown and Central Broadway. This includes the 1997 Transportation Plan, 1999 Bicycle Plan, 2002 False Creek Pedestrian and Cyclist Crossings Study, and 2002 Downtown Transportation Plan.

In 2012, Council adopted Transportation 2040, which highlighted all three False Creek Bridges as needing short-term walking and cycling improvements. Burrard Bridge was the first of the bridges to be improved, with construction recently completed in 2017 to restore an east sidewalk.

In 2014, a protected bike lane connection between the east shared path and Beatty Street painted bike lanes was completed. In 2016, protected bike lanes were installed along the full length of Beatty Street, as well as on Smithe and Nelson Streets from Beatty to Richards. The intersections of Beatty at Nelson and Smithe were designed to facilitate bicycle turns onto the bridge, initially via the east side shared path.

Strategic Analysis

The project seeks to improve walking and cycling comfort and safety on the east shared path of the Cambie Bridge by reallocating road space on the bridge to a southbound bike lane, thus significantly reducing bike volumes on the bridge's sidewalks. This would be done using concrete gravity barriers and other similar interim measures, with the only significant works being the removal and reinstatement of crash barrier on one of the southern off-ramps.

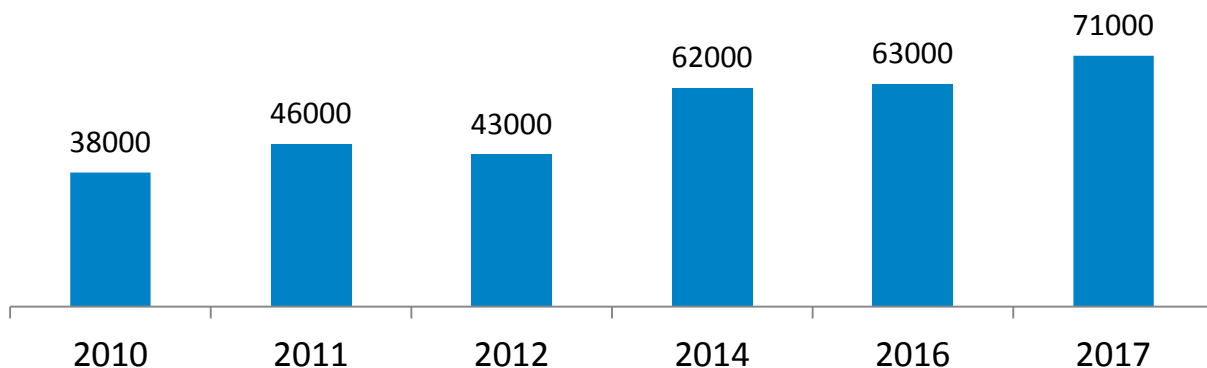
City staff anticipate these changes will improve conditions for people walking and cycling over the bridge, while having minimal impact on motor vehicle traffic. **Appendix A** shows the general design of these changes, with rationale explained in the below sections

Walking and Cycling Volumes

Cambie Bridge is an important link between key residential and commercial destinations on the north and south sides of False Creek. As more people choose to walk, bike, or roll over Cambie Bridge, the shared path on the east side of the bridge gets busier and opportunities for conflicts increase. At busy times the east shared path is nearing the peak of its capacity to safely and comfortably carry people walking, cycling, skateboarding, skating, and using mobility aids.

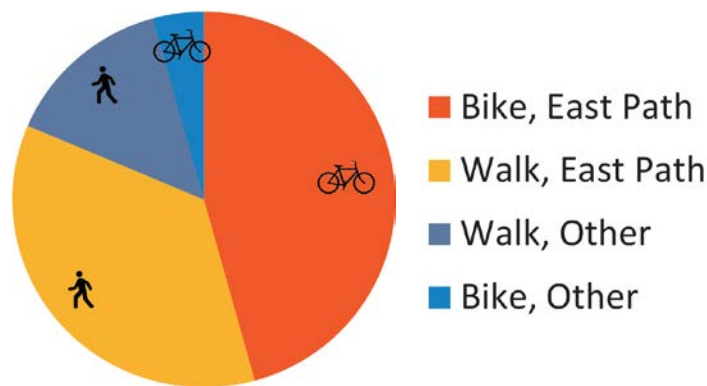
Since 2010, monthly June cycling volumes over the bridge have increased by 86%. July 2017 saw the highest recorded number of people cycling across the bridge with over 80,000 bicycle trips on the shared path, and about 3,200 per midweek day. **Figure 1** shows the change in cycling volumes on the shared pathway and **Figure 2** shows the typical distribution of people walking and cycling over the bridge.

Figure 1: June Bicycle Counts on Cambie Bridge east side shared path¹



¹ Note: data not available for summer 2013 and 2015

Sources: automated bicycle counter volumes from the east side shared path

Figure 2: Typical Summer Midweek Walking and Cycling Distribution²

Walking volumes on the Cambie Bridge are highest in the afternoon when southbound cycling trips across the bridge are also at their peak. Relocating southbound cycling trips will significantly reduce the conflicts between people walking and cycling, making the shared path safer and more comfortable for everyone. By separating out walking, cycling, and motor vehicles on the west side of the bridge, the southbound protected bike lane also addresses conflicts with bikes on the west sidewalk and roadway.

Walking and Cycling Conflicts

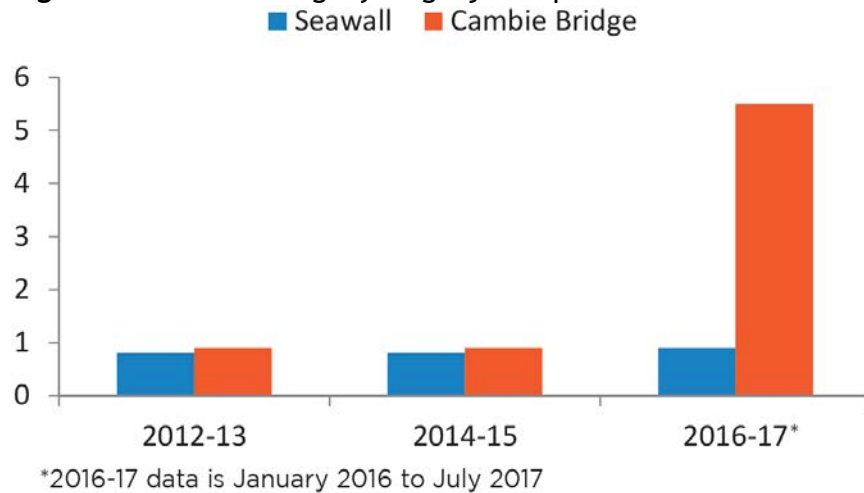
The east side shared path on the Cambie Bridge is among the busiest cycling connections to and through Downtown.

| Location | Record midweek daily bike volume | Count year | Dedicated Width for Cycling |
|------------------|----------------------------------|------------|-----------------------------|
| Burrard Bridge | 7,100 | 2015 | 5m |
| Cambie Bridge | 3,200 | 2017 | N/A |
| Hornby Street | 3,200 | 2017 | 3m |
| Dunsmuir Viaduct | 3,100 | 2017 | 3-4m |
| Dunsmuir Street | 2,700 | 2015 | 3-4m |

Through a number of public processes, including for Arbutus Greenway and South False Creek Seawall, staff have heard clearly from the public that they generally don't feel comfortable with shared walking and cycling facilities. In recent years, the City has been working to separate walking and cycling in many locations around the city, including the last significant remaining section of shared pathway between the Burrard and Cambie Bridges on the False Creek Seawall. At its narrowest, that Seawall shared path was approximately 1-2m wider than the Cambie Bridge shared path but experienced similar walking and cycling volumes.

Vancouver Coastal Health has been supporting the City by providing us with information on hospital visits for injuries on the transportation system (but not involving motor vehicles) from Vancouver General Hospital. **Figure 3** shows a comparison between minor injuries on the Cambie Bridge and Seawall, keeping in mind that for every injury requiring hospital treatment there are more near misses and minor injuries that we do not hear about.

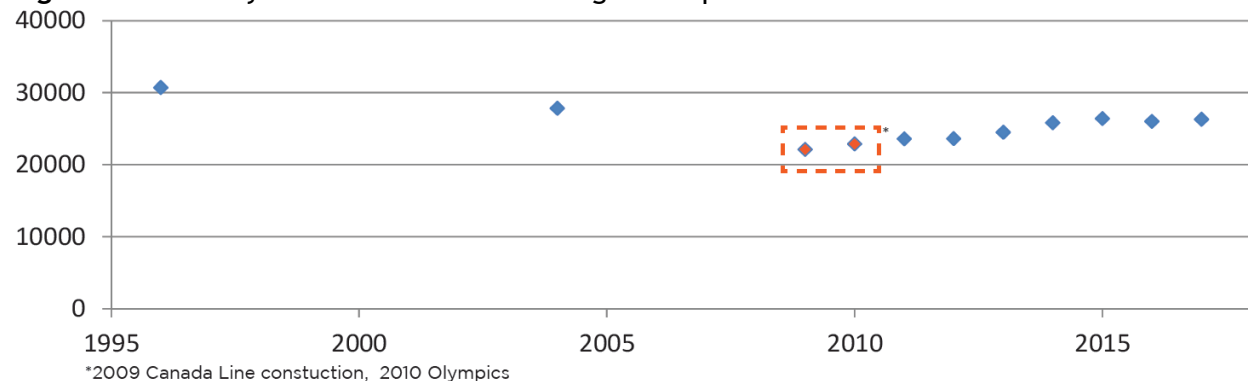
² Notes: illustrative estimates; "other" includes west sidewalk walking/cycling & roadway cycling
Sources: based on automated bicycle counter volumes and 12hr manual counts from 2016/2017

Figure 3: Minor Walking/Cycling Injuries per Kilometre³

Until recently, the same number of people incurred minor injuries (per kilometre) on Cambie Bridge as the Seawall, but recently minor injuries on the bridge have increased while minor injuries on the Seawall have not.

Motor Vehicle Volumes and Travel Time

Motor vehicle volumes on the Cambie Bridge are lower today than they were 20 years ago, with the lowest volumes around 2009 - 2010 due to Canada Line construction and the 2010 Olympics, after which vehicle volumes rebounded somewhat but have remained steady in recent years.

Figure 4: Weekday Southbound Cambie Bridge Mid-Span Motor Vehicle Volumes⁴

For bridges in an urban setting, such as Burrard Bridge or Cambie Bridge, the motor vehicle capacity of the bridge is largely governed by the signalized intersections at either end. Since traffic on the bridge itself flows freely, two vehicle lanes on the deck of the Cambie Bridge

³ Notes: Collisions involving motor vehicles and “falls” (e.g. incidents related to ice) not included. Minor injury is treatment at ER without hospital admission (i.e. serious injuries, none recorded for the Cambie Bridge). Staff have defined the “Seawall” as the Seaside Greenway from Burrard/Canada Place to the south side of the Burrard Bridge, including “Stanley Park” or “Science World.”

⁴ Sources: automated motor vehicle counter data from Jan 2010 to Oct 2017; with historical downtown screenline counts (one day 6am-10pm manual counts) from 1996 to 2010 factored to match in 2010

have sufficient capacity to carry the traffic that can make it through the signals at either end. Because of this, staff expect the proposed changes would not affect the bridge's motor vehicle capacity and there would be minimal change to travel times from Nelson Street to Cambie Street. Modelling was also undertaken by an independent consultant which showed less than a 10s travel time increase from Nelson/Richards to Cambie/Broadway.

During certain times of the day, particularly the peak of the afternoon rush hour around 5:30-6:00pm, traffic queues from the signals at 7th Ave, 8th Ave and Broadway tend to back up on Cambie Street and can sometimes extend as far as the top of the bridge's off-ramps. As traffic destined for these ramps would now share the two lanes on the bridge with other traffic, these movements may be somewhat slower during these times.

To confirm that there isn't an unexpected impact on motor vehicles, monitoring for the interim changes will include motor vehicle volumes, travel times, and queueing.

Cycling Connections to the Proposed Protected Bike Lane

The north end of the bridge is well connected to the downtown protected bike lane network, although future work would be needed to better connect the Seaside Greenway with the proposed protected southbound bike lane.

On the south end of the bridge, southbound bicycle traffic on the east shared path is relatively evenly split between connections to the west (e.g. Heather Bikeway or Off Broadway bikeway on W 7th Ave) and east (e.g. Yukon Bikeway or Off Broadway bikeway on W 5th Ave). Through related projects, staff are also exploring minor changes to better facilitate these connections.

To improve cycling connections to the west and address conflicts with people walking and taking transit, staff are currently working on the following connections:

- A protected bike lane along the north side of W 2nd/6th Avenues using a portion of the City-owned parking lot to separate walking and cycling on the existing wide shared sidewalk in front of the Canada Line station
- An off-street bike path through City-owned land between Ash Street and the Seaside Bypass route on Moberly Road

To improve cycling connections to the east and address conflicts with motor vehicle traffic, staff are exploring the following changes:

- Separating walking and cycling crossings and better highlighting the presence of crossing bicycle traffic at the end of the southbound-to-westbound off-ramp
- Highlighting bicycle crossings and adjusting signal operations at the Cambie/W 2nd Avenue intersection, with a focus on walking and cycling on the north shared crosswalk

Public Engagement

Staff have had several meetings with key stakeholders and held an open house for interested members of the public. The public consultation summary can be found in **Appendix B**.

Key themes from the engagement included:

1. Questions about the need for the changes
2. Concern about traffic impacts
3. Commentary on specific design details

The need for the improvements and their priority was outlined in Transportation 2040, and there are expected to be minimal impacts to traffic, as outlined earlier in this report. Based on the design feedback, the design has been modified and presented in **Appendix A**, including adjustments to:

- the proposed barrier locations and alignment midspan on the bridge to provide sufficient width to accommodate maintenance and emergency vehicles
- the alignment of the barriers to increase the length of the additional vehicle lane leading to the bridge's southbound to westbound off ramp, thus better facilitating drivers exiting to W 2nd/6th
- the physical separation of bike traffic on both the off-ramp and the wider southern portion of the sidewalk, which would likely be a narrow and low barrier with flexible plastic posts

Staff confirmed the proposed lane width on the southbound-to-westbound ramp through a test with the assistance of Ocean Concrete and a City-owned semi-trailer truck.

In preparing the recommended option, staff had explored other configurations for the southbound-to-westbound ramp such as those suggested by members of the public during consultation on the project. One such option is to widen approximately 200m of the ramp; staff have identified that this option will take additional time to study and cost to install. A phased approach, with a limited initial section of widening to evaluate the performance of a lightweight structural system, is warranted, and thus these interim changes will help establish how much widening is appropriate.

Another option staff explored was to close the southbound-to-westbound ramp to motor vehicle traffic, and instead widen the southbound-to-eastbound loop ramp and intersection to accommodate both. This configuration proved to be geometrically difficult with potentially significant impacts on motor vehicle traffic.

Public engagement also informed the related cycling connection projects presented in the previous section.

Implementation

Staff estimate the proposed changes to the bridge itself cost approximately \$400,000. Additional related improvements to connections on the south end of the bridge will be approximately \$200,000. Construction would be relatively quick, with the only major and permanent work being a small modification to the crash barrier at the southern end of the bridge's off ramp.

Public/Civic Agency Input

The ATPC provided feedback on the proposal and have expressed general support. They are expected to pass a motion regarding the project prior to the Standing Committee Meeting.

Implications/Related Issues/Risk***Financial Implications***

Expenditures for the project in 2018 will be managed within the existing approved annual capital expenditure budget. Funding for the project will be from the 2018 Active Transportation Corridors and Spot Improvements Multi-Year Capital Project Budget.

Environmental

Transportation 2040 and the Greenest City 2020 Action Plan identify that a mode shift toward walking, cycling, and transit is critical to accommodate regional population growth and to meet our environmental targets. The proposal addresses issues of capacity and comfort in the walking and cycling networks by beginning to separate these modes. Maintaining motor vehicle capacity ensures that transit and goods movement are not compromised.

CONCLUSION

The project is expected to improve safety and comfort for people walking and cycling across the Cambie Bridge, without significant impacts to motor vehicle traffic. If approved, staff will monitor the changes, address issues as they arise, and provide the results to Council in 2019.

* * * * *

Figure 1: Intersection of Nelson (Existing), Beatty (Existing), and Cambie Bridge (Proposed)

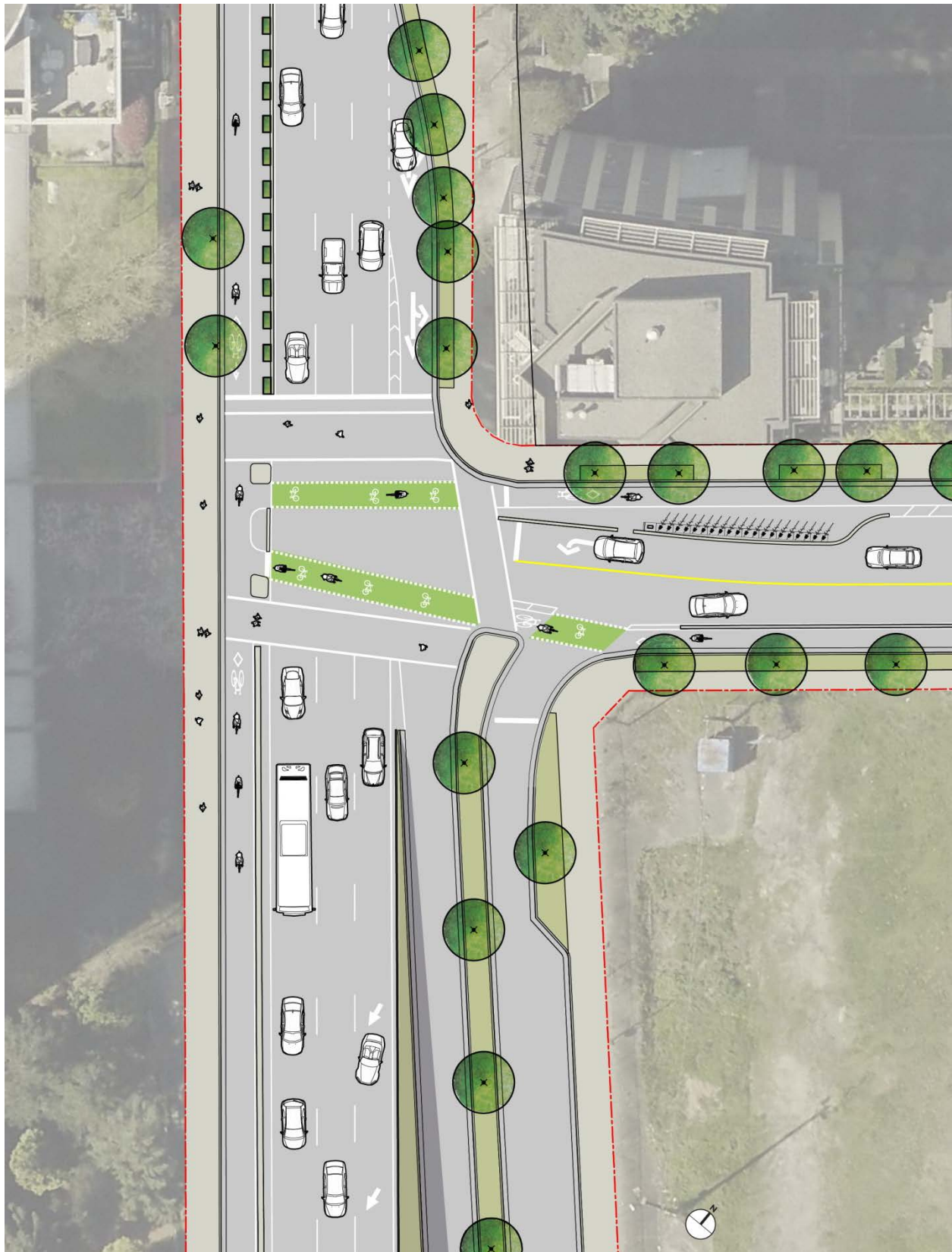


Figure 2: Midspan Cross Section (Facing North)

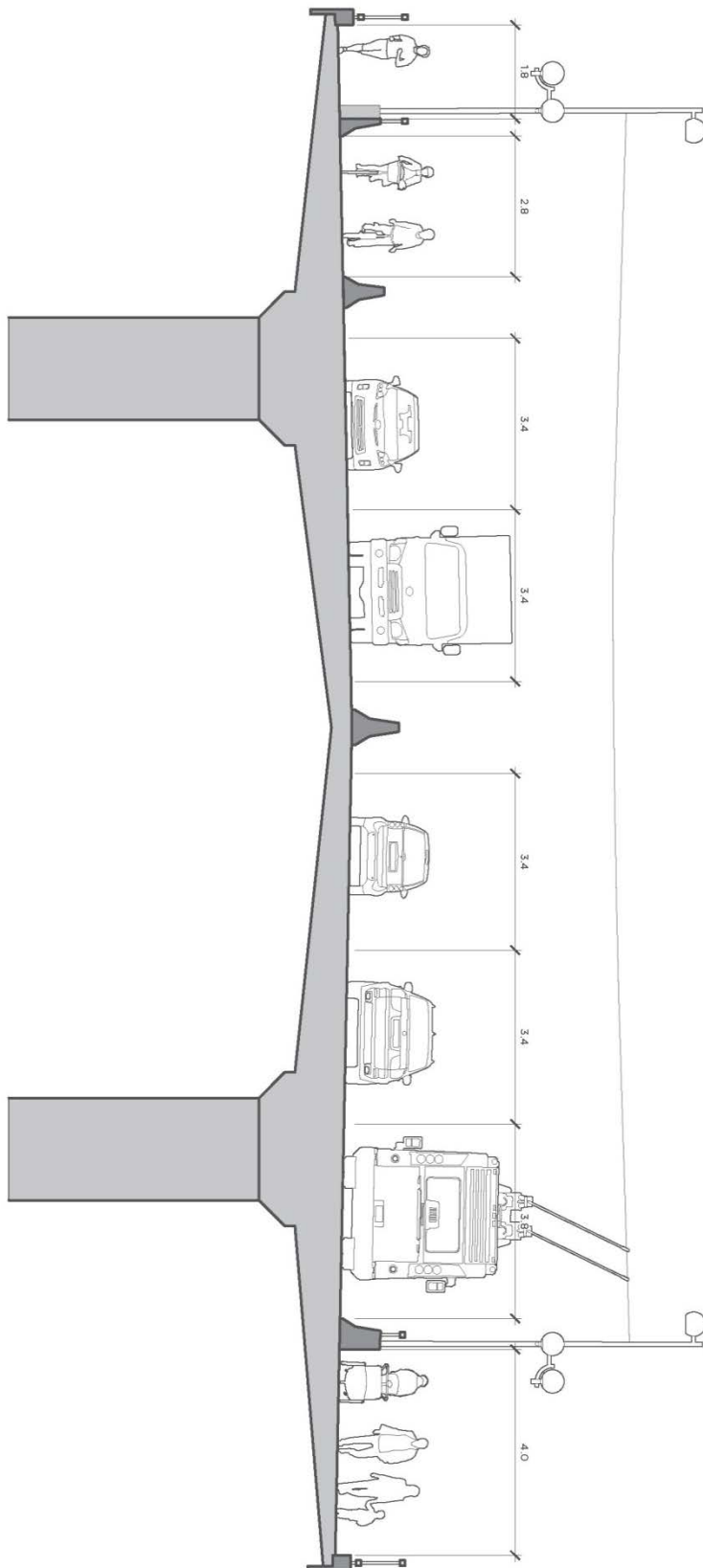


Figure 3: Transition at Top of Southbound-to-Westbound Ramp (Proposed)



Figure 4: Transition at Bottom of Southbound-to-Westbound Ramp (Proposed)



Consultation Summary Report

Stakeholder and public consultation for the Cambie Bridge Interim Active Transportation Improvements took place in Fall 2017. Stakeholder engagement focused on businesses that frequently use the bridge or are located on either side of the bridge. Public consultation was targeted to reach residents who walk, cycle, take transit, or drive over the Cambie Bridge. Further, residents who live in communities on either landing of the bridge were specifically targeted for engagement.

Background

Given the previous engagement that had been done as part of the Transportation 2040 Plan and the limited impacts identified through the technical analysis, public consultation focused on gathering detailed feedback from impacted stakeholders and informing residents and commuters of the expected outcomes from the proposed changes.

Stakeholder Engagement

In October 2017 City staff met with representatives from Ocean Concrete, whose trucks frequently use the bridge, to arrange a test of the proposed bike lane design for the Cambie Bridge exit ramp onto westbound 6th Avenue. This test was conducted using temporary cones to delineate the proposed bike lane design and Ocean Concrete's largest vehicles in-use, as well as the City's largest available fleet tractor-trailer. Both sets of tests demonstrated that the proposed bike lane design would work for large vehicles using the exit ramp.

Later in November and December 2017, City staff met with BC Trucking Association, Downtown Vancouver Business Improvement Association, Cambie Village Business Association, HUB Cycling, and presented to the Greater Vancouver Board of Trade.

Communications

Communications Products

| Communications Products | Quantity | Details |
|-------------------------------------|----------|--|
| Letters to Residents and Businesses | 7,568 | Residents and businesses located on the north and south side of Cambie Bridge were mailed letters informing them of the project and upcoming open house. |
| Advertisements - Print | 3 | November 18 to 30, 2017: Vancouver Courier, Georgia Straight, News 1130 |
| Advertisements - Radio | 1 | November 18 to 30, 2017: News 1130 (50x weather radio tags) |
| Media Articles | 6 | November 14, 2017: CTV Vancouver November 15, 2017: Vancouver Courier, Global BC November 16, 2017: Metro News Vancouver November 29, 2017: Urban YVR December 1, 2017: CTV Vancouver |

Public Consultation

Consultation Activities

| Consultation Activities | Quantity | Details |
|----------------------------|------------------------------------|---|
| November Public Open House | ~146 participants | November 30 at CityLab engagement space at 511 West Broadway, 2 - 8pm |
| Comment Sheets | ~66 received | Completed between November 30 and December 14, 2017, received online and in-person |
| Email/Phone Comments | ~407 received (as of Dec 18, 2017) | Received through cambiebridge@vancouver.ca , 3-1-1, and individual project staff |

Key themes from feedback received on Comment Sheets and Email/Phone Comments overlapped, but differed in support of the project.

Comment Sheet Feedback

Feedback received on Comment Sheets most commonly highlighted concerns with connections to and from the new bike lane and potential traffic impacts on Cambie Bridge. Some included multiple expressed concerns, some contained a single concern, and some contained no concerns.

Comment Sheet Feedback, Expressed Concerns

| Concern | Quantity | Notes |
|--------------------------------------|-------------|--|
| Already enough space for cyclists | 9 comments | e.g. the shared-use path is sufficient |
| Traffic impacts | 12 comments | e.g. motor vehicle traffic is bad, this traffic |
| Questions regarding bike connections | 11 comments | e.g. connections to and from the new bike lane, from Downtown/Seawall, and at Olympic Village SkyTrain Station |
| Paint lines on shared path instead | 5 comments | e.g. remove benches, paint a line on shared path |
| Other | 5 comments | e.g. focus on bike education, bike insurance, cyclist licensing, etc. |

Email and 3-1-1 Feedback

Conversely, feedback via email and 3-1-1 focused on potential traffic impacts on Cambie Bridge and highlighted a perception that the shared-use path on the east side of Cambie Bridge is sufficient for people walking, cycling, and using mobility aids to share. Some included multiple expressed concerns, some contained a single concern, and some contained no concerns.

Email and 3-1-1 Feedback, Expressed Concerns

| Concern | Quantity | Notes |
|--------------------------------------|--------------|--|
| Not safe enough for cyclists | 12 comments | e.g. build a bike bridge instead of this |
| Already enough space for cyclists | 96 comments | e.g. the shared-use path is sufficient |
| Traffic impacts | 144 comments | e.g. motor vehicle traffic is bad, this traffic |
| Spend resources elsewhere | 22 comments | e.g. address housing affordability, transit funding, etc. |
| Too soon after Burrard Bridge | 6 comments | e.g. wait and measure impact from Burrard Bridge on driving and cycling |
| Questions regarding bike connections | 5 comments | e.g. connections to and from the new bike lane, from Downtown/Seawall, and at Olympic Village SkyTrain Station |
| Paint lines on shared path instead | 5 comments | e.g. remove benches, paint a line on shared path |
| Other | 24 comments | e.g. focus on bike education, bike insurance, cyclist licensing, etc. |
| No concerns specified | 41 comments | e.g. "No bike lanes." |