CITY OF VANCOUVER

COUNCIL REPORT

Report Date: March 1, 2023
Contact: Lon LaClaire
Contact No.: 604.873.7336
RTS No.: 15523
VanRIMS No.: 08-2000-20
Meeting Date: March 29, 2023
Submit comments to Council

TO: Standing Committee on Policy and Strategic Priorities

FROM: General Manager, Engineering Services

SUBJECT: Broadway Active Transportation Lanes – Next Steps

Recommendation

A. THAT staff advance a design for Option 1, as generally described in this report, while preserving for the addition of active transportation lanes in the future and report back to Council on the design as part of the Broadway Corridor Streetscape Plan.

Alternatives

B. THAT staff advance a design for Option 2, as generally described in this report, and:

- conduct public and stakeholder engagement on those designs,
- work with the Province of BC on a strategy to construct active transportation lanes as part of the road restoration for the Broadway Subway,
- advance interim designs for non-station blocks that can be delivered in tandem with subway completion, and
- report back to Council with a final recommendation in Q4 2023.

OR

C. THAT staff advance designs for Options 2 and 3, as generally described in this report, and:

- conduct public and stakeholder engagement on those designs,
- work with the Province of BC on a strategy to construct active transportation lanes as part of the road restoration for the Broadway Subway,
- advance interim designs for non-station blocks that can be delivered in tandem with subway completion, and
- report back to Council with a final recommendation in Q4 2023.

Purpose and Executive Summary

This report is to seek direction from Council on how to proceed with incorporating protected active transportation lanes[1] as part of a Broadway redesign, as directed by Council in June 2022. It describes three potential design approaches that could be pursued which are generally compatible with the concept of Broadway as a Great Street. It also includes early implementation and financial implications to be considered as detailed design advances.

The work is time-sensitive, particularly in the station blocks where street restoration must be coordinated with subway construction that is currently underway.

This report recommends Option 1, that staff proceed with a design that reprioritizes curb space to parking, public space, and wider sidewalks and allows for the future reallocation of additional lanes to active transportation, for the following reasons:

- Staff will be better positioned to understand impacts of further road reallocation after Broadway Subway is operational and traffic flow to the area is better understood.
- In the station blocks, the City would need to negotiate with the Province to make any changes to the design – there is a risk that an agreement would not be reached and, if an agreement is reached, the financial risk to the City would be high.
- There is no budget currently allocated to fund active transportation lanes along Broadway.
- Significant changes to the Major Road Network and truck network to achieve option 3 would require regional agreement.
- The City could incrementally deliver active transportation lanes along Broadway with less risk at a later date.

Council Authority/Previous Decisions

The Broadway Plan was approved by City Council in June 2022 and included the following amendment:

K. *THAT Council commit to a future for the street of Broadway that increases safety and livability for families, senior, and people with disabilities and decreases carbon emissions, and do so by reallocating surface road space to prioritize pedestrians, busses, access for people with disabilities, safe active transportation and micro-mobility, emergency vehicles, public space, and the movement of goods, and deprioritizing personal private vehicles;*

FURTHER THAT Council commit to building an AAA safe active transportation lane along Broadway;

AND FURTHER THAT Council direct staff to review, analyze and report back on recommended designs and funding sources for meeting the above goals.

[1] This report uses the term “Active Transportation Lanes”, which was included in the Council direction. These are equivalent to facilities that have generally been called “Protected Bike Lanes,” which are also intended for micro-mobility beyond cycling, including e-scooters, e-bikes, skateboards, etc.

Other related Council directions include Transportation 2040, Climate Emergency Action Plan, and Vancouver Plan. Each of these policies directs staff to prioritize active transportation.

City Manager's Comments

The City Manager concurs with the foregoing.

Context and Background

Transforming Broadway into a Great Street was identified as a high priority in the Broadway Plan (2022), with a primary focus on pedestrians and public space. The Plan further describes Great Street elements including physical protection and cultural safety for all users, improved comfort and accessibility, ease of navigation, and an overall delightful experience.

In June 2022, Council committed to including all ages and abilities (AAA) active transportation lanes to support safe rolling and cycling on Broadway, and asked staff to review, analyze, and report back on recommended designs and funding sources. Active transportation lanes were not part of the initial design recommendations brought forward as part of the Broadway Plan and are not included in the designs currently being finalized by the Broadway Subway contractor for the station blocks, which will be reconstructed with subway construction.

This report provides an update on the design work to date for including active transportation lanes on Broadway, describing two concepts which could potentially be applied to the corridor depending on local traffic conditions and context. Thus far, concept development has focused primarily on transportation elements; should the work advance, they would be incorporated into more comprehensive streetscape plans that would include landscaping, street furniture, lighting, and other public realm components. Regardless of design decisions on active transportation lanes, staff will be developing a streetscape plan for Broadway to deliver it as a Great Street.

While much of the permanent design would be expected to be delivered through capital construction or adjacent development, there is a time-sensitive opportunity to deliver station blocks as part of Broadway Subway construction. There is particular urgency to confirm designs for the five station locations (seven blocks) on Broadway, as street restoration is expected to start in mid-2024.

A map of city blocks impacted by Subway station construction can be found in Appendix A.

Discussion

Benefits of Protected Active Transportation Lanes

While protected active transportation lanes on commercial or "high" streets have been implemented successfully around the world[2], this would be the first major application in the city of Vancouver outside of the downtown core and the largest project of this nature that the City has undertaken. The City of North Vancouver's recent redesign of Esplanade is a useful local precedent as it has similar dimensions and is part of both the Frequent Transit Network (FTN) and Major Road Network (MRN).

[2] Recent international examples include Bloor Street in Toronto, Ceintuurban in Amsterdam, and Vasagatan Street in Stockholm.

Protected active transportation lanes on Broadway could bring a number of benefits, including:

- providing direct and equitable access to shops and services, enabling more people to shop 'along the way' and participate in the social life of the street;
- accelerating the shift to active transportation and public transit by further improving sustainable transportation choices;
- improving safety and comfort for everyone, including pedestrians (by reducing sidewalk riding) and people cycling and using micro-mobility (by reducing conflicts with motor vehicles);
- enabling cycling and e-scooters for last-mile deliveries and integration with transit; and
- potentially reducing noise and air pollution for pedestrians, residents and businesses.

Considerations for Implementing Protected Active Transportation Lanes

There are a number of significant issues to be considered when determining whether to implement active transportation lanes on Broadway in the near term, notably:

- coordinating street design and delivery with subway construction that is already underway, with **street restoration designs almost complete and restoration expected to start in mid-2024;**
- cost implications, noting the City would need to enter negotiations with the Province and their contractor on how to deliver a revised scope, which would incur additional costs due to changes in designs;
- traffic impacts along Broadway and parallel routes if only two lanes remain;
- impacts to local transit, emergency vehicles, trucks, servicing and deliveries;
- increased pressure on development sites to deliver required setbacks; and
- potential reduction in space for pedestrians, patios and public life.

Motor Vehicle Volumes along Broadway

The Broadway Subway adds significant people-moving capacity under the street, creating a significant opportunity to reallocate road space. Staff are confident that the subway will reduce vehicle volumes by at least 15%, with further reductions possible in conjunction with making sustainable transportation more attractive and reducing motor vehicle capacity. There may be additional road space reallocation opportunities in the western section of the corridor, where motor vehicle volumes are somewhat lower.

More information on motor vehicle volumes can be found in Appendix B.

Broadway Today

Broadway is the central street in the second-largest employment centre in British Columbia, with growing commercial, institutional and light industrial areas and a high volume of transit users. It is an important part of the FTN, MRN and truck network. As part of the MRN, TransLink must approve any reduction to vehicle-moving capacity.

Today, the street is typically six lanes wide. This includes two general purpose moving lanes and a parking lane in each direction, with parking lanes becoming bus lanes during peak hours. Additional left-turn lanes are provided at key locations. Sidewalk widths vary between wide sidewalks achieved through more recent development and very narrow sidewalks adjacent some older development.

Original Broadway Plan Design

In the early phases of Broadway Plan engagement, improved accessibility and walking experience was identified as a top priority by most respondents.

Informed by this engagement, staff advanced a design (referred to here as the 'Original Design') that would reallocate two of the six lanes to create more room for walking as well as patios, store displays, and public/flexible space, with some parking/loading expected to be retained. The design did not include protected active transportation lanes, with a higher priority placed on space for other public realm components and recognizing that there are parallel routes nearby (10th Ave / Off-Broadway on 7th/8th Ave).

The reduction in motor vehicle capacity on the MRN from six travel lanes to four travel lanes was reviewed by TransLink who approved the capacity reduction in the station blocks. For the remaining blocks, TransLink requested that the City assess how the corridor operates with lane reductions during the Subway construction prior to endorsing additional lane reallocation.

This design was used to inform design of the station blocks, including placement of vents and other critical station infrastructure. Road geometric drawings were sent to the Province in 2021 to advance the detailed road restoration designs. Station Block Design Concepts were sent to the Province in 2022 providing additional design detail (trees, paving etc.). This has been incorporated into the current subway contract.

Exploring Broadway Active Transportation Lane Concepts

Following Council direction in June 2022 to include active transportation lanes on Broadway, staff reviewed several design approaches, including designs that could be delivered in the near-term with the completion of the subway. These approaches could potentially be implemented differently along the corridor depending on traffic demand and design context.

The shortlisted approaches are listed below, and described in more detail in Appendix C:

- **Option 1 -** *Reallocate curb lanes to wider sidewalks/public space & protect for future active transportation lanes*
  This approach is similar to what was recommended by staff with the Broadway Plan, except it includes more focus on designing for further reallocation of general traffic lanes to active transportation in the future. It would incrementally reallocate two of the existing six lanes to wider sidewalks and improved public space (eg. patios, parklets, seating, trees, and green infrastructure), and allow for parking/loading where needed. In the interim before development or other projects widen sidewalks, the curb lane would become full-time parking. Turn lanes would be added at select intersections where required. Placement of trees, poles, etc. would consider future active transportation lanes.

- **Option 2 –** *Reallocate curb lanes to active transportation lanes*
  This approach is similar to Option 1 in terms of traffic impacts. It trades off much of the

additional sidewalk width and public space opportunities, as well as parking in the interim, to provide a safe facility for cycling and micro-mobility devices like e-scooters. Turn lanes would be added at select intersections where required. Where implemented, there would be less opportunity for parking and loading. This option would require conversations with the Province to incorporate the active lanes into the station blocks as it would be a change to the design. Consideration would be given to temporary materials in the non-station blocks. This interim treatment would remove the ability to accommodate parking, loading and other curb lane uses.

- **Option 3 –** *Reallocate curb and centre lanes to wider sidewalks/public space and active transportation lanes*
  This approach would reallocate an additional travel lane in each direction to create significantly more room for sidewalks and public space opportunities as well as active transportation lanes. However, it would further reduce motor vehicle capacity to a single lane in either direction, impacting transit, goods movement and emergency vehicles. There would likely be little opportunity for parking and loading along the corridor. Similar to Option 2, Option 3 would require discussions with the Province, as well as considerations for interim treatments outside of station blocks. As vehicular capacity would be significantly reduced, conversations with TransLink will be required to ensure this design meets their operational requirements as Broadway is part of the MRN.

Staff expect that only the approaches in Options 1 and 2 would be feasible at station blocks to accommodate turn bays for higher turn volumes at arterial streets and bus stops to serve the stations. This would improve safety by reducing conflicts between motor vehicles and people walking, rolling and cycling, as well as allowing buses to stop at stations without blocking traffic. Option 1 would not require redesign of the station blocks as it is similar to the design provided to the contractor, although some details may need minor changes to better accommodate future active transportation lanes. Option 2 would require some further redesign of the station blocks, however curbs would generally not need to shift from the Original Design.

Subject to Council direction on a design approach, staff would further refine the options described above, incorporating them into more comprehensive streetscape plans that include landscaping, green infrastructure, street furniture, lighting, and other public realm components to realize Broadway as a Great Street.

Options Analysis

Early analysis of the impacts of each option for Broadway, relative to the existing street, are summarized below in Table 1. This analysis shows that there are significant issues with Options 2 and 3 that would create substantial challenges over the short-term and may make them infeasible, particularly coordinating with the Broadway Subway Project, impacts to parking supply, and (for Option 3) implications for the Major Road Network (MRN). Regarding the latter, TransLink must approve any changes to capacity in the MRN, and Option 3 would result in a substantial reduction in capacity along Broadway.

The feasibility and cost implications of both Option 2 and 3 have not yet been fully determined; if Council opts to advance either of these, this work would have to be undertaken.

TABLE 1. QUALITATIVE INDICATION OF IMPACTS OF THREE OPTIONS FOR A BROADWAY ACTIVE TRANSPORTATION LANE

✗ means slightly worse, ✗✗ means significantly worse, ✓means slightly better, ✓✓means significantly better, and - is neutral.

IMPACTS	OPTION 1 PROTECT FOR FUTURE ACTIVE TRANSPORTATION LANES	OPTION 2 REALLOCATE CURB LANES TO ACTIVE TRANSPORTATION LANES	OPTION 3 REALLOCATE CURB & CENTRE LANES TO WIDER SIDEWALK AND ACTIVE TRANSPORTATION LANES
Walking	✓✓	-	✓✓
Cycling	-	✓✓	✓✓
Transit (bus)	-	-	✗✗
Goods movement	-	✗	✗✗
Private autos	-	-	✗✗
Public space/patios	✓✓	-	✓✓
Parking	-	✗✗	✗✗
Coordination with the Broadway Subway Project	-	✗✗	✗✗
Near-term financial impact	-	✗✗	✗✗
Major Road Network impact (would require TransLink approval)	-	-	✗✗
Near-term incremental cost (2023-2026 Capital Plan - $M)	Minimal	$3M+ (station blocks) $2-5M (interim treatment – Arbutus to Quebec)	$3M+ (station blocks) $2-5M (interim treatment – Arbutus to Quebec)
Full build-out incremental cost ($M)	Minimal	$10M+	$20M+

Implementation, Timing and Contract Considerations

The Broadway Subway Project is currently under construction, and the contractor has almost finalized the street restoration designs based on the parameters in their contract from 2020 and the geometric designs and streetscape design concepts provided by the City in 2021/2022, which did not include active transportation lanes.

There is a high level of urgency to finalize designs if active transportation lanes were to be incorporated into the station blocks, as street reconstruction may start as early as mid-2024. Changes in road design could have implications on utilities, trolley pole locations, tree placement, grading and green infrastructure. Revised detailed design packages would need to be completed by early 2024, and staff would need to work with the Province to explore delivery options, which could range from adding scope to the contractor's work to City crews delivering elements of the restoration.

There is less urgency around non-station blocks as they would be constructed separately from the Broadway Subway project. In the short term, Options 2 and 3 could deliver infrastructure using lower-cost interim approaches on non-station blocks (e.g. using extruded concrete similar to Beach Avenue). This could provide a continuous experience and good connectivity to the surrounding bikeway and greenway network. However, it would limit parking and loading in the

near term and would result in an interim condition that would last for an undetermined amount of time.

In the longer term, permanent infrastructure between station blocks could be delivered through a combination of capital projects and adjacent redevelopment.

Next Steps

To date, staff have not engaged on design concepts, except with TransLink who shares responsibility for decisions on MRN streets.

In February 2023, City staff also met with Musqueam and Squamish Nation staff to explore early directions and partnership opportunities for incorporating cultural recognition into Broadway as a Great Street designs.

Staff will continue collaborating with the Host Nations to incorporate their values, history and art into the streetscape. Staff recognize the Host Nations' expertise and perspectives as being critical to the planning process. Staff hope and expect to have further discussions with the Host Nations at future phases of the work plan. This collaboration will continue as part of Broadway Plan public realm planning and is not contingent on Council's direction on active transportation lanes.

Following Council direction stemming from this report, if Options 2 or 3 are chosen, staff would begin to plan public engagement. The focus would be the Broadway streetscape concepts that illustrate different configurations of the public realm, including active transportation lanes, pedestrian areas, plantings, green infrastructure and patios. Staff would provide opportunities for local businesses, service providers, and people who use Broadway to provide feedback on the potential benefits and challenges. This feedback would help refine a preferred option accompanied by an implementation and funding strategy.

Staff would also begin a dialogue with the Province and their contractor to evaluate options for delivering active transportation lanes in station blocks.

If Option 1 is chosen, staff would defer public engagement on active transportation lanes until future direction is received from Council to start to work towards implementation.

Financial Implications

The Broadway Plan Public Benefits Strategy and current Capital Plan did not include costs to implement active transportation lanes for Broadway Great Street; the approved 2023-2026 Capital Plan only funds the Original Design.

Station Blocks

Option 1 would require minimal additional funding by the City (prior to a future decision to implement active transportation lanes).

Option 2 adds active transportation lanes to the Original Design, which would require a reallocation of funding, likely from other planned Active Transportation projects.

At station blocks, including active transportation lanes would require either adding or removing scope for the Broadway Subway construction contractor, depending on whether the work would be completed by the contractor or the City. Staff would need to continue working with the

Province to explore the most cost-effective way to deliver the additional scope. The cost estimates provided in this report are very high level as there is significant uncertainty related to negotiations with the Province and their contractor, at this stage of the project, however adding active transportation lanes to the scope in these blocks is expected to be at least $3M.

Non-Station Blocks

Between station blocks, an interim design could deliver a functional facility at an earlier timeline with permanent build out completed by adjacent redevelopment, where possible. Staff estimate that the interim design between Arbutus Greenway and Quebec Street might cost between $2M and $5M to implement, depending on a number of factors including traffic signal changes.

The long-term design would likely be implemented through development for much of the corridor. Overall, Option 1 would involve a minimal additional costs. Option 2 and Option 3 would likely have incremental costs of approximately $10M and $20M, respectively.

Funding for active transportation lanes in non-station blocks is also not included in the approved 2023-2026 Capital Plan, but staff would continue to explore opportunities to augment City funding through other mechanisms including grants or cost sharing agreements with senior levels of government.

Legal Implications

There are no legal implications associated with this report's recommendations.

* * * * * * * * *

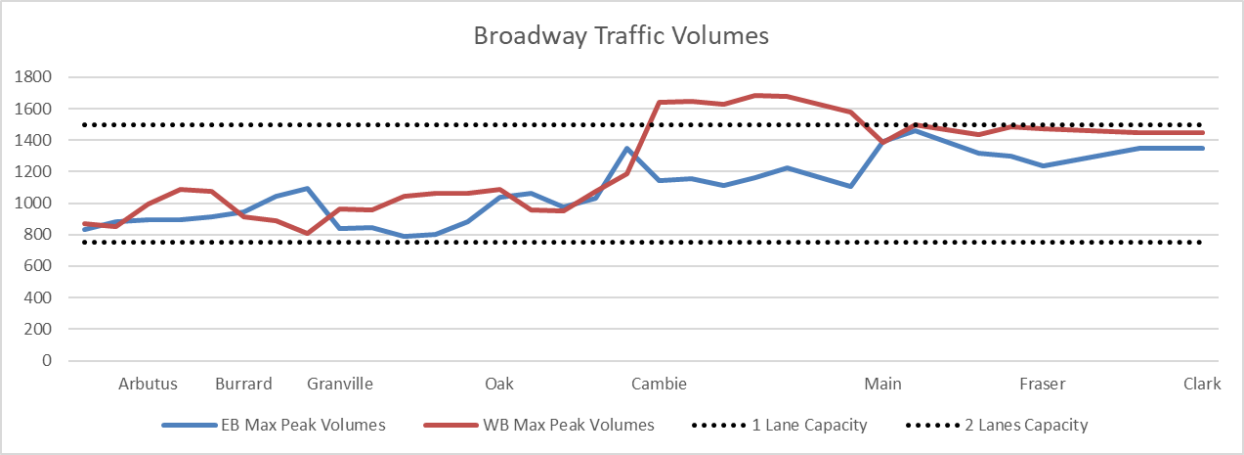
APPENDIX A
STATION BLOCKS

The seven “station blocks” along Broadway that are being significantly rebuilt with the Broadway Subway construction are:

- Arbutus St to Cypress St
- Granville St to Hemlock St
- Oak St to Laurel St
- Cambie St to Alberta St
- Quebec St to Main St

* * * * *

APPENDIX B
MOTOR VEHICLE VOLUMES



Traffic volumes were compiled using the most recent traffic counts for intersections, excluding pandemic counts due to lockdown measures. The Max Peak Volumes were calculated using the highest of volumes during the AM Peak or the PM Peak. General capacity of one lane of traffic is approximately 750 vehicles per hour. Volumes vary along the Broadway Corridor, typically decreasing west of Cambie Street.

The pandemic appears to have had some impact on motor vehicle volumes; preliminary indicators suggest that the post-pandemic volumes are 10% lower compared to those from before the pandemic.

Broadway is currently operating at a reduced capacity in many sections due to subway construction. At times, it has operated with as little as one lane per direction at station blocks, with turn restricted to manage traffic impacts. Outside the station blocks, transit lanes have been extended to 24 hours to maintain transit reliability. Observations during this time suggest that Broadway can function with two lanes in each direction.

The addition of the Broadway Subway—which on opening day will provide the equivalent of over 10 lanes per direction of people-moving capacity underground—creates an opportunity to transform Broadway by reallocating space on the surface. Staff estimate the subway could reduce vehicle volumes by 15%, with further reductions possible in conjunction with other factors that make alternatives to driving more attractive. Some trips currently taken by car will shift to other modes (e.g., transit, walking, or rolling), while others may shift to other corridors. At this point, it is unclear whether there would be a net suppression of overall trips if vehicle capacity were more significantly limited.

* * * * *

APPENDIX C
NEAR-TERM OPTIONS FOR AN ACTIVE TRANSPORTATION LANES ON BROADWAY – DETAILS

Broadway Today and Original Design

Today, Broadway is typically six lanes wide. This includes two general purpose moving lanes and a parking lane in each direction, with parking lanes becoming bus lanes during peak hours. Additional left-turn lanes are provided at key locations. Sidewalk widths vary between wide sidewalks achieved through more recent development and very narrow sidewalks adjacent some older development.

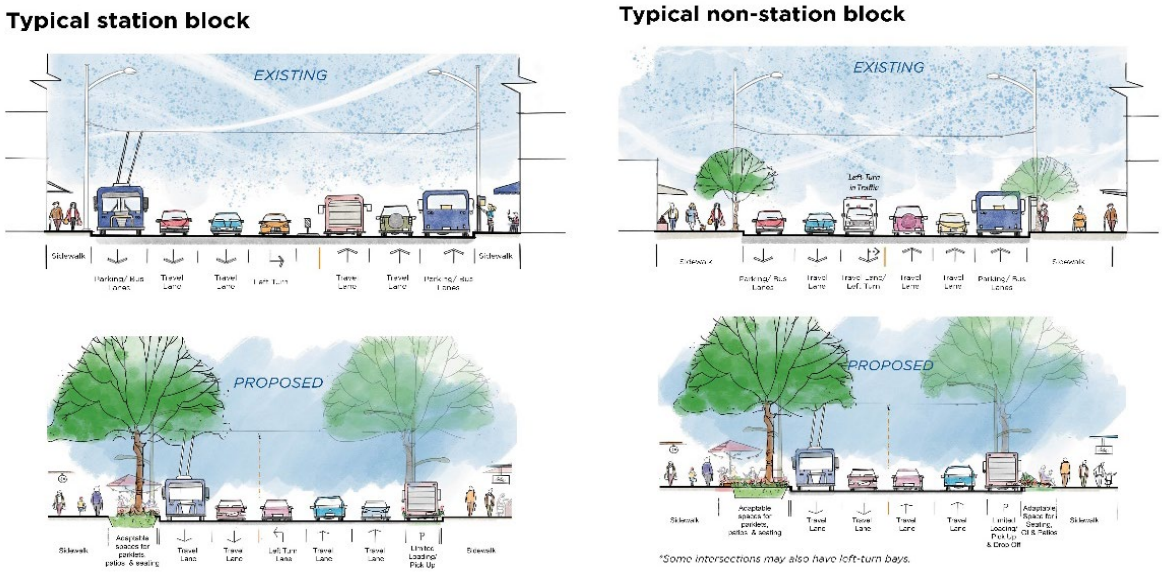


Figure 1: Broadway Today and the "Original Design" for Broadway as a Great Street, Broadway Plan

Informed by the Broadway Plan engagement, staff advanced a design (referred to here as the 'Original Design') that would reallocate two of the six lanes to create more room for walking as well as patios, store displays, and public/flexible space, with some parking/loading expected to be retained. The design did not include protected active transportation lanes, with a higher priority placed on space for other public realm components and recognizing that there are parallel active transportation routes nearby (10th Ave / Off-Broadway on 7th/8th Ave). The Original Design was submitted to the Province and put forward in the Broadway Plan.

Option 1

This concept would include:

- Four motor vehicle travel lanes (two in each direction)
- Turn lanes where there are higher turning volumes (e.g. at arterials and select motor vehicle access streets)
- Wide, accessible sidewalks
- Significant additional space for trees, green infrastructure, public seating, and patios
- Design considerations to allow for future implementation of active transportation lanes

Like the Original Design, this design approach would reallocate two lanes from today's Broadway. It would, however, put more focus into protecting for future active transportation lanes at a later date. Adding active transportation lanes in the future would likely require additional road space reallocation.

Option 2

This concept would include:

- Four motor vehicle travel lanes (two in each direction)
- Turn lanes where there are higher turning volumes (e.g. at arterials and select motor vehicle access streets)
- Accessible sidewalks (with extra width achieved through redevelopment where possible)
- Protected active transportation lanes on each side of the street
- Some space for trees and green infrastructure (public seating and patios)

Like Option 1, this design approach would reallocate two lanes from today's six lanes on Broadway. However, instead of allocating all of the repurposed space towards public/patio space and dedicated curb uses, much of the space would be used to provide protected active transportation lanes. It would be very similar to the Original Design and Option 1 in terms of traffic impacts, with the same number of lanes.

Over the long term, this concept would provide a good walking and rolling experience in much of the corridor with wide sidewalks achieved through redevelopment, where possible. The protected active transportation lanes would provide safe places for people to cycle or use micro-mobility devices such as e-scooters. Sidewalk comfort would be improved due to reduced sidewalk riding and associated conflicts between people walking, cycling & rolling. There would be some room for public space and patios, though opportunities would be significantly less than Options 1 or 3.

The concept allows for some potential flexibility in the curb lane, which could potentially be used to facilitate transit, and/or parking and loading on the street in off-peak hours in the future. It would provide functional, connected and safe active transportation lanes; however, constraints at some locations could result in narrower sidewalks and active transportation lanes.

Option 2 could be implemented along the corridor with interim materials, however this would likely eliminate most parking/loading on Broadway.

Option 3

This concept would include:

- Two motor vehicle travel lanes (one in each direction)
- Turn lanes where there are higher turning volumes. Both left- and right-turn lanes may be required in many locations (e.g., at arterials and select motor vehicle access streets)
- Wider, accessible sidewalks
- Protected active transportation lanes on each side of the street
- Significant space for trees, green infrastructure, public seating, and patios

This concept would reallocate an additional travel lane compared to Options 1 and 2. The additional space would result in the greatest opportunities for public realm enhancements, with significant room for trees, green infrastructure, public seating, and patios. There will be very limited ability to provide for loading and pick-up/drop-off activities on Broadway; these would be

limited and likely adjacent bus stops where the sidewalk would need to be narrowed to accommodate a pull-out for transit.

It would provide an excellent walking and rolling experience, with wide, comfortable sidewalks and protected active transportation lanes.

This concept would have the greatest impact on motor vehicle capacity and could significantly impact goods movement serving the employment in the area as well as general vehicle access to the corridor including the VGH Hospital Precinct. Because of this, it may have serious impacts, particularly in higher volume sections of the corridor. Local transit service would generally operate in the shared single lane, likely significantly reducing bus speed and reliability.

* * * * *