



MILLENNIUM LINE BROADWAY EXTENSION PRINCIPLES & STRATEGIES

SUMMARY OF THE CITY OF VANCOUVER MILLENNIUM LINE BROADWAY EXTENSION PRINCIPLES AND STRATEGIES

The Station Design and Urban Integration Principles (Principles) and Construction Impact Mitigation Strategies (Strategies) contained in this document were approved unanimously by Vancouver City Council on May 16, 2018. They were developed from past experiences of rapid transit projects within the City of Vancouver and refined through extensive engagement with over 11,000 stakeholders and members of the public. The Principles and Strategies identify the goals that the City will endeavour to achieve through the Millennium Line Broadway Extension (MLBE) and related City activities.

STATION DESIGN AND URBAN INTEGRATION PRINCIPLES

SYSTEM-WIDE PRINCIPLES

1. Support reconciliation
2. Design for long-term flexibility and resilience
3. Provide flex space onboard trains

COMFORT AND ACCESSIBILITY PRINCIPLES

4. Design for accessibility
5. Design to be user-friendly, safe and comfortable
6. Provide universally accessible customer washrooms

URBAN INTEGRATION PRINCIPLES

7. Minimize impact of Arbutus exchange
8. That public art be considered at all stations
9. Design for future flexibility
10. Integrate seamlessly into the corridor
11. Design for efficient movement to, from and around the station
12. Recognize significance of Cambie Station

CONSTRUCTION IMPACT MITIGATION STRATEGIES

STRATEGIES SUPPORTING LOCAL INTERESTS

1. Support business viability
2. Minimize the impacts of noise, dust and vibration

TRANSPORTATION RELATED STRATEGIES

3. Construction mitigation strategies should consider the City's "hierarchy of modes"
4. Minimize impacts on pedestrians
5. Minimize impacts on cyclists
6. Prioritize Broadway bus services and minimize detours
7. Ensure accessibility of transit services during construction
8. Maintain traffic flow as much as possible
9. Manage needs of many stakeholders
10. Coordinate with other developments and projects

ENGAGEMENT AND COMMUNICATIONS STRATEGIES

11. Engage with those most affected
12. Communicate upcoming impacts

STATION DESIGN AND URBAN INTEGRATION PRINCIPLES

The following principles focus on the MLBE station design and how the MLBE project will integrate into the surrounding neighbourhoods and transportation network. There are twelve high level principles grouped into three categories:

- **System-Wide Principles** - relate to the entire MLBE project
- **Comfort and Accessibility Principles** - relate to achieving a user friendly and accessible extension
- **Urban Integration Principles** - relate to how the stations and system infrastructure will fit within the surrounding city.

The high level principles are numbered and include a number of more specific lettered principles that demonstrate how the high level principle will be achieved.

SYSTEM-WIDE PRINCIPLES

1. Support reconciliation. That consideration be given to how the Broadway Extension can support the City's goals of reconciliation with the Musqueam, Squamish and Tsleil-Waututh Nations: (1) Strengthen local First Nations and Urban Indigenous relations; (2) Promote Indigenous peoples arts, culture, awareness, and understanding; (3) Incorporate First Nations and Urban Indigenous perspectives for effective City services.

a. That a Statement of Significance and Archaeological Assessment be completed at the outset of the Broadway Extension and future Broadway Corridor planning programs to establish heritage values, historic places, and places of low, medium or high archaeological potential and risk. The themes and values identified can be used to inform station design and opportunities for public art. (also contributes towards Principles #8 and #10)

b. That the City of Vancouver is a City of Reconciliation and encourages TransLink to invite Musqueam, Squamish and Tsleil-Waututh Nations to incorporate Indigenous naming for stations (where of MST First Nations' interest, as well as supported by the Statement of Significance) that would supplement TransLink's station name and recognize the rich history and cultural heritage of the local Nations.

2. Design for long-term flexibility and resilience. That the system and all stations are designed for long-term needs, expansion, sustainability and resiliency to effects of climate change and natural shocks such as floods and earthquakes.

- a. That the system and all structures be designed for durability and resiliency for major seismic events.
- b. That SkyTrain service access and operational staff parking be located off-street and avoid impacting the public realm whenever possible. (also contributes towards Principle #9)
- c. That the Broadway Extension be designed to allow for a future Millennium Line extension west to UBC with minimal impacts to Millennium Line services. (also contributes towards Principle #7)
- d. That the Broadway Extension system should be designed to be consistent with the ultimate capacity of the existing Millennium Line. Station elements (platforms, elevators, escalators, emergency exits...) should either be sized for the long term needs on opening day or allow for future expansion of station elements with minimal impacts on transit operations and passengers. Emergency exit capacity must be based on full trains operating at their maximum length and at minimum headways (i.e. highest frequency).
- e. That the public realm is designed and built at a high quality using enduring and attractive materials and furniture. The design of the public realm at the Cambie Station should consider its significance as a major transfer point as well as the centre of the civic and medical precinct. (also contributes towards Principle #12)
- f. That any trees removed for the MLBE project should be replaced whenever feasible with the goal of maximizing the tree canopy around stations (also contributes towards Principle #10).
- g. That the Broadway Extension team work with the City's Green Infrastructure group towards designing stations in consideration of the City's Integrated Rainwater Management Plan.
- h. That the Broadway Extension team work with the City's Transportation Division and the Planning Department towards designing the public realm to protect for Complete Street design options on Broadway.
- i. That the Broadway Extension be designed to high environmental standards and consider participating in the Envision sustainable infrastructure accreditation program.

3. Provide flex space onboard trains. That the City would like TransLink to provide at least as much flexible space onboard trains as their most recently purchased SkyTrain vehicles to accommodate people with wheelchairs of all sizes, mobility aids, bikes, strollers and larger personal items. The City recognizes that many older vehicles will be operating on the Broadway Extension that do not have the same design flexibility. (also contributes towards Principle #4)

COMFORT AND ACCESSIBILITY PRINCIPLES

4. Design for accessibility. That the system and all stations are designed to be age friendly and with the goal of universal accessibility for all transit users including vulnerable populations.

a. That the system and all stations are designed with the goal of universal accessibility for all transit users in accordance with TransLink's Transit Passenger Facility Design Guidelines and any accessibility features introduced since the guidelines were developed. This includes seating on platforms and other locations in stations, up and down escalators, sufficient elevator capacity for long-term needs and RFID (Radio Frequency Identification) faregates for people who are unable to use fare card media.

b. That elevators are designed to optimize the accessibility of each station. This should include minimizing the number of elevator trips required to travel between the platform and the street. Elevators should be sufficiently sized to accommodate all users (people with all sizes of wheelchairs, other mobility aids, stroller, bikes...) with the preferred design allowing for a single direction of travel (i.e. in one door, out the opposite door). Multiple elevators are preferred at all stations to allow for redundancy. (also contributes towards Principles #2 and #5)

c. That areas where HandyDART, taxi and pickup/drop-off activity can occur should be located as close to the station as possible, avoiding grades, while also providing safe access to curb drops. Weather protected areas should be considered near these zones that includes space for wheelchairs as well as seating. (also contributes towards Principles #2 and #11)

d. That station designs should be analyzed considering the specific needs of vulnerable populations including but not limited to people with a wide range of physical or cognitive disabilities, seniors, women and children (also contributes towards Principles #2 and #5).

e. That fire and other emergency warning devices should consider the specific needs of all transit users, including individuals who are deaf or hard-of-hearing.

5. Design to be user-friendly, safe and comfortable. That the system and all stations are designed to be intuitive, easy and comfortable to navigate, welcoming and foster feelings of safety and security.

- a. That Broadway Extension station entries are designed to be immediately recognizable as a rapid transit station in accordance with TransLink's wayfinding standards. (also contributes towards Principle #11)
- b. That all stations should be identifiable at platform level to assist transit wayfinding.
- c. That all stations be designed to CPTED (Crime Prevention Through Environmental Design) principles to promote feelings of safety and comfort in accordance with TransLink's Transit Passenger Facility Design Guidelines. This would include adequate lighting and designing for clear sightlines at grade and below grade.
- d. That stations and station wayfinding are designed to be useful to people with a wide range of visual and cognitive abilities and to integrate with the existing and planned City of Vancouver pedestrian and cyclist wayfinding systems. (also contributes towards Principles #4 and #11)

6. Provide universally accessible customer washrooms. That the City believes that the Broadway Extension should provide universally accessible customer washrooms to begin operations on opening day that are suitable for all sized power wheelchairs and other mobility devices as well as all gender identities. (also contributes towards Principles #4 and #5)

URBAN INTEGRATION PRINCIPLES

7. Minimize impact of Arbutus exchange. That impacts of the Arbutus bus exchange are minimized on the local neighbourhoods, including locating bus layover, turnaround and passenger queueing/waiting areas off street right-of-way as much as possible. (also contributes towards Principles #5, #10 and #11)

8. That public art be considered at all stations, including opportunities to use public art to increase visual appeal of at grade system structures or fencing. Individual station designs (entrances and below grade elements) should explore opportunities to integrate public art that considers the unique features of the neighbourhood. (also contributes towards Principle #10)

9. Design for future flexibility. That the system and stations be designed in a manner to allow for flexibility for future underground pedestrian connections and integration with nearby developments.

- a. That stations and related system structures should be designed to allow for overbuild and integration into current and future developments whenever feasible. (also contributes towards Principles #10 and #12)
- b. That the Broadway Extension work with the City of Vancouver towards full integration of the Cambie Station with a future City of Vancouver campus on the block bounded by Cambie, Yukon, West 10th Avenue and West Broadway. (also contributes towards Principles #10 and #12)
- c. That the Broadway Extension work with the owner of Lot 7 of the Great Northern Way Structure Plan when designing and building the Great Northern Way Station head house (entry building) and underground elements to allow for overbuild of station head house or integration into a concurrent or future development. (also contributes towards Principle #10)
- d. That the Broadway Extension work with stakeholders in the Vancouver General Hospital area to explore the possibility of an accessible underground connection between the future Oak Street Station and Vancouver General Hospital campus. (also contributes towards Principles #4, #5 and #11)
- e. That City staff should seek opportunities with new developments for underground connections to the MLBE (e.g. emergency exits, additional entrances, direct connections, etc.)

10. Integrate seamlessly into the corridor. That the system infrastructure, stations and plazas (when present) be designed to integrate seamlessly into and maintain the heritage features of the corridor and provide sufficient space for waiting, queueing, pedestrian movement, future connections, business access, weather protection and street furniture.

- a. That emergency exits be located off the street right-of-way and integrated into an adjacent building or development whenever feasible. If integration is not possible on opening day, emergency exits should be designed to allow for the integration into a future development. (also contributes towards Principle #9)
- b. That whenever possible, Broadway Extension stations should use statutory rights-of-way secured by the City for emergency exits or additional entrances.
- c. That the City will work with TransLink towards providing Commercial Retail Units (CRUs) at some or all stations. (also contributes towards Principle #5)
- d. That the elevated structure and tunnel portal north of Great Northern Way is designed to increase visual appeal, consider creative treatments that reflect the users of the area, seek opportunities to retain existing street uses under the guideway (e.g. parking, pedestrian and cycling uses) and avoid creating barriers to existing or future movement patterns.
- e. That all Power Propulsion Substation (PPS) and other system structures should be located to minimize their visual impact exploring options to locate them underground or above grade. If some structures have to be located at grade (e.g. Automatic Assured Receptivity Unit (AARU), the location and treatment of these structures should be determined with City staff. (also contributes towards Principles #2 and #9)
- f. That Broadway Extension station head houses and surrounding public spaces are designed considering existing and emerging City of Vancouver urban design guidelines, Complete Streets Policy Framework, Design Criteria Manual and best practices and provide sufficient space for waiting, queuing, pedestrian movement, business access, shelters, weather protection and street furniture (garbage receptacles, benches). (also contributes towards Principles #5 and #11)
- g. That impacts to buildings on the Vancouver Heritage Register along the Broadway Extension be minimized or avoided.
- h. That the Broadway Extension work with major landowners and stakeholders in the corridor with sensitive medical or scientific equipment (e.g. Vancouver General Hospital, Discovery Parks) when designing and building the Broadway Extension.
- i. That noise mitigation strategies for noisier elements of the elevated guideway (e.g. switches, corners) are implemented that consider current and future development patterns.

11. Design for efficient movement to, from and around the station. That the station plazas and surrounding public realm are designed to allow for efficient, intuitive and comfortable transfers between the Broadway Extension and other transit services as well as other modes of travel (walking, cycling, motor vehicles, car share).

- a. That vents in sidewalks should be strategically located to ensure adequate sidewalk capacity is provided for universal accessibility and located to avoid conflicts with bus stops, seating, and queuing areas. In locations where vents are challenging to locate without impacting sidewalk capacity, consideration should be given to integrating vents and related ducts into buildings while minimizing the amount of building frontage affected by the ducts. (also contributes towards Principles #4, #9 and #10)
- b. That stations be designed for maximum integration into the city's pedestrian, cycling and transit networks, as well as the communities they will serve. (also contributes towards Principle #10)
- c. That station entrances are located to provide the most direct, safe and comfortable connections possible between transit modes. The connection between the Broadway Extension and the Canada Line should be underground. (also contributes towards Principle #10)
- d. That the Broadway Extension be designed to accommodate bicycles in stations and in flex space onboard trains that can be used for bikes, strollers or luggage as well. Consider runnels for stairs which could reduce the use of elevators by people with bicycles. Whenever possible at stations, provide secured, enclosed, easily accessed bicycle parking facilities, bike racks, and sufficient space at grade for Public Bike Share stations. (also contributes towards Principle #3)
- e. Consideration be given to car share and future mobility options when allocating curb space (also contributes towards Principle #2).

12. Recognize significance of Cambie Station. That Cambie Station be given special consideration due to the significance of the site as a major transportation hub and centre of a civic and medical precinct including considering opportunities for the City or another party to provide additional station entrances.

- a. That consideration be given to additional entrances at Cambie Street Station due to the significance of the site (major transfer point, future City of Vancouver campus), to reduce pedestrian movements at grade and to allow flexibility to upgrade the existing entrance during construction of the future City Hall campus with minimal impacts to transit operations and passengers. (also contributes towards Principles #2, #9 and #11)

CONSTRUCTION IMPACT MITIGATION STRATEGIES

The following strategies focus on minimizing the impacts of construction of the MLBE project. There are twelve high level strategies grouped into three categories:

- **Strategies Supporting Local Interests** – aim to minimize the impacts on local businesses, residents, services and stakeholders
- **Transportation Related Strategies** – aim to minimize the impacts on the various modes of transportation
- **Engagement and Communications Strategies** – aim to develop proactive and useful communications and engagement during construction.

The high level strategies are numbered and include a number of more specific lettered strategies that demonstrate how the high level principle will be achieved.

STRATEGIES SUPPORTING LOCAL INTERESTS

1. Support business viability throughout construction including maintaining business access and the establishment of a business and community liaison office at least one year prior to construction.

a. Establish a business and community liaison committee to manage the impact of construction at least one year prior to the beginning of construction. (also contributes towards Strategy #11)

i. Include members that represent residents and business interests in the Corridor as well as senior management at the City of Vancouver, TransLink and the Broadway Extension Office. (also contributes towards Strategy #11)

ii. While funded by the Project the committee should remain independent in budgetary decision making and allocation of business support spending.

iii. Include business support such as marketing plans, retail consultants, funding for events, loyalty programs, contests, wayfinding, etc....

iv. Provide a single point of contact for businesses and residents with concerns about construction impacts including detours to the pedestrian, cycling, transit and road networks. (also contributes towards Strategy #11)

b. Maintain business visibility and access for customers throughout construction. (also contributes towards Strategy #9)

c. Consider relaxations of City sign regulations during construction to retain business visibility and promote businesses most affected by construction.

2. Minimize the impacts of noise, dust and vibration during construction on local residents, businesses, services and stakeholders.

- a. Minimize and manage dust during construction by considering interventions such as watering construction sites, covering exposed soils, constructing wind barriers and/or other measures.
- b. Manage and minimize vibration during construction by monitoring vibrations before and during construction and seek ways to minimize impacts of vibration during construction using appropriate measures.
- c. Coordinate when (time of day) construction happens to reduce noise and traffic impacts on business and the community whenever possible. (also contributes towards Strategy #11)

TRANSPORTATION RELATED STRATEGIES

3. Construction mitigation strategies should consider the City’s “hierarchy of modes” as approved in Transportation 2040. Generally, the priority of modes should be (in order of priority) walking, cycling, transit, taxi/commercial transit/shared vehicles, private automobiles.

4. Minimize impacts on pedestrians during construction by minimizing pedestrian detours that cross roads and ensuring all detours are accessible, safe, comfortable and predictable.

- a. Minimize pedestrian detours that have to cross roads and ensure they are well marked with high contrast for visually impaired people, accessible, comfortable and predictable. Particular attention should be paid to ensuring safe temporary crossings near schools in the corridor.
- b. Ensure pedestrian safety and security around construction zones by achieving direct sightlines and adequate light around detours. Additional lighting and security may be required.
- c. Ensure construction hoarding does not impact the visibility of pedestrians crossing the street.

5. Minimize impacts on cyclists. Ensure bike route detours use alternate routes that are easy to use and at least the same level of comfort and protection as the existing route. This may require temporary or permanent upgrades to alternate routes. The City should consider fast tracking cycling network improvements that can aid in protecting cyclists during Broadway Extension construction.

6. Prioritize Broadway bus services and minimize detours. The City should prioritize bus services primarily operating on Broadway (#9, 99 B-Line) through transit priority measures and TransLink should minimize bus detours and monitor bus services in the broader corridor throughout construction.

- a. Prioritize Broadway transit service by continuing peak hour bus lanes and consider off peak transportation measures such as bus lanes as queue jumpers for areas experiencing congestion.
- b. Ensure bus services that are entirely focused on Broadway (#9 and #99) continue to operate on Broadway, even during times of greater lane reductions.
- c. Minimize bus route detours and avoid using local streets. Maintain predictable transit routes and bus stops by timing route changes to TransLink's regular quarterly service changes. (also contributes towards Strategy #12)
- d. Monitor bus service performance on Broadway and the diversion of bus ridership onto parallel bus routes and adjust service as needed.

7. Ensure accessibility of transit services during construction and minimize impacts to HandyDART services within the corridor.

- a. Ensure all bus services and stops, both permanent and temporary, are accessible during construction. (also contributes toward Strategy #6)
- b. Ensure HandyDART vehicles can provide safe access for passengers throughout construction.

8. Maintain traffic flow as much as possible. Encourage alternate driving routes for through traffic during construction and maintain sufficient travel lanes on Broadway for the busiest parts of the day to ensure efficient movement of vehicles, buses and goods.

- a. Minimize impacts to traffic flow and access on Broadway by maintaining at least four travel lanes (2 in each direction) whenever possible for the busiest parts of the day and at least two travel lanes (one in each direction) at all times. Consideration can be given to maintaining fewer lanes of traffic if it is not physically possible to do safely or sufficient analysis is done to assess the ability to continue to move people, goods and transit vehicles along Broadway and a clear benefit to the businesses and residents results (i.e. shorter construction duration, less noise at certain times of day) (also contributes towards Strategy #6)
- b. Maintain Broadway's function as a truck route.
- c. Review adjacent traffic routes to improve reliability and efficiency and minimize traffic using short cuts on local streets and laneways. Monitor traffic volumes on local streets and laneways and consider temporary measures to decrease traffic volumes as necessary.

9. Manage needs of many stakeholders. Manage loading, parking, access and emergency services needs during construction to balance the needs of residents, businesses, services, stakeholders and the Broadway Extension project.

- a. Coordinate with businesses to ensure access to loading and parking throughout construction, particularly for areas with reduced or removed on street parking. (also contributes towards Strategies #1 and #11)
- b. Review existing parking restrictions and enforcement on nearby local streets to minimize impacts to neighbourhood parking.
- c. Provide signage to direct people to key destinations such as Vancouver General Hospital, BC Cancer Agency, and off-street parking opportunities.
- d. Work with emergency services (fire, ambulance, police) to ensure adequate access during construction. The Broadway Extension should work towards the goal of zero impact on emergency vehicle access to and from Vancouver General Hospital.

10. Coordinate with other developments and projects. Ensure coordination of Broadway Extension construction with other developments and projects in the corridor including development of traffic management plans that are approved, monitored and adjusted when needed by dedicated staff.

- a. Ensure traffic management plans considering pedestrian, bicycle and vehicle movements are approved and monitored by dedicated staff who respond to traffic issues as they arise by adapting plans. Consideration of plans should extend beyond the areas immediately affected by construction.
- b. Coordinate construction of the Broadway Extension with other developments and projects in the Corridor to minimize overall impacts.

ENGAGEMENT AND COMMUNICATIONS STRATEGIES

11. Engage with those most affected. Ensure that construction methods, mitigation and transportation demand management strategies are developed by engaging with the residents, businesses, services and stakeholders most affected by construction.

- a. Ensure that trade-offs related to construction method decisions such as level of noise, traffic impacts, and time of day of construction involve engagement with those most impacted.
- b. Work with residents, business owners, City advisory groups such as the Persons with Disabilities and Seniors Advisory Groups, and stakeholders in the community to share information early and often.
- c. Promote alternative travel choices during construction (e.g. Travel Smart program). (also contributes towards Strategy #12)
- d. Minimize interruptions to utilities and services for residents and businesses throughout the construction period. When interruptions are required, sufficient notification must be provided.

12. Communicate upcoming impacts. Use positive and proactive communication of upcoming construction activities.

- a. Use proactive, positive communications on websites, social media, radio, and signage to provide advance warning of traffic changes. This should include TransLink's existing notifications for their quarterly service changes to alert of detours and bus stop changes as well as the City's Road Ahead notifications.
- b. Project and City communications staff should work with local media outlets to encourage positive reporting of detours and traffic impacts.