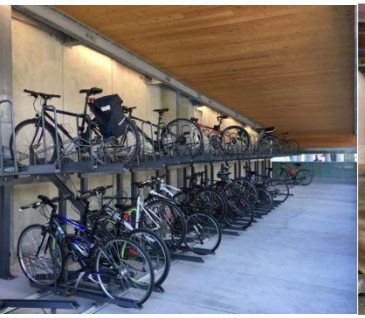
Colloque AQTR
La mobilité pour tous
December 12th 2017

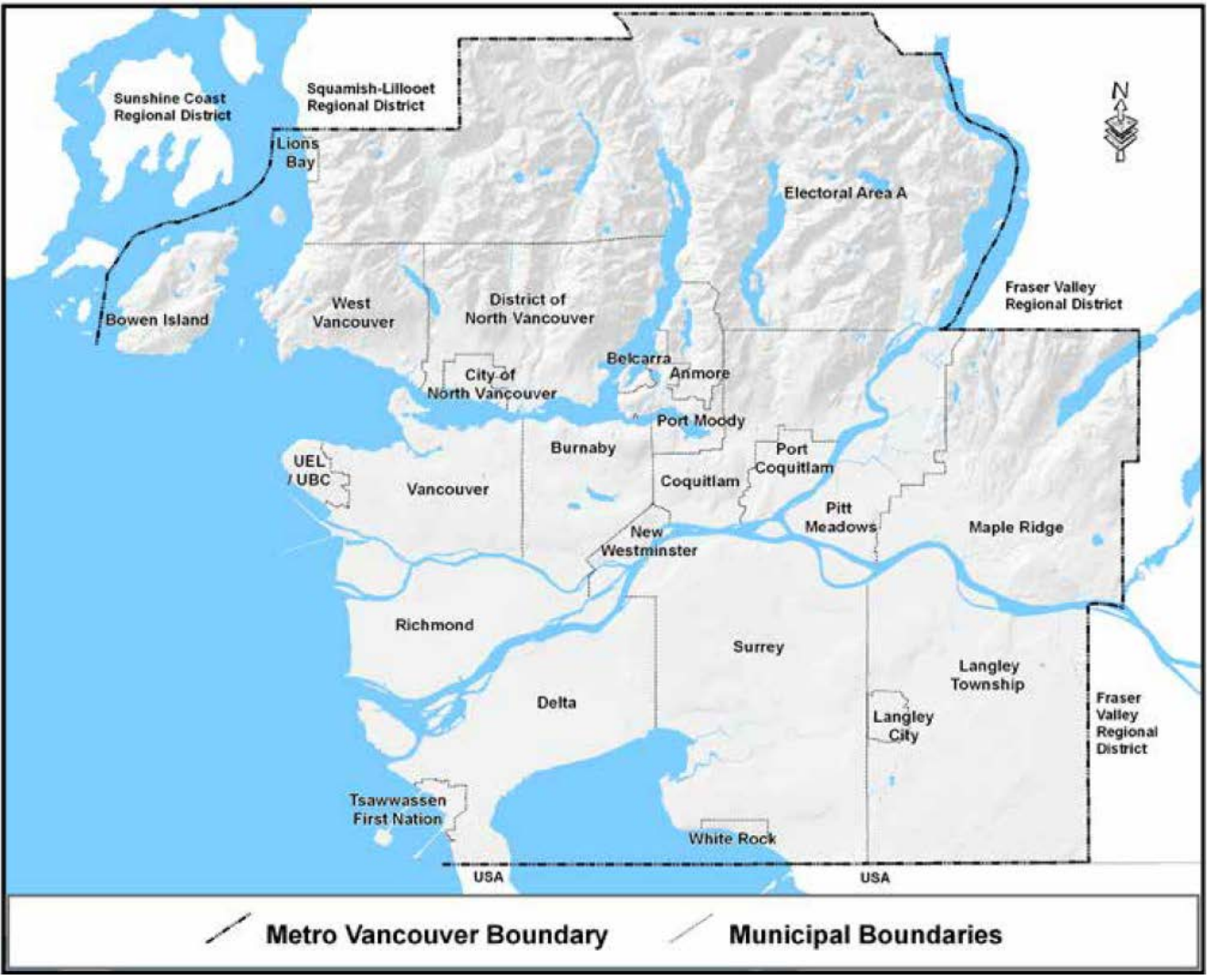





Synergies between active transportation and transit: strategies and tools

Pieter Agneessens
Senior Manager Facility Development Program
Infrastructure Program Management Department

THE REGION



Metro Vancouver
21 municipalities,
1 Electoral Area &
1 Treaty First Nation

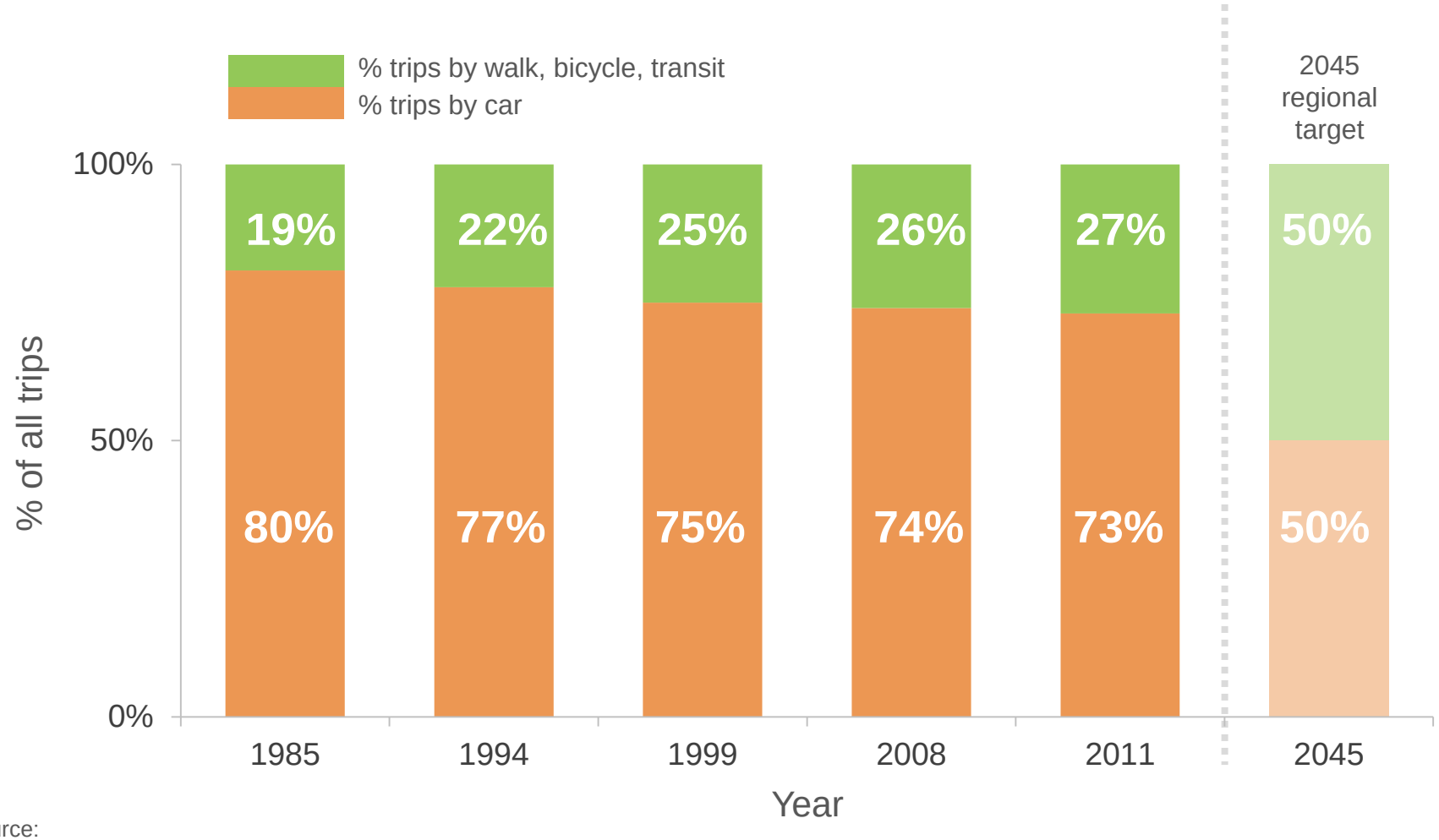
Population (2016 Census):
2,463,431

Annual (2016) boardings
384.83 million

Metro Vancouver 2040 – Shaping Our future (Regional Growth Strategy)

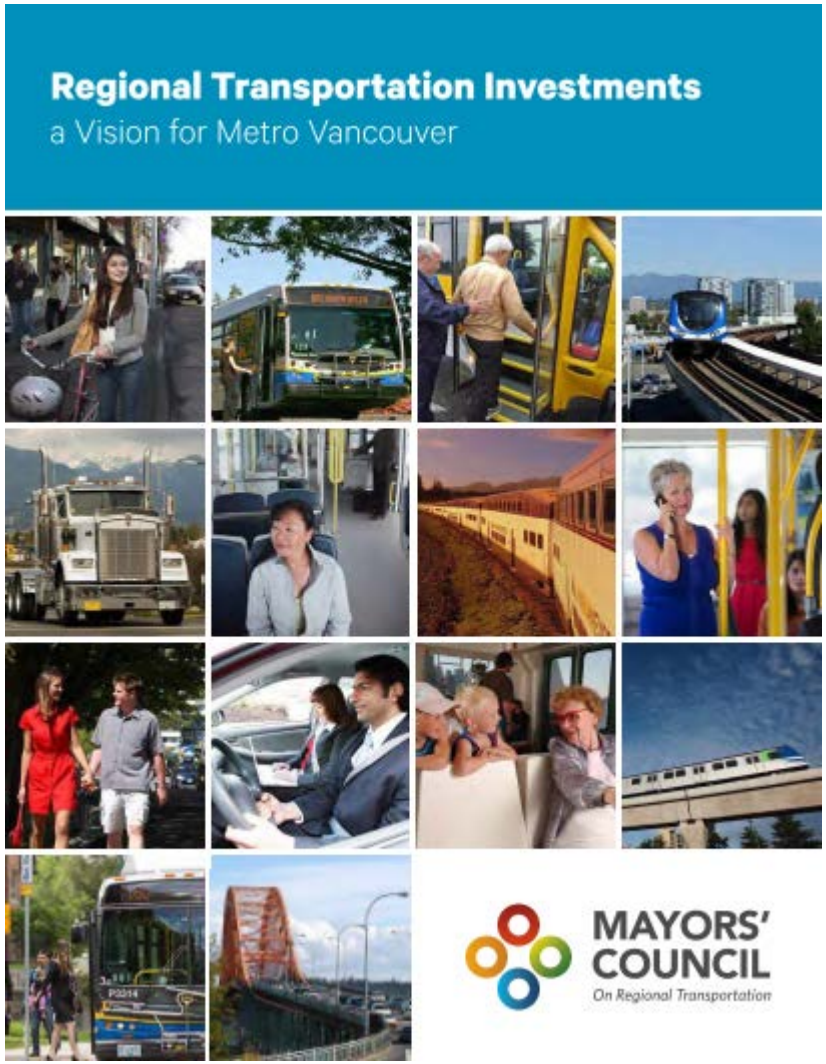
MODAL SPLIT

The proportion of **all trips** made by walking, cycling & transit has **increased 40%** in the last 30 years.



Source:
TransLink – How and Why People Travel – RTS Backgrounder (2013)

10-Year Mayor's Vision



CYCLING AND WALKING

- **2,700 kilometres of bikeways,** including 300 km of fully traffic-separated routes: Making cycling a safer choice for both cyclists and motorists

- Better connections to transit through **improved walking and waiting facilities** at or near transit stops and stations

MODES

TransLink directly manages the region's transit network including more than 200 bus routes…

MODES

…, SkyTrain Expo
and
Millennium Lines….

… Canada Line….

MODES

…the SeaBus…

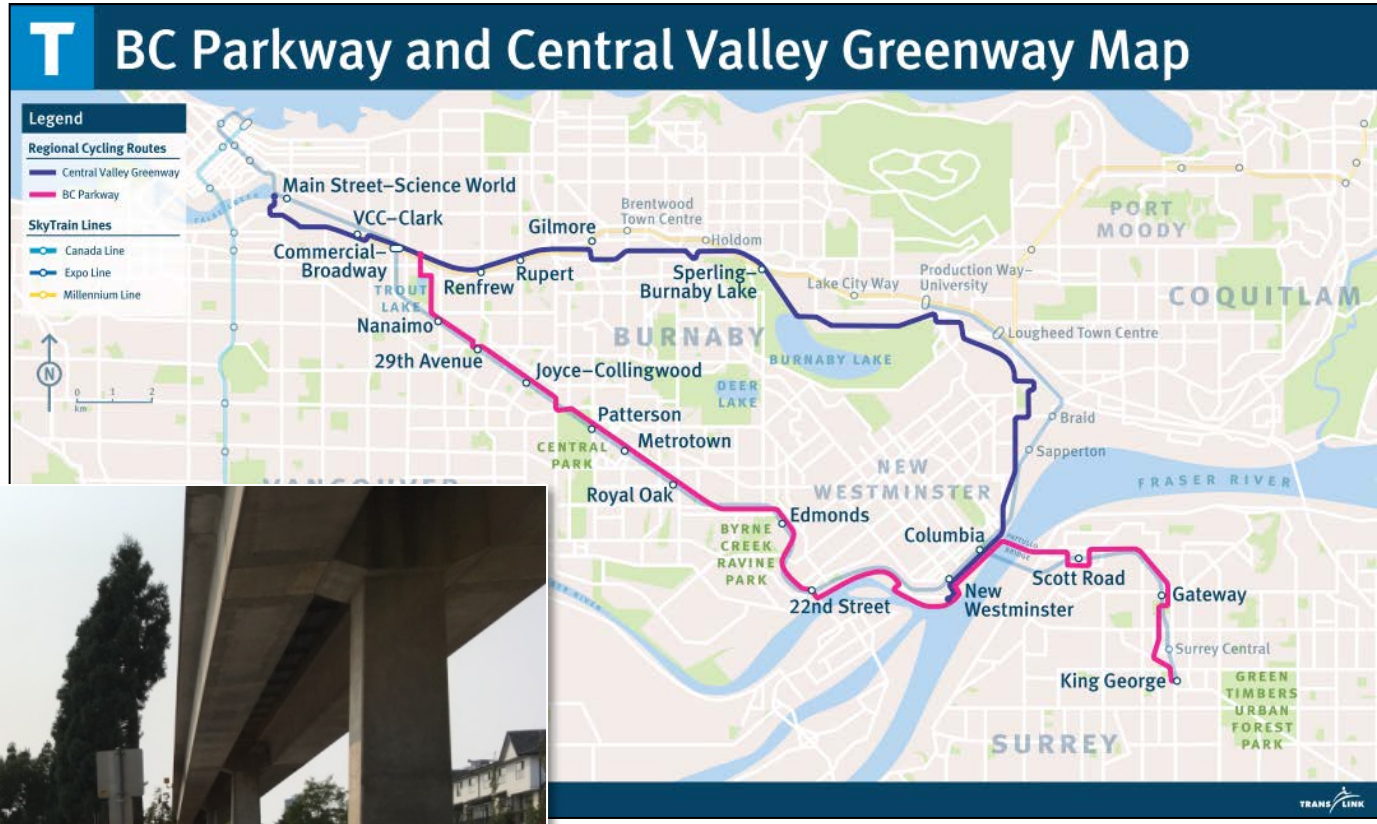
…and the West Coast Express.

MODES

- Vehicles 100% accessibles
- All stations accessible
- More than 70% of +8,000 bus stops accessible

MODES

BC PARKWAY



- 26-kilometre, multi use path
- An increasingly important facility for walking and wheeling

MODES

BC PARKWAY

TransLink bike parking

- 4 (+9) parkades, +400 lockers

Bikes on transit

MODES

TransLink also operates 5 regional bridges, co-manages the 600 km Major Road Network…

MODES

…and co-funds local bike and walking infrastructure built by municipal partners.

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MUNICIPAL COST SHARING

$23 m IN 2017

51 funded projects across 18 municipalities to make improvements throughout Metro Vancouver.

Upgrades through 3 cost-sharing programs with municipalities:

Major Road Network and Biking Minor Capital Program (MRNB):

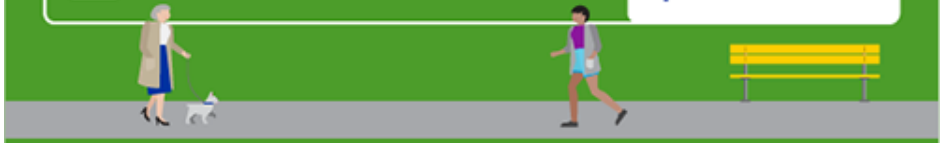
Improve safety, local and regional connectivity, and the efficiency of the Major Road Network.

$13.7 m in 2017

Walking Infrastructure to Transit (WITT):

Enhance and expand pedestrian access to transit.

$2.5 m in 2017



Bicycle Infrastructure Capital Cost-Share (BICCS):

Safety and comfort for cyclists of all ages.

$6.9 m in 2017

MUNICIPAL COST SHARING

November 16 2017

City to expand successful public bike share program

The City, in partnership with Mobi by Shaw Go and TransLink, is pleased to announce an expansion of the bike share program service area to Commercial Drive.

"TransLink is pleased to support this expansion of the bike share program as we continually look for ways to connect our customers to the transit network," says Kevin Desmond, CEO, TransLink. "Through initiatives such as #biketotransit, we are always looking for ways to help more people combine cycling with transit. This includes adding more secure bike parkades at SkyTrain stations in coming months, and through our annual funding to municipalities, we're helping communities add new bike lanes and bike paths across the region."

The expansion will build on the current network with stations every two to three blocks, and will include approximately 50 additional stations and 500 bicycles.

Funding from TransLink will be provided under the Bicycle Infrastructure Capital Cost Sharing (BICCS) program. Additional direct capital costs will be borne by Vancouver Bike Share Inc. (the operator of Mobi by Shaw Go) with the City of Vancouver providing ongoing support and contractual oversight.

Source:
https://www.mobibikes.ca/en/news/city-expand-successful-public-bike-share-program

10-Year Mayor's Vision – Phase 1

Invest in walking & cycling

This Plan expands investment in walking and cycling. Walking and cycling are more affordable and sustainable modes of travel than motorized transportation. Compared to the cost of transit and road infrastructure, significant increases in walking and cycling can be achieved through relatively small investments.

FUNDING TO MUNICIPALITIES

*Excludes previously approved grants that municipalities will expend in 2017.

FACILITY PLANNING FRAMEWORK

Planning & Conceptual design issued TL documents

Detailed design & implementation

Operation

All facilities

- TL Transit-Oriented Communities Design Guidelines (TOCDG)
- TL Transit Passenger Facility Design Guidelines (TPFDG)

Bus specific

- TL Bus Infrastructure Design Guidelines (BIDG)
- *TOD Exchange integration (under development)*
- *Shelter design guidelines (under development)*
- TransLink Bus facility furniture standards and guidelines (v1.0)
- Transit Plaza RASCI matrix (v1.0)

SkyTrain specific

- TL SkyTrain Design Manual (SDM)
- Planning input for TOD projects (memo)
- TL Building Code Criteria (TLBCC) 2015
- *Station detailed design specs. (TBDev.)*
- *Station RASCI matrix (TBDev.)*

LRT specific

tbd

bike specific

tbd

TOCD GUIDELINES

"The best transportation plan is a good land use plan"

The 6 Ds each have a different level of relative influence on transportation outcomes at the various scales of geography, which should be recognized during community design.

	DESTINATIONS	DISTANCE	DESIGN	DENSITY	DIVERSITY	DEMAND MANAGEMENT
CORRIDOR	●●●	●	●	●●	●●●	●●
NEIGHBOURHOOD	●●	●●●	●●	●●●	●●●	●●●
SITE	●	●●	●●●	●●	●●	●●

Level of Influence on transportation outcomes

●●● high
●● medium
● low

TOCD GUIDELINES

Places that facilitate a **decreased reliance on driving** by providing:


Good **Destination** accessibility


Short **Distance** to transit

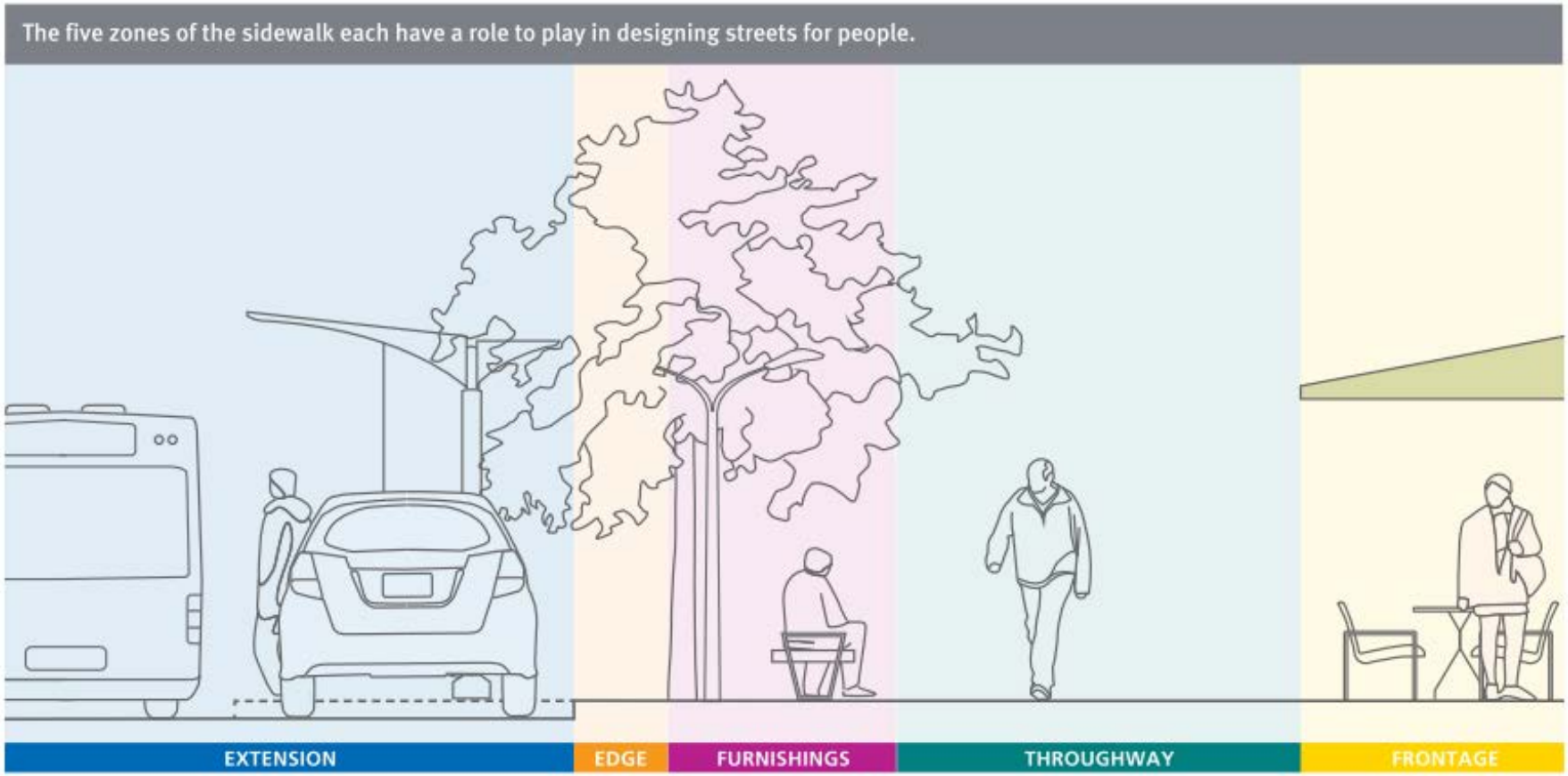

Pedestrian-friendly **Design**


Density of jobs & residents


Diversity of uses

Demand management

TOCD GUIDELINES



TRANSIT-ORIENTED COMMUNITIES DESIGN GUIDELINES

TOCD GUIDELINES

All of the pedestrian elements of the streetscape combine to create a safe, welcoming, and comfortable environment that encourages walking.

Sidewalks

Great sidewalks are the starting point for transit-oriented communities.

Curb extensions

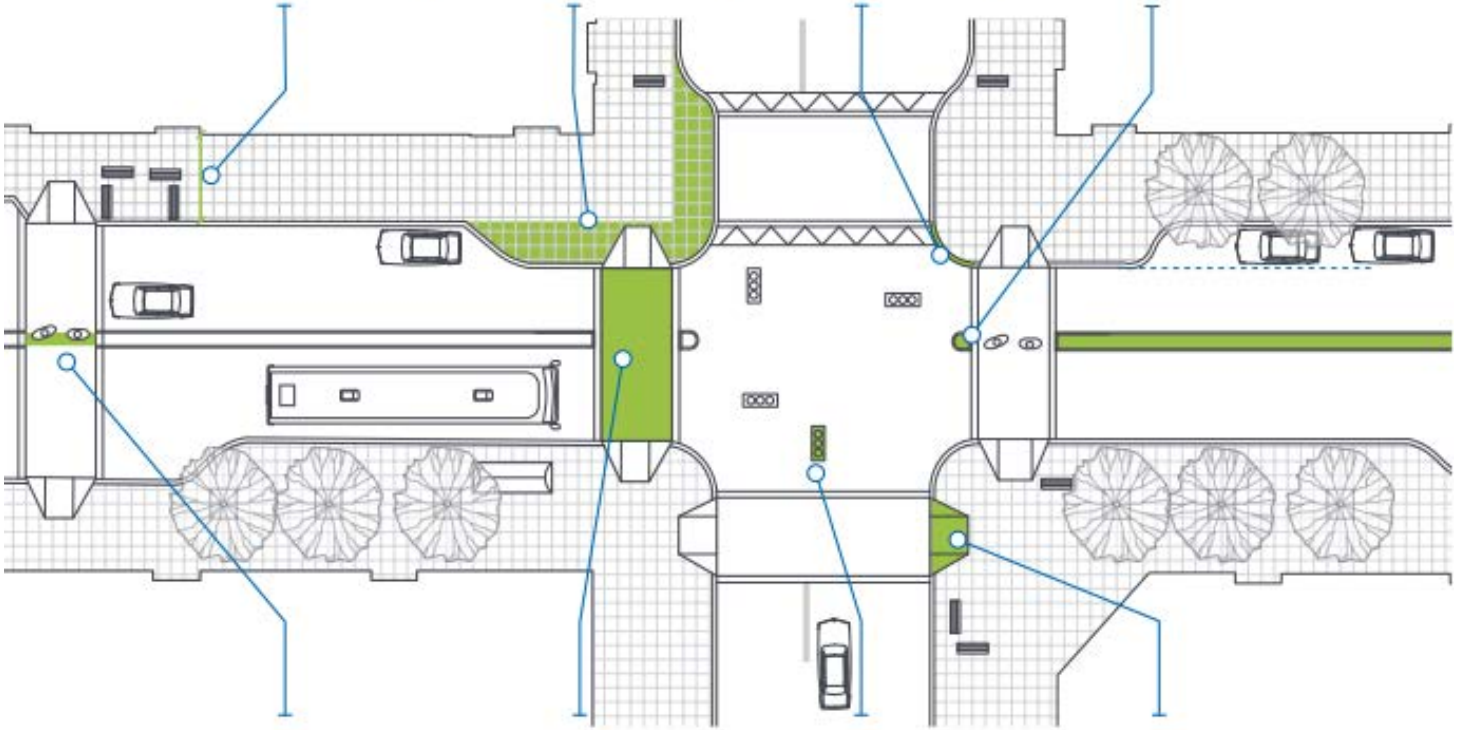
Curb extensions continue the sidewalk into the parking lane – usually at intersections, transit stops, or mid-block crossings – to increase pedestrian safety.

Curb radii

Tight turning radii force drivers to turn at lower speeds and increase the amount of space available to pedestrians.

Refuge islands

Refuge islands provide medians at intersections to increase pedestrian safety on busy streets.



Medians

Medians are used to separate opposing directions of vehicle traffic, creating a safe area for pedestrians crossing the street.

Crosswalks

Well-designed street crossings allow pedestrians to travel in safety and comfort.

Signals

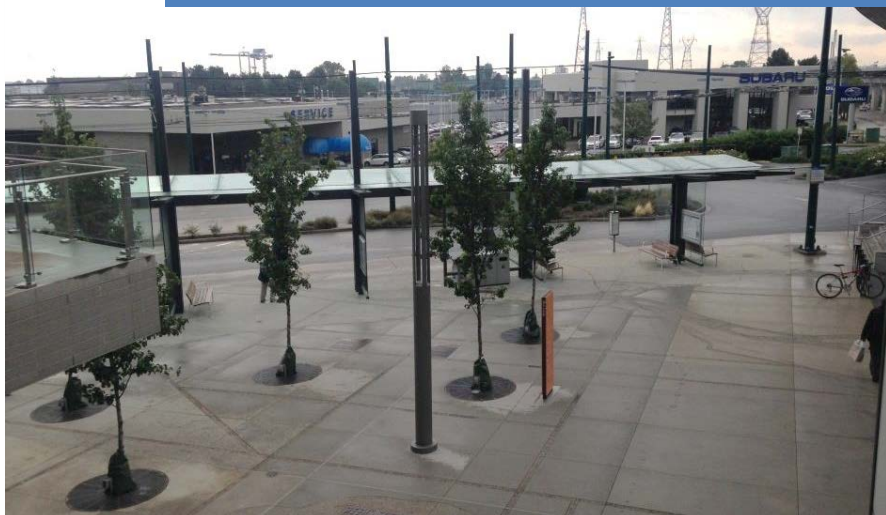
Traffic signals control the movement of vehicles and pedestrians at intersections and/or mid-block crossings.

Curb ramps

Curb ramps enable convenient crossing points for wheelchair users and those with other mobility impairments.

RECENT TOD PROJECTS

Marine Gateway



Source: http://perkinswill.com/work/marine-gateway-mixed-use-development.html

Richmond cash starts design work on new Canada Line station

JENNIFER SALTMAN
More from Jennifer Saltman

Published on: November 15, 2017 | Last Updated: November 15, 2017 5:34 PM PST

A train moves along the Canada Line at No. 3 Road and Capstan Way in Richmond. GERRY KAHRMANN / PNG

Richmond has sent $3.5 million to TransLink to pay for designing a new Canada Line station at Capstan Way.

Richmond has sent $3.5 million to TransLink to pay for designing a new Canada Line station at Capstan Way.

The city's council approved the transfer at a meeting on Tuesday night.

In 2012, Richmond signed an agreement with TransLink for Capstan station, which will be at No. 3 Road between the existing Aberdeen and Bridgeport stations. Capstan was one of four stations that were planned for the Canada Line to be built later when they were needed.

Developers building near the proposed station get bonus density in return for contributions to the cost of Capstan station. The money is in a city bank account and the bulk of it will be delivered to TransLink when the full amount — about $27.8 million — is collected.

Currently, developers pay just over $8,500 for each dwelling unit they build. The amount is adjusted each October based on inflation.

Over the past six years, based on Sept. 30 figures, the city has collected $19.36 million. It was originally believed that it would take 15 years to collect the full amount, but based on development permit applications, the full amount could be in hand by next spring.

Once all of the money is collected and council approves the final transfer to TransLink, the agreement stipulates that the station must built and operational within 30 months, barring factors outside of TransLink's control.

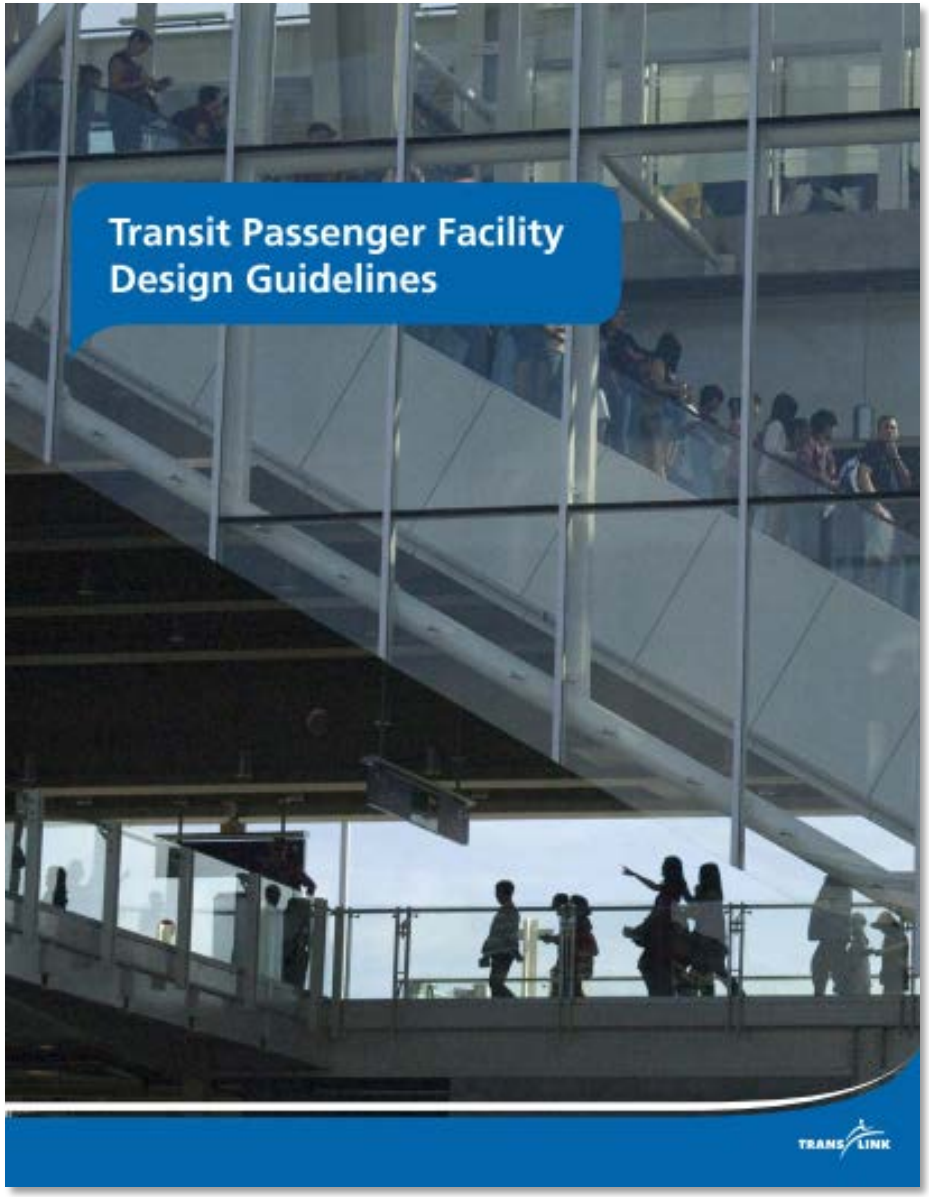
Any funding collected beyond what is needed to build the station can be used for related improvements to the station, roadways or other transportation infrastructure.

Derrick Cheung, vice-president of strategic sourcing and real estate for TransLink, called it "a novel collaborative arrangement."

The agreement between the city and TransLink allows for $1 million for preliminary design work and $2 million for detailed design work. Part of the preliminary design process includes confirming land requirements for the new station.

Source: http://vancouversun.com/news/local-news/richmond-cash-starts-design-work-on-new-canada-line-station

TPFD GUIDELINES



U **USABILITY - Put passengers and pedestrians first**

- U1 Make it easy
- U2 Make it universally accessible
- U3 Make it safe and secure
- U4 Make it comfortable

O **OPERATIONS - Optimize transit efficiency**

- O1 Facilitate transit operations
- O2 Support transit by integrating with other modes
- O3 Facilitate effective management and maintenance

P **PLACEMAKING - Create great places**

- P1 Make transit a community asset
- P2 Seamlessly integrate transit, urban development and the public realm

E **ENVIRONMENT - Be leaders in environmental sustainability**

- E1 Minimize negative environmental impacts of transit facilities
- E2 Reduce energy consumption
- E3 Design healthy sites

A **ACCOUNTABILITY - Be fiscally responsible**

- A1 Design with whole life costs in mind
- A2 Optimize economic benefits through design
- A3 Design responsive and flexible facilities and spaces

TPFD PRINCIPLES

1. Integration

Transit and its context adding value to each other

2.Inclusivity

Design to maximize accessibility to transit for all users

3.Sustainability

Meeting needs of present without compromising the needs of future generations

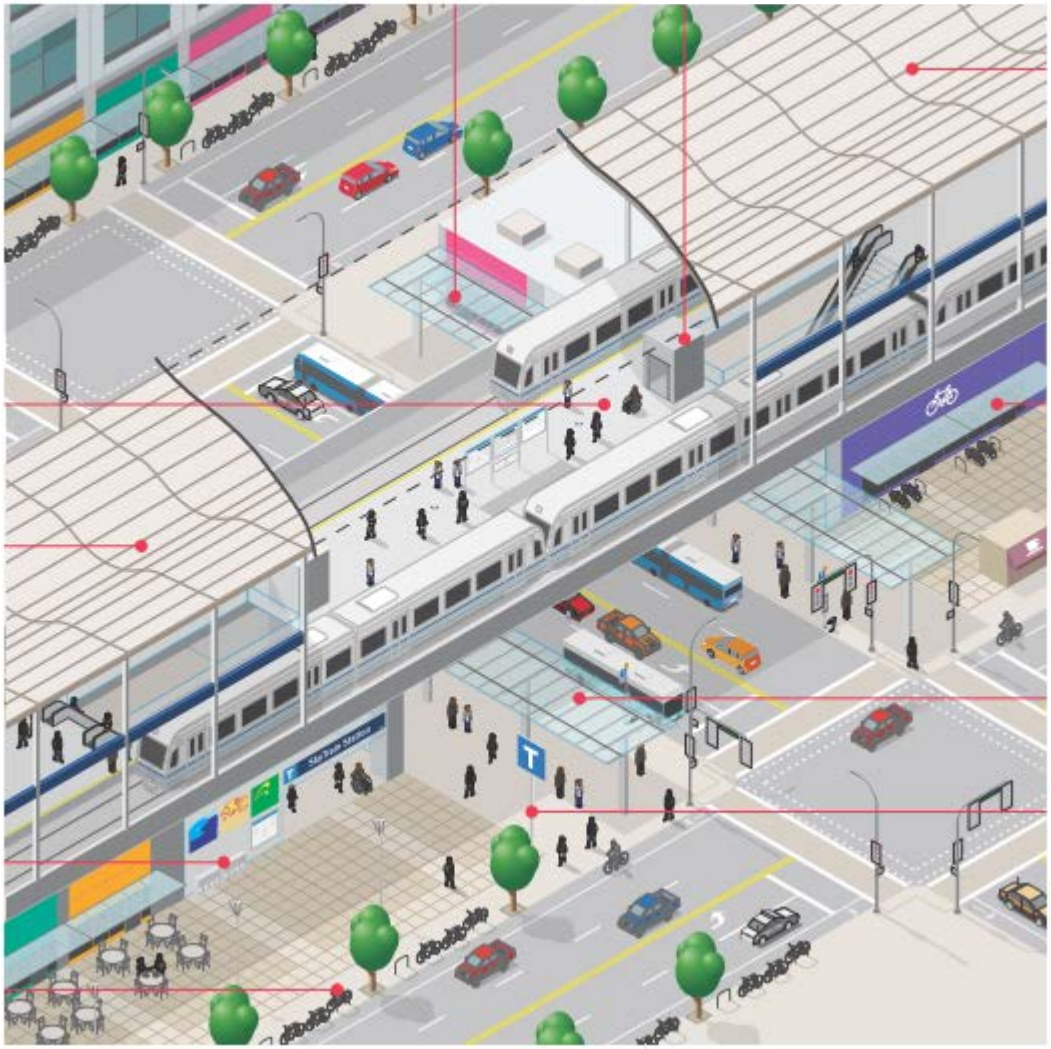
4.Modal balance

The needs of pedestrians, cyclists and transit riders should be collectively and respectfully considered.
"all transit passengers are pedestrians"

TPFD TYPOLOGIES

A2.1 Revenue generating opportunities

U2.1.3 Vertical circulation



E1.1 Use materials responsibly

U1.1 Movement and capacity

O2.5 Bicycles

A1.2 Efficient built design

U4 Make it comfortable

U1.3 Wayfinding and passenger information

U4.2 Amenities

OZ.1 Intermodal connections

TPFD TYPOLOGIES

EXCHANGES

TPFD GUIDELINES

U1.1 Movement and capacity

PRIORITIZE IMPROVEMENTS TO:

- remove barriers to movement
- improve circulation and permeability
- meet predicted future passenger capacities
- meet predicted pedestrian desire lines
- minimize conflicting pedestrian flows
- provide clear sight lines to all destinations
- provide consistent, high-quality lighting and wayfinding
- remove blind corners and redundant infrastructure

U1.1.3 CONFLICTS OF MOVEMENT

- Use pedestrian modeling software, where appropriate, to test capacities and identify potential conflicts of movement at locations such as entrances, exits and points of vertical circulation.
- Give priority to bus and HandyDART stop locations at transit passenger facility entrances without putting pedestrians or bicyclists at risk through constrained pedestrian or bicycle movements, insufficient waiting space or restricted sightlines.
- Locate bicycle parking and taxi ranks adjacent to desire lines, and as close as possible to transit passenger facility entrances, but not in locations that obstruct pedestrian movements.
- Provide convenient and clearly marked paths between bicycle parking and bicycle access points at the perimeter of facilities.
- Keep movement, queuing and circulation areas clear of unnecessary obstructions, including temporary information materials that could be integrated as part of the built design.

Pedestrian crossing located on desire line from station entrance to retail mall. Richmond-Brighouse Station, Richmond.

Temporary information display obstructs passenger movements. Commercial-Broadway Station, Vancouver.

U1.2 Legible spaces

A legible space is one where navigation and movement are intuitive, allowing passengers to orient themselves and reach their destination without the need for excessive directional signage. Legible spaces help to make movement easy and to reduce anxiety caused by uncertainty in complex or unfamiliar environments.

U1.2.1 SIGHTLINES, VIEWS AND DISTANCES

- Orient primary facility entries and exits towards inter-modal connections and public spaces.
- Minimize visual obstructions to provide easy access and movement through the physical layout of transit facilities and their surrounding streets and paths.
- Optimize sightlines within facilities and visibility of their surrounding context, particularly at inter-modal connection areas, through architectural design and maximum use of transparent materials.
- Identify opportunities to integrate transit and general infrastructure to rationalize street furniture, thus aiding legibility and security, enhancing sense of place and minimizing clutter.

U1.2.2 FACILITY IDENTITY AND DESIGN COHERENCE

- Adopt a consistent and integrated palette of colours, materials and surface treatments to create coherence across the network and to foster a distinctive identity for the facility.
- Design building elements (e.g., overhangs, canopies, entries) and vegetation and landscape features (e.g., low walls, lighting, public art, planters, surface treatment, texture, color) to define a system of legible and memorable spaces in and around transit facilities.
- Clearly define edges and transitions in and around facilities through distinct materials, finishes and landscape elements.

Transparency and high quality lighting connects interior and exterior spaces. Aberdeen Station, Richmond.

REFERENCES

TRANSLINK REFERENCES

SkyTrain RTP 2000 Design Manual (2006): 3.4.4 (Spatial and Organizational Principles).

TransLink Infrastructure Design Guidelines (2002): 4.2 (Transit Exchange).

Universal Accessibility Guidelines for TransLink Fleet & Facilities (2007): 2.0 (Space Allowance, Reach Ranges, and Controls), 4.0 (Protruding Objects).

OTHER REFERENCES

Pedestrian and Planning Design: Revised Edition (1987), Fruin, J.

The Green Guide 5th Edition (2008), UK Government: (pedestrian modelling flow rates).

Highway Capacity Manual: Third Edition (2000), Transportation Research Board.

Station Planning Standards and Guidelines (2007), Transport for London.

TPFDG GUIDELINES

O2.1 Inter-modal connections

Taxi and private car drop off adjacent to Joyce-Collingwood Station. Vancouver.

O2.1.2 PEDESTRIANS

- Provide convenient, multiple and direct pedestrian access points to the transit facility for all origins and destinations, leading to a single gate array where practical.
- Safely accommodate existing and potential passenger and pedestrian routings.
- Design fare-paid areas, particularly at connections and exchanges, to facilitate user understanding and seamless movement.
- Site bus stops to minimize walking distances between connections.
- Group bus routes with similar destinations at single or adjacent stops.

O2.1.3 BICYCLES

- Establish bicycle access and parking requirements based on passenger demand, transit passenger facility usage and local context.
- Provide safe and convenient bicycle access, egress and parking appropriate to the facility type and in well-lit areas close to transit access routes, while minimizing conflict with other modes:
  - provide long-term bicycle parking, such as a bicycle station, lockers or cages;
  - provide short-term bicycle parking, such as bicycle racks, preferably sheltered and close to the transit passenger facility;
  - design bicycle access routes to be separate from motor vehicle traffic, comfortable for all users, with even, well-drained surfaces.
- Locate bicycle parking as close as possible to transit passenger facility entrances/ exits, in areas with good natural surveillance from other transit passenger facility users and passers-by and readily accessible from every entrance (at transit passenger facilities with more than one entrance) without obstructing pedestrian movement.

Washington Bikestation provides secure parking, showers, lockers and bicycle rental and integration with public transit. Union Station, Washington, DC.

O2.1 Inter-modal connections

- Provide clear and consistent signage for bicycle parking facilities that is visible from all approaches.
- Design bicycle parking facilities to be compatible with transit facility street furniture, allowing adequate space for both users and maintenance activities.
- Consider using CCTV to improve security for bicycle parking and access routes. [See: U3.2.3 CCTV]

O2.1.4 TAXI AND KISS & RIDE

- Identify and quantify separate passenger pick-up and drop-off for taxis and private vehicles appropriate to the facility type, with drop off locations placed as closely as possible to facility entrances to deter use of bus stops and avoid conflict. [See: TIDG 4.4]

O2.1.5 PARK & RIDE

- Provide continuous, direct and safe pedestrian access between parking and the transit facility.
- Consider the provision of priority parking spaces for car share and car pool vehicles.

SEE CASE STUDY
4.1.6 FLINTHOLM STATION BICYCLE INTEGRATION

REFERENCES

TRANSLINK REFERENCES

SkyTrain RTP 2000 Design Manual (2006): 3.7.2.5 (Bike Racks), 3.7.3.10 (Bike Storage Facilities).

Transit Infrastructure Design Guidelines (2002): 3.0 (Bus Stop Location and Design), 3.3 (Bus Stop Placement), 4.2 (Transit Exchange), 4.4 (Passenger Pick-up and Drop-off Facilities).

Passengers queuing into Commercial-Broadway station entrance area from the 99-B line bus stop in the morning peak, creating an obstruction to cross-movements for pedestrians on the sidewalk. Vancouver, BC.

No weather protection between the car park and station. Coquitlam Park & Ride and bus exchange. Coquitlam, BC.

TPFD GUIDELINES

DESIGN STRATEGY P1: MAKE TRANSIT A COMMUNITY ASSET

P1.2 Vibrant people places

SEE CASE STUDY:
4.1.5 LIGHT RAIL AND PUBLIC REALM INTEGRATION

Incorporating transit passenger facilities and infrastructure into their local context in a way that respects and enhances the existing character of the neighbourhood – with open spaces and landscaping integrated as part of transit passenger facility and route design in larger developments – will help to create attractive environments with clear identities and structures.

Frame public spaces and pedestrian access routes adjacent to transit facilities with active uses and frontages. Vancouver, BC.

A community garden demonstrates positive use of residual land under elevated trackway. Joyce-Collingwood Station, Vancouver, BC

P1.2.1 PUBLIC SPACES

- Locate important public spaces along key pedestrian, bicycle and transit routes.
- Design public spaces surrounding transit to complement the cultural preferences of the local population.
- Incorporate the heritage and cultural diversity of locations in facility design, including public art, linking the transit network to its communities to create a positive identity for transit and foster community pride.
- Provide for an integrated mix of ancillary activities to meet the needs of a broad range of passengers and local communities – such as farmers' markets, musical performances and temporary art installations – to animate public spaces throughout the day and evening, both inside and outside of transit facilities.
- Design amenities to be fully integrated with transit facilities, surrounding developments and buildings and to be adaptable, comfortable, universally accessible, safe and easy to use, preferably during all hours of transit operations. [See U4.2 Amenities]
- Frame public spaces and pedestrian access routes adjacent to transit facilities with active uses and frontages – such as windows, storefronts and residential entrances – to support activities and hours of use that are compatible and complementary to those of transit services. [See: U1.1 Movement and Capacity]
- Provide safe and comfortable areas to sit, incorporating sheltered areas protected from the rain and wind to encourage their use in most weather conditions. [See: U.4 Make it Comfortable]
- Provide pedestrian-scale lighting to extend the active use of public spaces.
- Incorporate feature lighting, where appropriate, to enhance safety and sense of place. [See: U3.3 High Quality Lighting]
- Use residual lands beneath guideways to add to the inventory of public open space and support active transportation (e.g., community gardens or multi-use paths).
- Locate parking lot and garage entrances away from pedestrian routes, and minimize parking entrance widths.
- Follow CPTED principles to encourage natural surveillance and other passive security measures. [See: U3.2 Security]

DESIGN STRATEGY P2: SEAMLESSLY INTEGRATE TRANSIT, URBAN DEVELOPMENT AND THE PUBLIC REALM

P2.1 Integration with context

SEE CASE STUDY:
4.1.5 LIGHT RAIL AND PUBLIC REALM INTEGRATION

Transit facilities function best and attract customers when they are integrated into their surroundings and are able to serve passengers' day-to-day needs. Context-sensitive transit passenger facilities that deliberately shape and animate the public spaces surrounding them will be well-suited to becoming active and integrated fixtures embraced by their communities.

- Design transit facilities and the public realm to respect the local context, respond to community objectives, and be appropriate to the character and topography of the site.
- Consider issues of facility layout, scale, proportion and massing, natural features and soft and hard landscaping.
- Design amenities and spaces to be fully integrated with surrounding developments and buildings and to be adaptable, comfortable, universally accessible and safe and easy to use, preferably during all hours of transit operations.
- Orient buildings and maintain sightlines to key local landmarks or natural features to help in passenger orientation and wayfinding. [See: U1.3 Wayfinding and Passenger Information]
- Integrate public places and activities into existing circulation, open space and ecological networks.
- Integrate lighting, signage, wayfinding and hard and soft landscaping with transit facilities and surrounding areas. [See: U1 Make it Easy and U3.3 High Quality Lighting]
- Coordinate materials and surfaces used for transit facilities to be consistent, where appropriate, with those of their context, while also being consistent along transit routes.

THE PUBLIC REALM

The public realm forms the physical link between transit facilities and the wider communities they serve. In this context, the public realm is defined as the spaces between and around buildings, including streets, that are accessible and usable by people. Its elements include the spaces, building frontages, landmarks and views that define it, as well as the streets, sidewalks, paved and natural areas, hard and soft landscaping, water features, lighting and public art that help to animate it. Together, these elements give the public realm its identity, character, value and 'sense of place'. Importantly, the public realm is also dynamic space, enlivened by movement, activities and people.

This facility entrance structure is surrounded by active, animated public space and is integrated with underground retail and office developments to provide accessible, animated and safe use during hours of transit operations. Vancouver City Centre Station, Vancouver.

BIDG & UABSDG

integration

BIDG & UABSDG

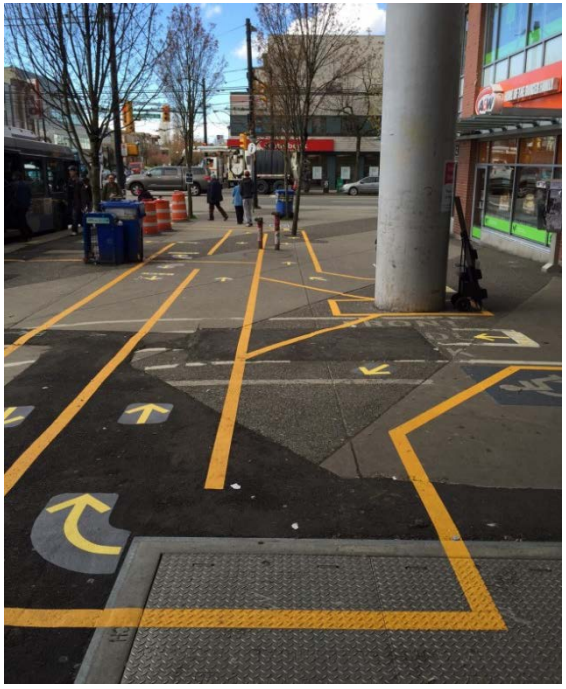
C3: BUS STOP LOCATION AND DESIGN

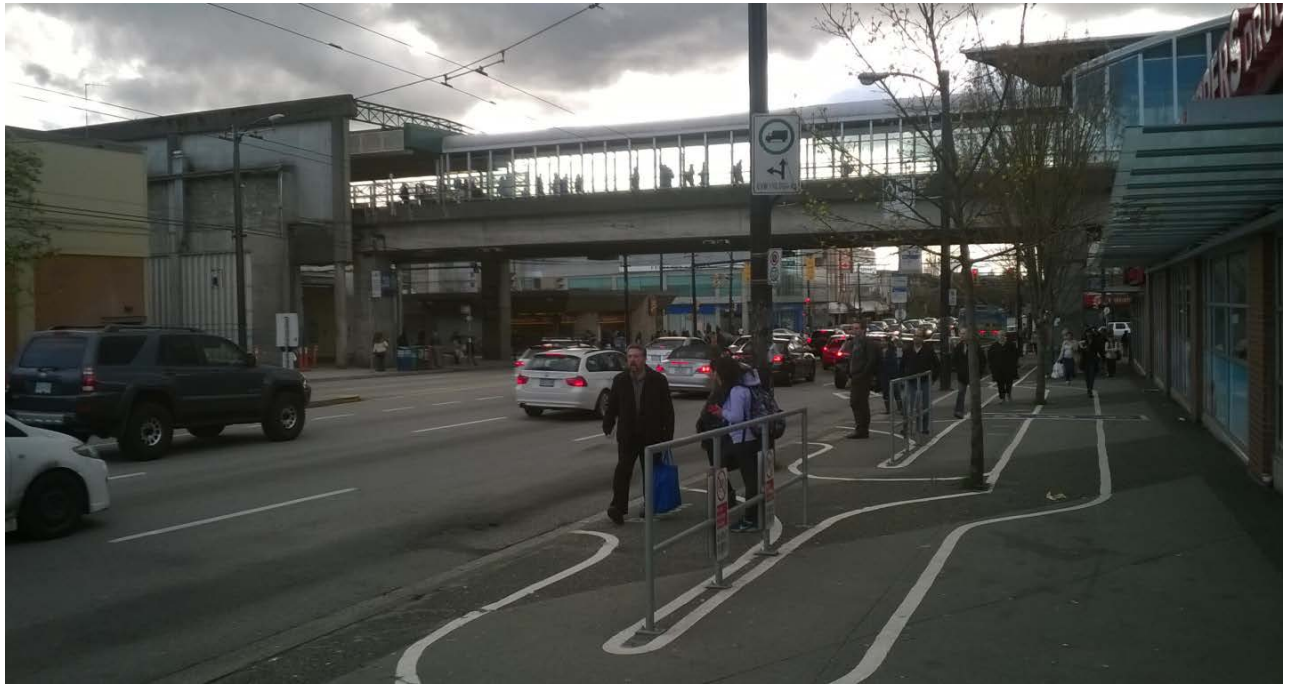
Figure 3.5.10 Example bus stop with TWSIs

CURRENT BUS PROJECTS

A rendering of what the completed bus shelter for the 99 B-Line will look like at Commercial–Broadway Station.

QUEUING



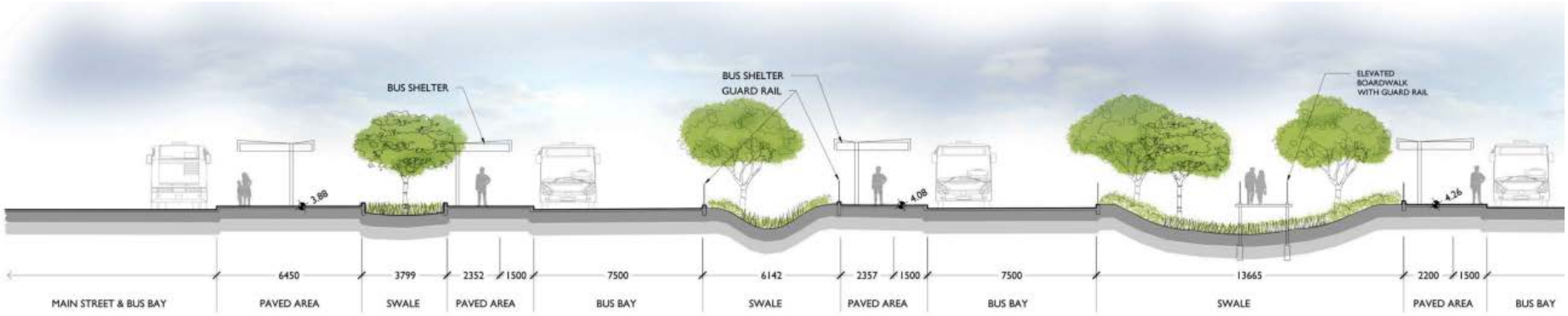


CURRENT BUS PROJECTS

UBC exchange

CURRENT PROJECTS

Phibbs exchange



SECTION 1
L2.0 SCALE 1:100

TRANS LINK

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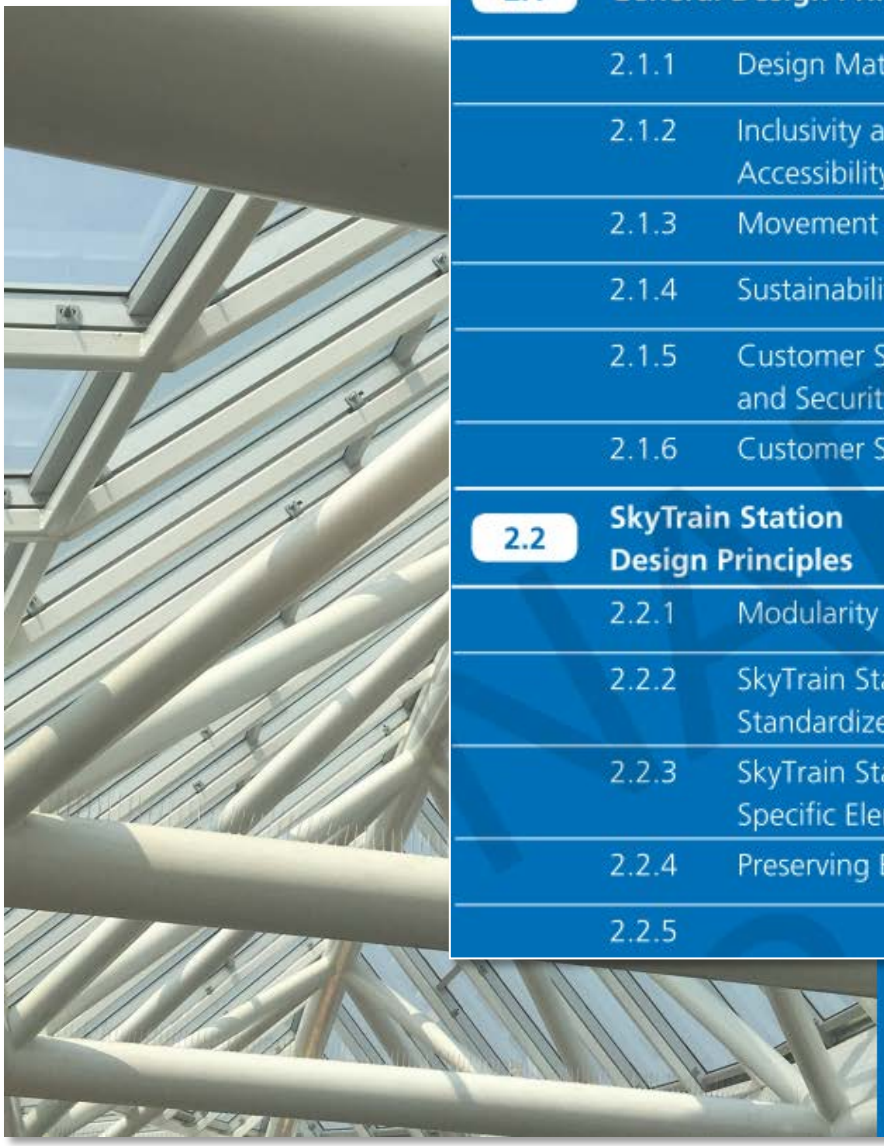
SKYTRAIN DESIGN MANUAL

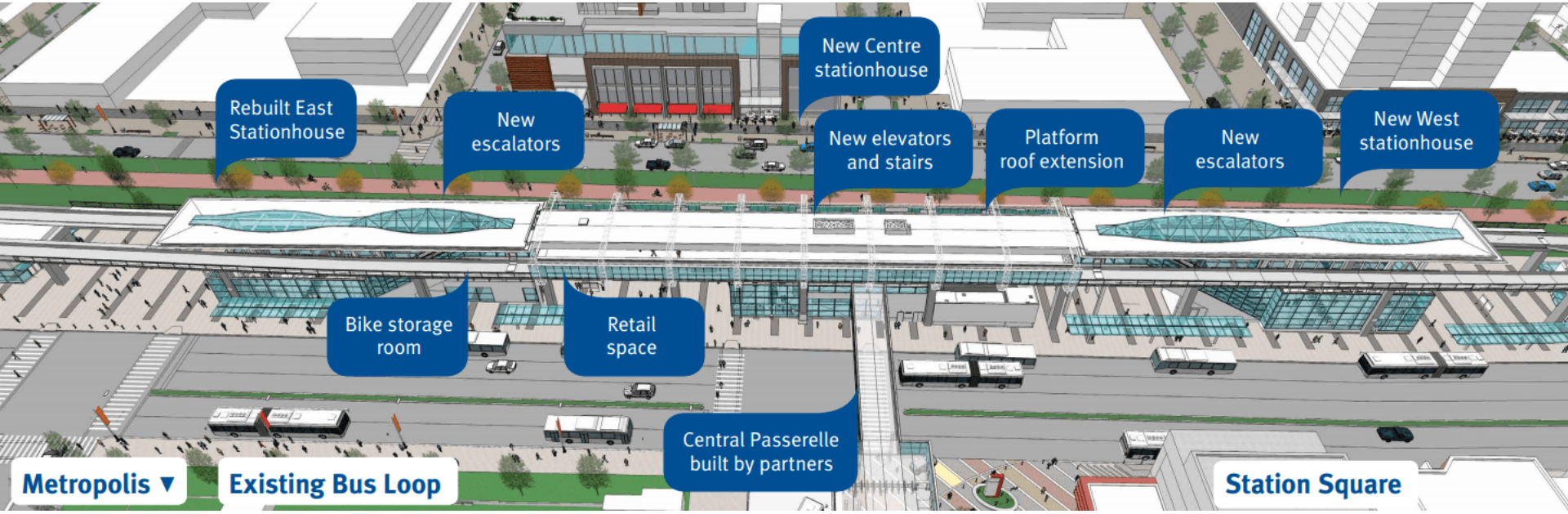


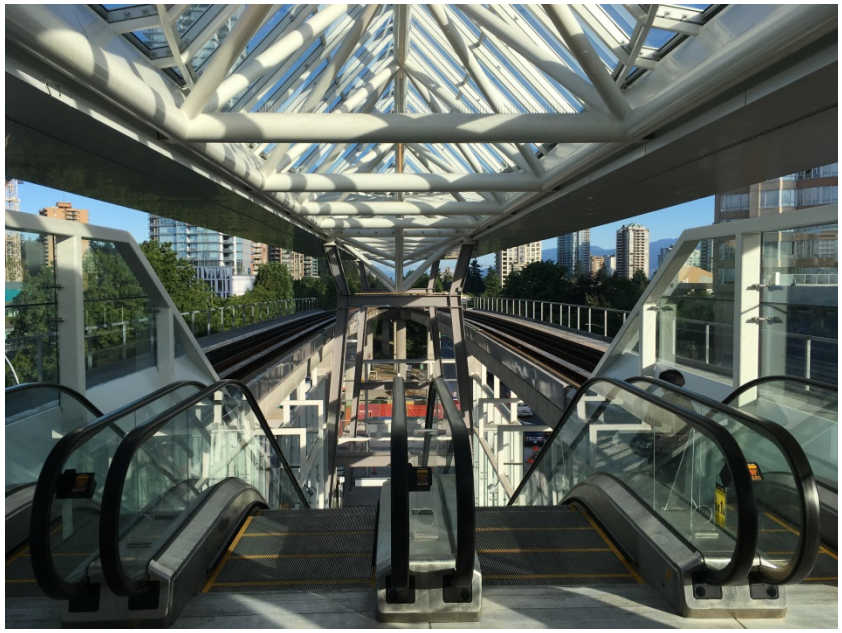
2.0 SKYTRAIN STATION DESIGN PRINCIPLES

TRANS LINK

Colloque AQTR
La mobilité pour tous
December 12th 2017

RECENT STATION PROJECTS





RECENT STATION PROJECTS

Surrey Central

Source: http://www.officemb.ca/work/surrey-central-skytrain-station-upgrades/

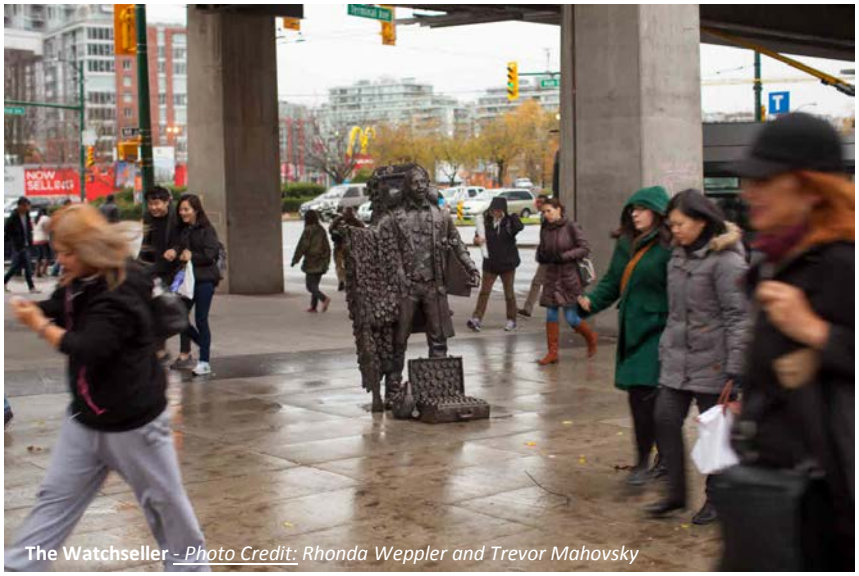
RECENT STATION PROJECTS

Joyce-Collingwood Phase 1

TRANS LINK

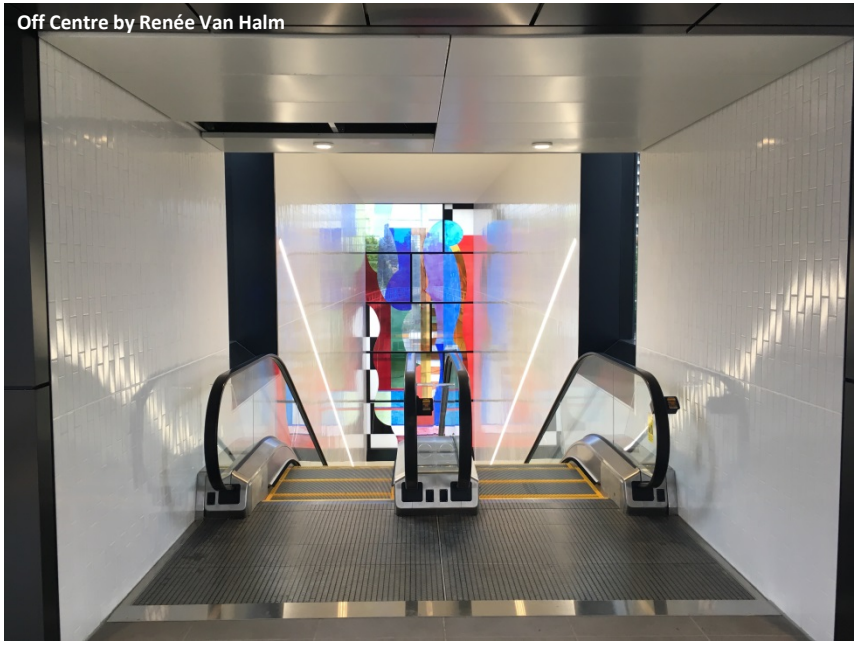
Colloque AQTR
La mobilité pour tous
December 12th 2017

PUBLIC ART



The Watchseller - *Photo Credit: Rhonda Weppler and Trevor Mahovsky*

TransLake by Trent Hutton



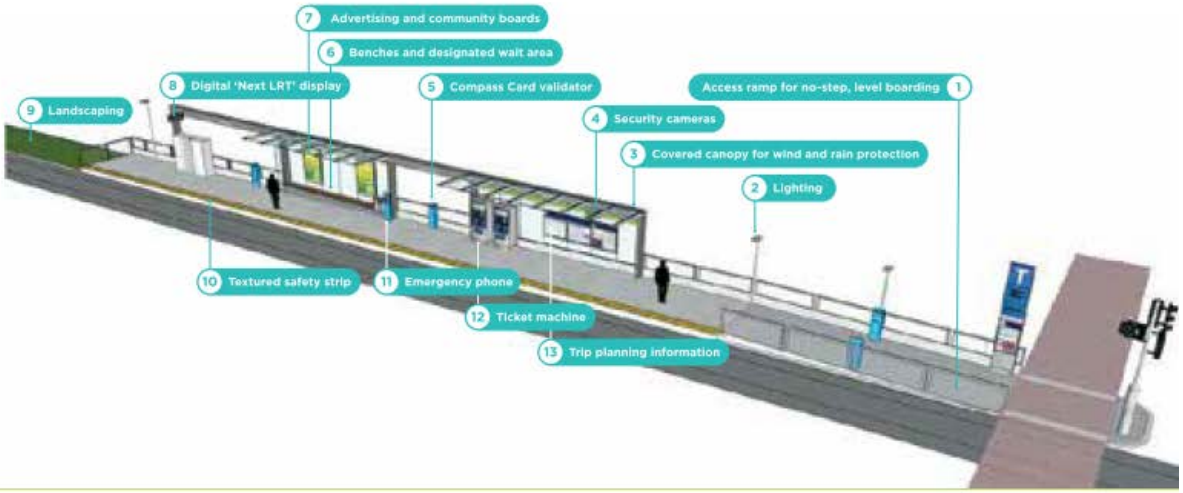
Off Centre by Renée Van Halm

New Westminster Glass Mural by Sean Alward

NEW MODE: LRT

LRT Stop Design

- LRT stops will be designed with minimal footprint, blending seamlessly into the community.
- Clear sightlines and street-level access will make it easier to see and access retail areas and other destinations.
- Wind/rain shelters and other features like lighting, cameras and emergency call boxes will help provide a safe environment for passengers.
- Wide ramps to platforms will make it easy for passengers of all ages and abilities to access the stops.
- Real-time wayfinding information will provide travel and wait times.



Side stop design concept.

Close-up of stop design.

Centre stop design concept.

LRT & public realm

2 3D visualization.

Conceptual illustration only.

LRT & public realm

104 Avenue east of 144 Street

1 Present day conditions.

2 Illustrated example only, future visualization of 104 Avenue east of 144 Street.

DEMAND FOR SPACE

SUMMARY

ENABLING SYNERGIES THROUGH:

Focus on **INTER FACES**

BALANCE DEMAND for space

Create **CONSIS TENCY**

Think **HUMAN BEHAVIOR**

Design for **ADAPT ABILITY**

Merci ! Questions ?

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