

Integrating Pedestrian and Bicycle Facilities into Large-scale Infrastructure Projects

Overview

Municipalities across Canada are developing increasingly sophisticated active transportation plans and programs, and are recognizing the multiple benefits of adding new pedestrian and bicycle facilities (e.g., improved community health, reduced greenhouse gas (GHG) emissions, more equitable transportation infrastructure, reinforcement of compact settlement patterns, etc.). This case study summarizes the successes and challenges of integrating pedestrian and bicycle facilities into large-scale infrastructure projects in Canada based on the specific active transportation policies that support them. It focuses on two examples in Edmonton, AB, and Richmond/Vancouver, BC.

Resources

There are numerous resources available on developing active transportation policy, including the following:

National Complete Streets Coalition, United States (US)
<http://www.completestreets.org/>

Victoria Transport Policy Institute
www.vtpi.org

Capital Bike and Walk
www.capitalbikeandwalk.org/

Toronto Coalition for Active Transportation – Reports and Resources
<http://www.torontocat.ca/main/documents>

Physical Active Strategy Publications
<http://www.physicalactivitystrategy.ca/index.php/home/publications/>

The State of Active Transportation
www.metrolinx.com/docs/1/News/CAP_for_Metrolinx-Final.pdf

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Context

Despite the recognized relationship between the built environment, and individual health, many major municipal infrastructure projects do not include active transportation facilities. Instead, active transportation facilities are generally implemented as “one-offs,” often resulting in fractured pedestrian and bicycle networks which are less likely to attract new users.

Municipalities can improve their active transportation networks by adopting policies which require pedestrian and bicycle facilities to be integrated into large-scale infrastructure projects at the planning level (e.g., requiring all road resurfacing projects to include a curb lane for cyclists, or bridges to include pedestrian walkways, etc.). Active transportation requirements can be included in a number of policy documents, including zoning bylaws, transportation plans and budget plans. The requirements will help ensure that the needs of pedestrians and cyclists are considered throughout

large-scale infrastructure planning processes, and encourage ongoing improvement to existing active transportation networks.

Many cities in the US have implemented substantial street re-designs, guided by formal “complete streets” policies, which direct the planning, design, and construction of community streets to meet the needs of all potential users, including cyclists, pedestrians, public transit users, freight vehicles, and automobiles. To date, at least 165 jurisdictions in the US have adopted these kinds of policies, in the form of community plans, design manuals, internal policies, and by-laws (ordinances).

Examples of formal “complete streets” policy are more limited in Canada than in the US, but many municipalities have completed transportation and street re-design projects which are guided by similar priorities (i.e., balancing the needs of all road users).

Policy Context

The examples profiled in this case study were developed as a result of active transportation policies, requiring pedestrian and cyclist facilities to be integrated into larger-scale infrastructure projects. Key enabling policy documents included:

- **Edmonton - Bicycle Transportation Plan, Transportation Master Plan:** Edmonton’s Bicycle Transportation Plan (BTP), was initially approved in 1992, and reviewed and updated in 2009. The BTP requires that bicyclists’ requirements be considered in all future transportation projects, and is supported by the City’s Transportation Master Plan (1999, updated in 2009), which aims to “provide an integrated system of roadway, public transit, pedestrian, and bicycle facilities”.

Several of the plan’s goals directly support the integration of bicycle facilities into larger-scale projects, and require new road construction and resurfacing projects to accommodate bicycles (e.g., the 1992 plan required that curb lanes on arterial roadways

would be at least 0.5m wider than adjacent lanes to accommodate cyclists). The 2009 plan also recommends updating the City’s design and construction standards with Transportation Association of Canada (TAC) bicycle guidelines (e.g., pavement markings, standards for on- and off-road bicycle facilities, etc.). Edmonton is also considering a zoning by-law amendment, which would require end-of-trip facilities (in addition to bicycle parking) for cyclists to be included in all new and renovated developments. Currently, Edmonton’s zoning by-law requires bicycle parking to be included in new educational facilities, and residential / residential related buildings with over 20 dwellings.

- **Vancouver/Richmond - TransLink Regional Bicycle Plan, City of Vancouver Bicycle Plan, City of Richmond On-street Cycling Network Plan:** Policy guidance for the Canada Line Pedestrian Bicycle Bridge came from TransLink’s mandate to support cycling initiatives in the region, outlined in its 1999 TransLink Regional Bicycle Plan (currently being updated). Richmond and Vancouver each have policy documents guiding the development of municipal bicycle facilities. Vancouver is currently developing a new 10-year Cycling Program Master Plan, building from the previous 1999 Bicycle Plan. Vancouver’s Transportation Plan (1997) lists walking and cycling as the top priority transportation modes for the city. Cycling in Richmond is guided by the On-Street Cycling Network Plan, adopted in 1996. The network plan is updated yearly with a revised map of existing and proposed routes, and is supported by the 2009 City Centre Transportation Plan (CCTP), which includes the area surrounding the Canada Line Pedestrian Bicycle Bridge. The vision for the CCTP proposes that end-of-trip facilities be included at civic sites, parks, transit villages, and other major destinations, and recommends that short- and long-term

bicycle parking be included in all new developments.

those funds for the completion of other projects.

Rationale and Objectives

Major infrastructure projects often lack active transportation components (e.g. street resurfacing projects, road expansions, etc.). Municipalities can enhance their pedestrian and bicycle networks by adopting policies that require active transportation facilities to be considered and integrated into all major transportation infrastructure projects and improvement projects. Requiring active transportation improvements at the wider policy level has several benefits, including:

- **Ongoing network improvement:** transportation system access, use, efficiency and equitability can all be improved by incorporating pedestrian and cyclist facilities in system expansion, development and maintenance projects. Both large- and small-scale additions (e.g., new lane markings or signage, end-of-trip facilities included in new developments, etc.) will enhance the wider active transportation network, making it more attractive to potential users.
- **Integrating active transportation planning with all ongoing planning processes:** Many municipalities have limited staff resources available for pedestrian or bicycle planning, and may benefit by establishing active transportation standards at the policy level (e.g., all new arterial roads should include wide curb lanes).
- **Offsetting costs to active transportation budgets:** by requiring pedestrian or bicycle facilities to be incorporated into larger infrastructure initiatives. For example, sharrows (which mark shared bicycle-automobile lanes) may be added to a street as part of a larger road re-surfacing project, or bike racks installed as part of a new residential or commercial development. This allows improvements to be made at minimal cost to often-limited municipal cycling or active transportation budgets, preserving

Pedestrian or cycling facilities that are integrated into larger projects may fulfil multiple objectives, in addition to enhancing existing active transportation networks. Additional effects may include:

- **Improved safety:** Pedestrian, cyclist and automobile safety is improved by providing facilities that reduce motorized – non-motorized transportation conflicts.
- **Traffic calming and neighbourhood revitalization:** Active transportation improvements can help reduce automobile speeds and congestion (e.g., by narrowing travel lanes, reducing speed limits, etc.), which not only improves cyclist and pedestrian safety, but can also help improve the overall public realm and neighbourhood livability.
- **Improved network connectivity:** transportation networks can be improved through the addition of key connections (e.g., bike lanes on bridges), or by enhancing linkages to community destinations (e.g., universities, major housing/commercial development, recreational trail networks).

Actions

There are many different approaches to integrating pedestrian and bicycle facilities into larger infrastructure projects. Requiring active transportation to be integrated into ongoing infrastructure planning will result in differing strategies and designs being employed, based on the context and available resources for each project. The integration of bicycle and pedestrian facilities into larger infrastructure projects typically involves such features as:

- **Street re-designs or road diets:** The re-allocation of existing right-of-ways to incorporate bike lanes and/or the widening sidewalks for pedestrians; painting

“sharrows” on shared bicycle – automobile lanes; adding new separated bike lanes; and other strategies to create safe spaces for pedestrians and bicycles (e.g., specialized intersection signals or bike boxes).

- **Pedestrian and bicycle bridges:** These establish safe crossings for cyclists, pedestrians, wheelchair users, etc. They can be stand-alone structures (e.g. pedestrian-only bridges, overpasses) or may be incorporated into an existing infrastructure (e.g. bridges which include on-street bicycle lanes, or wider sidewalks with pedestrian seating or viewing areas).
- **Off-street shared trails, or on-street bike lanes:** These can be incorporated into larger developments including new residential or commercial developments, or institutional development. Integrating purpose-built pedestrian and cyclist facilities (e.g. recreational trails, bike lanes, complete / shared streets, etc.) at the design/construction stage may help increase walking and cycling levels in those communities by creating safe spaces for pedestrians and cyclists.
- **End-of-trip facilities:** These can encourage individuals to use more active modes of transportation. Amenities could include safe bicycle parking (e.g. bike boxes, or secure / sheltered bike racks) and workplace showers for commuters. Municipal policy may require these types of facilities to be integrated into all new developments, enhancing active transportation facilities at limited cost to municipal budgets.

This section profiles the actions resulting from active transportation policies adopted in each of the two case studies.

Edmonton: Many of the City’s on-street bicycle facilities were implemented between 1992 and 2009 as a result of the 1992 Bicycle Transportation Plan (BTP), which required that arterial roads include curb lanes that were 0.5m

wider than adjacent lanes. Edmonton currently has approximately 400km of curb lanes as a result of this policy, and has recently begun to add “sharrows” (markings which indicate lanes that are shared by cyclists and motorists). The City has worked to integrate commuter and recreational bicycle facilities into existing transportation networks, as detailed in the example below:

100 Avenue Road Diet: A rehabilitation of 100 Avenue was also initiated during the construction of the Ribbon of Steel (an off-street shared-use trail, which is intersected by 100 Avenue), following residents’ concerns about speeding and shortcutting in the local Oliver community. 100 Avenue was identified as being suitable for a road diet, with the intention of managing automobile speeds, in addition to providing a safer environment for cyclists and pedestrians.



Mid-block crosswalk connecting 100 Avenue to the Ribbon of Steel multi-use trail (Edmonton)

Major physical changes included the reduction from a three-lane, two-way road into a two-lane roadway between 112 and 115 Streets. Between 116 and 121 Streets, 100 Avenue was converted from a one-way, two-lane road into a single-lane westbound road, with a bike lane running in the eastbound direction. Bicycles operate in both directions on 100 Avenue, using a contra-flow bike lane facility, along with a shared lane. A mid-block crossing was installed on 100 Avenue, west of 109 Street, providing a safe connection for cyclists and pedestrians moving on to the Ribbon of Steel.

Vancouver and Richmond: In 2005, TransLink (Metro Vancouver’s regional transportation authority) began construction on the Canada SkyTrain Line, designed to provide a rapid transit connection between downtown Vancouver and Richmond, and to Vancouver International Airport. The project includes a new bridge over the North Arm of the Fraser River, connecting Marine Drive Station in Vancouver with Bridgeport Station in Richmond. The proposed bridge presented an opportunity to enhance pedestrian and cycling infrastructure across the Fraser River, and the idea of adding a separated pedestrian and bicycle crossing was strongly supported by local cycling advocacy groups. At that time, cyclists and pedestrians in the area were limited to using the Arthur Laing, Oak Street or Knight Street Bridges between Richmond and Vancouver. None of the bridges have cycling specific infrastructure: Knight and Oak Street bridges have sidewalks, which are shared by pedestrians and cyclists, and the Arthur Laing Bridge has narrow shoulders and no sidewalks.

Due to funding constraints and other issues, TransLink and RAVCO (the public-private partnership company established to deliver the Canada Line project) did not initially approve the Canada Line Pedestrian Bicycle Bridge. Instead, it was included as a separate priced option on the Canada SkyTrain Line contract, and was subsequently approved and funded by TransLink. The \$10 million construction cost was spread over 3 – 4 years, and was drawn from the yearly \$6 million Bike Capital Program budget.



Canada Line Pedestrian Bicycle Bridge

Canada Line Pedestrian Bicycle Bridge: Completed along with the Canada Line in 2009, the pedestrian and bicycle bridge runs alongside the guideway of the Canada SkyTrain Line, attached below the bridge deck. The bridge is 3.5m wide and almost 1km long, constructed of steel with a non-slip coating, providing the only separated pedestrian and bicycle connection between Richmond and Vancouver. The ramps at either end have a maximum grade of 8%, and are designed to accommodate all modes of active transportation, including wheelchair users. Overhead lighting permits safe 24-hour usage of the bridge, with landings to the side, offering regular rest and viewpoints.

TransLink consulted with the City of Richmond and City of Vancouver early on in the design process. Richmond requested that the design have the ramp meet Van Horne Way, which connects to the City’s cycling network. Surrounding land use was primarily industrial, and Van Horne Way included no pedestrian or cyclist facilities. Van Horne way was added to Richmond’s cycling network, and a new off-street, multi-use pathway was added to one side, serving northbound cyclists and two-way pedestrians. Parking was removed on the other side, and a new bike lane was included for southbound cyclists. Connections to Vancouver International Airport (via Sea Island) were established on Charles Street, Smith Street, and Beckwith Road, connecting cyclists to No. 3 Road.

The City of Vancouver is currently planning additional pedestrian and cyclist connections to the Canada Line Bridge, outlined in the “Next Steps” section.

Results

Many municipalities and regional governments across Canada have recently adopted active transportation plans. Several of these plans require pedestrian and bicycle facilities to be considered when planning larger infrastructure initiatives. Although many municipalities and regional governments across Canada have recently

constructed additional pedestrian and bicycle facilities, few are measuring and monitoring the impact of these programs on a consistent or long-term basis. This has limited their ability to fully gauge the effectiveness of their efforts in terms of changes in attitudes and behaviour, although anecdotal evidence and broader survey work suggest positive results in most communities. The monitoring programs and results for the featured case studies are summarized below:

- **Edmonton** – Between 1992 and 2009, Edmonton established a 400km network of wide curb lanes on arterial roadways directed by the policies in the 1992 Bicycle Transportation Plan. The results of the 100 Avenue Road Diet project are summarized below:
 - **100 Avenue Road Diet:** The City of Edmonton monitored speed, traffic volumes, and pedestrian/bicycle activity before and after construction, in 2002 and in 2005. Field observations and count data were collected during a two-hour peak period (from 3.30pm - 5.30pm) and were conducted over the course of a single day, rather than being averaged over a longer period. Although this limits the reliability of the data, bicycle counts indicate that afternoon peak period bicycle use has more than doubled, from a total of 26 cyclists in 2002, to 70 in 2005. The mid-block crosswalk (connecting to the Ribbon of Steel) is well used by pedestrians, inline skaters, and cyclists, with good pedestrian and driver behaviour noted during monitoring.

Daily traffic volumes on 100 Avenue were reduced by 16% following the road diet, and 85th percentile speeds remained below the posted speed of 50km per hour. As anticipated, traffic volumes increased on nearby collector roads following the road diet. Significant increases were observed on nearby 110 Street and 99 Avenue. Both streets are designated as collector roads, and

are close to the widely used High Level Bridge on 109 Street, and the neighbouring Grandin Elementary School, at 99 Avenue and 110 Street. Traffic counts (conducted in 2005) indicated daily volumes of 4,443 vehicles on 99 Avenue, and 2,824 on 110 Street, which is well below the maximum daily volume of 12,000 for Edmonton's collector roads.

- **Vancouver and Richmond - Canada Line Pedestrian Bicycle Bridge:** Cyclist totals have been collected since the beginning of 2010, through the use of automatic counters, but no pedestrian counts have been conducted to date. Cyclist numbers have risen since the beginning of January, with some days seeing over 600 individual trips across the bridge, and an average of over 300 trips per day (from January to mid-July, 2010).

The City of Vancouver is currently monitoring bicycle numbers on approaching bikeways, to better understand how cyclists are approaching the bridge, and to assist in creating new connections from the bridge, to the existing Vancouver bicycle network.

Challenges

Some of the major challenges in developing and implementing successful active transportation policy are summarized below:

- **Making pedestrian and bicycle facilities a priority:** Despite a growing policy emphasis on shifting people to more active and sustainable transportation modes, active transportation budgets often do not reflect this importance. A lack of political will, combined with established attitudes about automobile use, may present challenges for all levels of government when implementing and enforcing active transportation policy directives.
- **Cost and capacity:** Funding requirements for new pedestrian and bicycle infrastructure

vary widely, and limited financial and staff resources may delay or prevent the implementation of proposed infrastructure. Municipalities may lack the staffing resources to focus on implementing active transportation initiatives, illustrated by a recent survey conducted by the TAC, which found only 26 municipalities with at least one full-time equivalent staff member focused on planning and implementing active transportation initiatives.

- **Measurement and monitoring:** Plans for monitoring and evaluating the impacts/results of pedestrian and bicycle facilities are often limited. Effectively measuring the “before” and “after” results may be beyond the staff and financial resources of many local governments, making it difficult to gauge the effectiveness of new pedestrian and bicycle facilities, and potentially more difficult to plan and implement future pedestrian and bicycle infrastructure.

Next Steps

The examples profiled in this case study have influenced future plans for pedestrian and bicycle facilities in their respective communities.

- **Edmonton:** The City of Edmonton’s 2005 – 2006 Bicycle User Survey (which collected the opinions of approximately 950 local cyclists) indicated that there was a preference for designated on-street facilities, e.g. bike lanes, rather than the wide curb lanes that form the majority of Edmonton’s on-street bicycle network.

Edmonton’s 2009 Bicycle Transportation Plan identifies a future network of approximately 500 km of on-street bike lanes, sharrows, and multi-use trails. Much of the existing on-street bicycle network is in the form of 400 km of wide curb lanes, along arterial roads, implemented between 1992 and 2009. Space for future on-street bicycle lanes will be created through a redistribution of the

existing right of way, rather than road widening, and will involve either removing or narrowing current travel lanes. It is likely that the City of Edmonton will initiate future road diet projects, as part of the ongoing bicycle network expansion, and to accommodate cyclists who may not currently feel comfortable cycling in traffic, on a shared lane.

- **Canada Line Pedestrian Bicycle Bridge:** TransLink consulted with the City of Richmond and City of Vancouver early on in the design process. Although several changes were made to the proposed ramps, both cities have undertaken additional pedestrian and cyclist projects, to better integrate the bridge with their existing networks. Both municipalities may apply for funding from TransLink’s Bicycle Infrastructure Capital Cost Sharing Program, which covers up to 50% of eligible cycling improvement projects. Next steps planned by Richmond and Vancouver are outlined below:
 - **Richmond:** Future plans include the completion of the northern section of the Shell Road bike route, which will improve access to the bridge. The Richmond City Centre area was expanded to include Bridgeport Station, following the construction of the Canada Line, and the 2009 City Centre Area Plan, and City Centre Transportation Plan will direct future development in the area. Future improvements include bike lanes on River Drive, between Shell Road and No. 4 Road, and other pedestrian and bicycle connections may be added as these plans are implemented.
 - **Vancouver:** The City is currently monitoring cyclist numbers on adjoining bike routes, and is working on new pedestrian and cycling facilities, to safely link the bridge with the existing bicycle network. An extension to the Kent Avenue South bikeway has been planned, and approved in principle by City Council.

The proposed bike route extension would close the gap between the Ontario and Heather Street bike routes, and connect to Cambie Street bike lanes and the Pedestrian Bicycle Bridge. The project would also include a pedestrian and bicycle at-grade crossing of the rail tracks, allowing a more direct route to the bike lanes at South West Marine and Cambie Street.

Best Practices

Below are some best practices for integrating bicycle and pedestrian facilities into large-scale infrastructure projects through active transportation policies:

- **Allow flexibility:** Instead of requiring standard interventions, allow a range of infrastructure investments to be considered. For example, establish a set percentage of project funding to be directed to active transportation facilities, but allow the best, most practical, and context specific active transportation interventions to be integrated with larger infrastructure projects or redesigns.
- **Incorporate active transportation policy into all plans:** Integrate active transportation policies with all relevant community planning initiatives, rather than just transportation plans or specific active transportation plans. This could include Official Community Plans (or equivalent community plans), growth management strategies, neighbourhood revitalization plans, healthy built environment plans, climate change adaptation strategies, etc. Active transportation planning will be more successful if it is truly integrated into all relevant planning processes. For example, Richmond has integrated active transportation policies into their updated City Centre Area Plan and Transportation Plan, which will enhance pedestrian and cyclist facilities in the area around the Canada Line Pedestrian Bicycle Bridge.
- **Emphasize connections to existing networks:** New or amended active transportation policies should stipulate that pedestrian and bicycle facilities be integrated with existing networks. For example, major facilities (e.g. bridges, off-street trails, etc.) may require new bike lanes or pedestrian trails to effectively connect them to existing active transportation networks, along with signage and other wayfinding measures.
- **Leverage smaller-scale policy changes to create significant effects:** Active transportation policy may direct road re-surfacing or rehabilitation projects to include improvements to pedestrian or cyclist facilities. For example, policies may recommend that vehicle lanes may be narrowed or removed to accommodate additional bicycle lanes, or extended sidewalk widths, as part of a road diet or street re-design project, similar to the approach employed by the City of Edmonton.
- **Monitor and measure:** As financial and staff resources allow, monitor and measure the effects of projects (e.g. pedestrian, vehicle, and cyclist counts, observations of road users' behaviour, automobile speeds, etc.). Ideally, monitoring should be conducted regularly, and include "before and after" information, depending on the nature of the project. This enables policies to be amended and updated to ensure that the resulting infrastructure is user-friendly. For example, Edmonton amended their Bicycle Transportation Plan in 2009, following a survey that indicated that cyclists would prefer designated on-street facilities rather than shared curb lanes.
- **Enforce policies:** It is critical to enforce policies and inventory resulting active transportation infrastructure. Policies can be enforced through fines or payments in lieu, permit delays and other standard means. Policy requirements as part of Ottawa's zoning by-law should have resulted in the

construction of several thousand additional new bicycle parking spaces in new housing developments, but to date, no inventory has been completed, and estimated compliance is low.

- **Extend reach with partnerships:** Work with other stakeholders (e.g. neighbouring municipalities, local universities or other institutions, regional government, transportation authorities, etc.), exploring opportunities to reflect active transportation priorities in public and private initiatives throughout the community (e.g. new commercial, institutional, or residential development; regional transportation projects, etc.). Working together, Translink, Richmond and Vancouver were able to add a new piece of infrastructure to the regional cycling network, something that would have been much more challenging to implement as a standalone project.
- **Develop policies that focus on safety:** The perceived safety concerns posed by cycling or walking may prevent an individual's adoption of active transportation modes. Both small- and large-scale physical improvements may help alleviate safety concerns, and reduce conflicts on roadways (e.g. adding separated bike lanes, pedestrian or cyclist-activated traffic crossings at busy intersections, etc.). Both examples included in this paper were guided by a desire to improve safety, which benefits existing pedestrians and cyclists, and helps attract new users to the active transportation network.

Resources

The resources required to develop active transportation policy varies widely, depending on the staff resources and political will in each jurisdiction. The funding and staff resources to implement and oversee projects may present an additional challenge, depending on the scope of the individual active transportation initiative. Smaller-scale projects (e.g. the introduction of sharrows) may be combined with internally

funded projects (e.g. street re-surfacing or re-painting projects). More complex projects may require additional resources, including funding from grants or partnerships, or input from external consultants. Project costs may be at least partially offset by integrating pedestrian and bicycle facilities with larger-scale infrastructure projects at the policy level.

- **100 Avenue Road Diet, Edmonton:** Bicycle lanes on 100 Avenue were added as part of a road rehabilitation project, directed primarily by a need to reduce traffic volumes and speed, and to provide a safe connection to the Ribbon of Steel trail. Reconfiguring the road markings occurred at the same time as the rehabilitation, and the cost of adding new bike lanes was absorbed into the larger rehabilitation budget. City of Edmonton Sustainable Transportation staff carried out the project planning and implementation internally.
- **Canada Line Pedestrian Bicycle Bridge:** TransLink funded the \$10 million pedestrian bicycle bridge project. It was constructed as part of the Canada Line rapid transit project, by RAVCO (the company established to deliver the project, which was a public-private partnership). TransLink consulted with City of Vancouver and City of Richmond transportation planning staff as part of the design process.

Lessons Learned

Based on current research and on the ground implementation, the following lessons learned can be applied to the integration of pedestrian and bicycle facilities into larger infrastructure projects:

- **Combining pedestrian and bicycle facilities with larger-scale projects can result in opportunities to add key connections to existing networks:** Major infrastructure projects offer a chance to establish important connections in an existing active transportation network. Integrating these initiatives at the policy level, and

forming partnerships, may allow municipalities to extend their reach, and to develop pedestrian and bicycle facilities that would be more challenging to implement as stand-alone projects.

- **External consultants can be expensive, but can benefit the project:** Smaller municipalities may lack the capacity to develop active transportation policies or plans in-house. Working with an experienced external consultant may help to develop policy that can be successfully integrated into all relevant municipal planning processes.
- **Early consultation with external and internal partners can produce a better quality design, and end result:** Consultation is a vital element in successfully developing and incorporating active transportation priorities into all relevant planning processes. Feedback from external and internal partners may be used to enhance the final policy directives, which should be regularly monitored and amended as required.
- **Project costs may be offset by combining pedestrian and bicycle facilities with other infrastructure projects:** Municipal active transportation budgets are often limited, despite growing recognition of the multiple benefits to be gained by developing walkable and bikeable communities. Strategically combining active transportation initiatives with larger projects at the policy level can help extend municipal active transportation budgets.

Sources

City of Edmonton – Walking and Cycling:
http://www.edmonton.ca/transportation/cycling_walking/cycling-in-edmonton.aspx

TransLink – Canada Skytrain Line:
<http://www.TransLink.ca/en/Rider-Info/Canada-Line/Features.aspx>

City of Vancouver Bicycle Planning:
<http://vancouver.ca/engsvcs/transport/cycling/plans/network.htm>

City of Vancouver Current Projects:
<http://vancouver.ca/engsvcs/transport/cycling/plans/projects.htm>

City of Richmond Bicycle Planning:
<http://www.richmond.ca/services/ttp/cycling/planning.htm>