

CARRALL STREET GREENWAY
Public Realm Improvements & Community Development

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ABSTRACT

The Carrall Street Greenway is a public realm improvement project located in the Vancouver's historic Downtown Eastside (DTES). Development of the Greenway served two functions; stimulating the economic revitalization of the DTES, and adding to the City of Vancouver (City) greenways network.

The Greenway design process was lengthy and involved stakeholders from diverse backgrounds including special interest groups, such as heritage and cycling advocacy groups, community groups and business operators. The goal was to develop a design for the 20 metre right-of-way that satisfied all groups.

The design narrows the space allocated to vehicles to two travel lanes with uni-directional recreational paths at sidewalk level on each side of the street. There is also a flexible amenity area on one side of the street to be used for the various community needs. At different times of day or season, this amenity area can be used for parking, loading, sidewalk cafes, street parties and other community programming. Providing this flexibility in space programming is a new concept for Vancouver.

In addition to the special transportation design features, the Greenway also incorporates numerous innovative and sustainable design elements such as stormwater infiltration planter boxes, granite features, and a permeable paving system.

The Carrall Street Greenway provided an excellent opportunity for the City to explore ways of creating great streets that support transportation choices, community building and sustainable initiatives, both social and environmental.

INTRODUCTION

The Carrall Street Greenway is a public realm improvement project located in the Vancouver's historic Downtown Eastside (DTES). Development of the Greenway served two functions; stimulating the economic revitalization of the DTES, and adding to the City of Vancouver (City) greenways network.

Carrall Street is approximately 1 kilometre or 7 city blocks long, and runs north-south through the neighbourhoods of Gastown, DTES Hastings and Chinatown. The Greenway is focused between Maple Tree Square in the north and Pacific Boulevard in the south. In the future, as the properties at both the north and south ends redevelop the Greenway will be extended to link Burrard Inlet with False Creek. Interim measures have been implemented to connect the Greenway to False Creek.

Greenway planning and development, a lengthy and complex undertaking, began in 2003 and will be completed this fall.

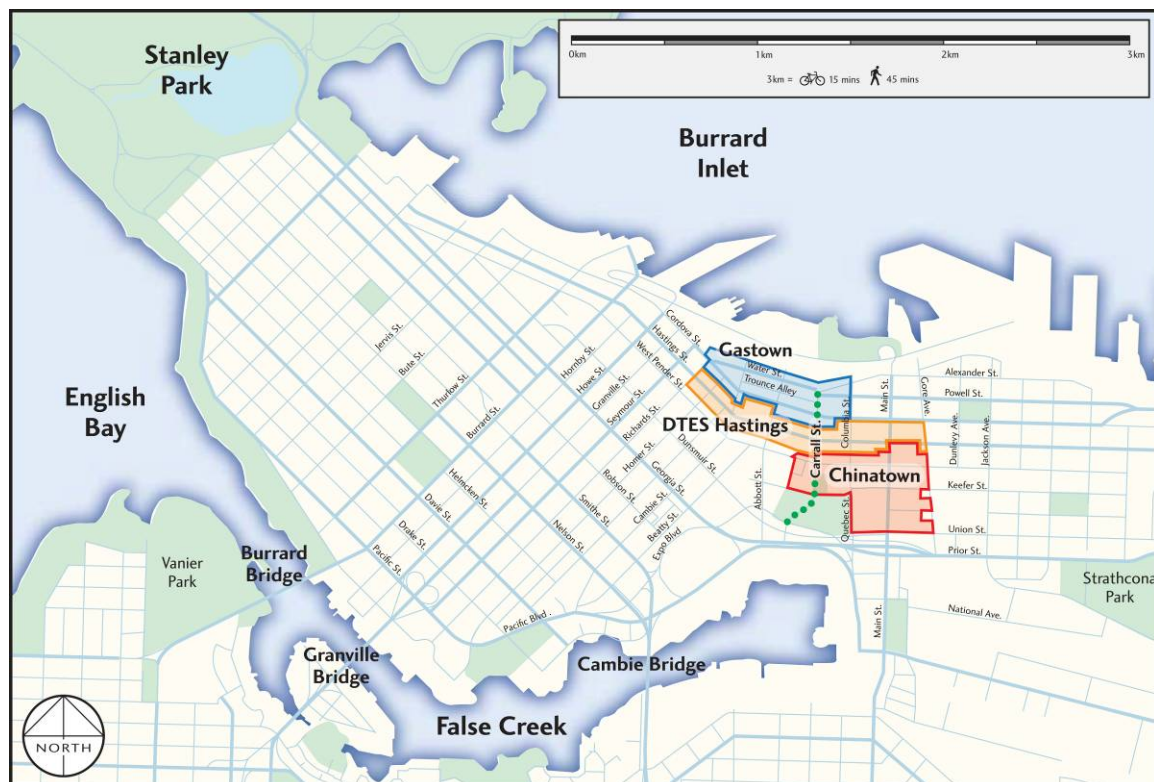


Figure I: Map of Carrall Street Greenway and Historic Neighbourhoods

BACKGROUND

Typically, greenways are long, thin parks called linear parks, parkways, or urban trails. One of the earliest examples in North America is the Emerald Necklace in Boston. In 1880, North America's first landscape architect Frederick Law Olmstead developed a series of linear parks that linked the river, ponds and marsh areas along 11 kilometres

of trails in Boston. Vancouver's own greenway legacy dates back to the 1928 Bartholomew Plan, which included a water front walkway along English Bay.

Vancouver's Greenways Plan

In 1991, then Mayor Gordon Campbell appointed the Urban Landscape Task Force to report on the existing use and future management of Vancouver's urban landscape. In their report *Greenways•Public Ways* the Task Force recommended the development of a system of urban greenways. Following on this recommendation, staff worked to develop a greenways plan for the City. After an intensive public participation program and detailed review by staff from various City departments including Planning, Engineering and Parks, Council approved the Vancouver Greenways Plan in 1995.

The Greenways Plan identified 14 citywide greenways. The greenways are linear routes for pedestrians and cyclists, which cross the city from east to west and north to south, linking major open spaces, parks, public facilities, and neighbourhood centres. Their purpose is to provide walking and cycling connections, and expand the opportunities for urban recreation and community participation. Approximately 50% will be developed on street right-of-ways.

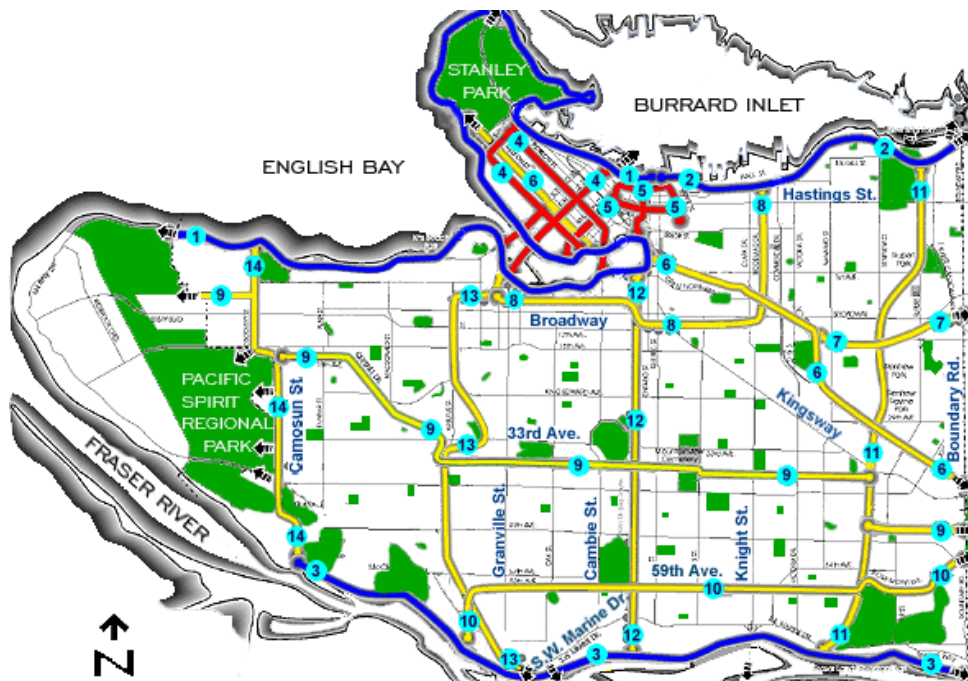


Figure II: 1995 Vancouver Greenways Plan

Carrall Street Greenway

One of the 14 greenways identified in the Plan was the Downtown Historic Trail. The Trail provided a circuit through the historic downtown neighbourhoods, and included Carrall Street.

In 2002, Council adopted the Downtown Transportation Plan, a comprehensive plan focusing on movement in the downtown core including recommendations for improving pedestrian and cycling connections. Carrall Street was identified as an important

north-south greenway route in the downtown linking Burrard Inlet to False Creek and as a distinct greenway separate from the Downtown Historic Trail.

Economic Revitalization

The DTES, which includes Gastown, DTES Hastings and Chinatown, was once the heart of Vancouver. It was home to thriving businesses and services including head offices, the main library, banks, theatres, department stores and City Hall. The streetcar terminus station was located at Carrall and Hastings Streets, drawing large numbers of people into the community. By the late 1950's operation of the streetcar ceased and the main library moved into the new downtown area located further west. Many of the businesses in the area followed suit. As real estate values increased throughout Vancouver, people were still able to find affordable housing in the DTES. By the late 1970's the DTES was in serious decline, and today it is considered Canada's poorest neighbourhood. The social challenges associated with poverty have added to the difficulties of the neighbourhood and have made it challenging for businesses to be successful.

The City is actively working on a wide range of plans, programs and policies to improve the quality of life for those in the DTES addressing issues such as housing, substance abuse and economic revitalization. One of these programs is the Carrall Street Greenway. Another is the Heritage Incentive Program in the DTES which promotes conservation and rehabilitation of heritage buildings by providing grants for façade upgrades, density bonuses and property tax abatement. Many of the buildings along Carrall Street are eligible for this Program. Currently, ten buildings have been or are being processed through this Program and several of these properties have completed their renovations. The upgrades to these buildings have drastically changed the visual appeal along the street as well as providing additional services and accommodation.

Original Conditions

The Carrall Street right-of-way is approximately 20 metres wide between Water Street and Pacific Boulevard. Prior to the Greenway, a typical cross section of the street consisted of a two-way street with one travel and one parking lane in each direction, with the exception of the northern section between Cordova and Water Streets that was one-way with two travel lanes and two parking lanes. There were both designated parking and commercial loading spaces, and people were generally able to find parking or loading without much difficulty. Public transit bus routes used the northerly three blocks of Carrall Street between Water Street and Pender Street in the southbound direction. In addition, in the historic Chinatown neighbourhood, scheduled tour buses used the Pender Street to Keefer Street block in the northbound direction. Traffic volumes were relatively low at between 2000 and 5000 vehicles per day.

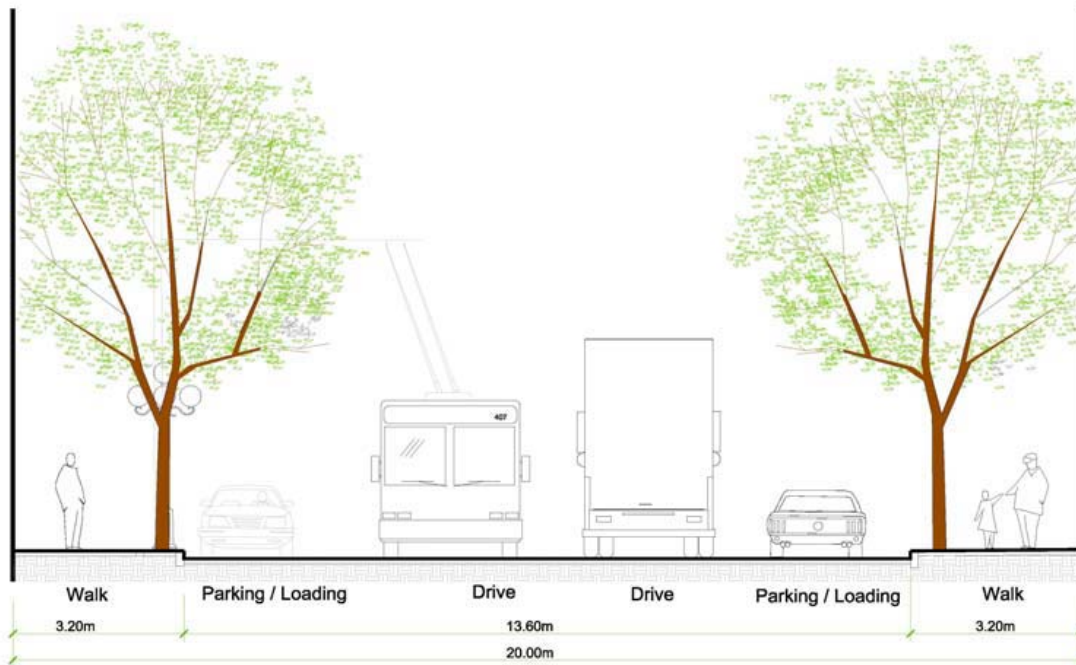


Figure III: Original Cross Section of Carrall Street

Sidewalks were typically 3.2 metres wide and the surface treatment varied between a stamped concrete pattern in Chinatown at the south end, to a radiating brick pattern in Gastown at the north end and standard City sidewalks in between. The neighbourhoods also have distinctive pedestrian lighting, with the red lanterns in Chinatown and the black nine-ball in Gastown.

GREENWAY DESIGN

The design required complete reconstruction of the street from property line to property line, while retaining mature trees where ever possible. A wide variety of uses have been incorporated including: two travel lanes, sidewalks, recreational paths, parking and loading areas, and flexible amenity space. In addition, special attention has been paid to including innovative and sustainable design features and to respecting the existing character of the distinctive historic neighbourhoods.

In general, two travel lanes have been maintained and the space allocated to vehicles narrowed. Sidewalks and uni-directional recreational paths are located on each side of the street. There is also a flexible amenity space on one side of the street to be used for the various community programming.

Street Design

In order to allocate space in the street right-of-way for non-motorized uses, the curb to curb street width was narrowed from 13.6 to between 6.0 and 6.2 metres. The street is separated from the amenity space and recreation paths by a low roll-over curb. Parking and passenger, commercial and bus loading are now accommodated in the flexible amenity space.

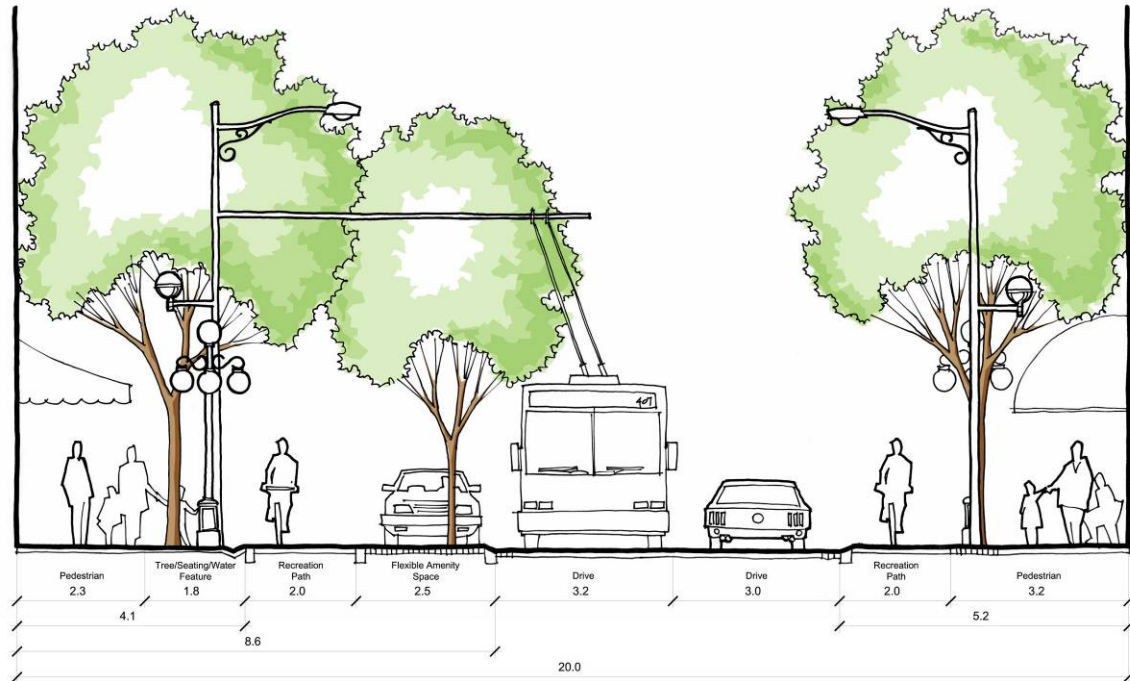


Figure VI: Typical Cross Section - Water to Keefer Streets

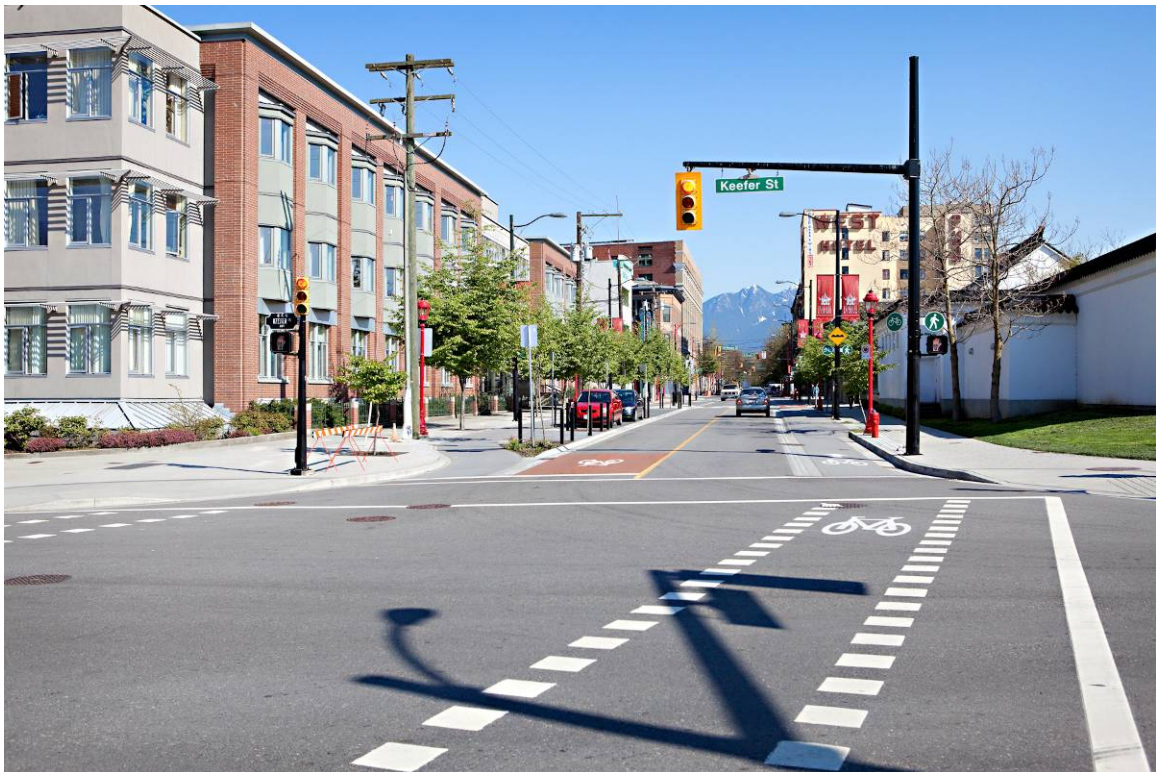


Figure V: Carrall and Keefer Intersection - looking North

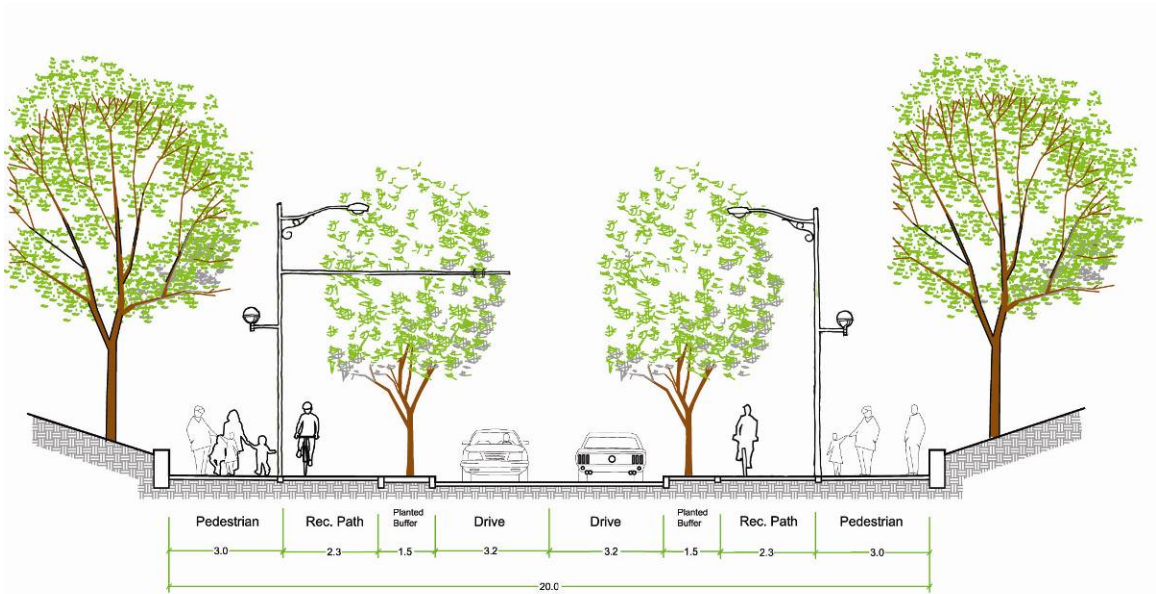


Figure VI: Typical Cross Section through Andy Livingston Park



Figure VII: Carrall and Keefer Intersection - looking South (Andy Livingston Park)

Pedestrians, Cyclists and other Non-Motorized Users

Concrete sidewalks 3.0 to 3.2 metres wide and separated uni-directional concrete recreational paths 2.0 to 2.5 metres wide were constructed on both sides of the street. The recreational paths match the sidewalk grades. The path on the east side of the street is separated from the street by a low roll-over curb. On the west side, the path is flush and adjacent to both the sidewalk and the flexible amenity space. The needs of different user groups were considered. For example, the new sidewalks use saw-cut control joints instead of trowelled joints to minimize discomfort for wheelchair users.

A special design feature is the treatment of recreational path users at the intersections. This new design transitions the off-street recreational path to an on-street bike lane at the intersection. On the approach to the intersections the paths transition to road grade and users cross the street in bike lanes marked with square elephant's feet pavement markings. These markings were developed for cross-bikes or multi-use path crossing markings at roadway intersections and help "to demarcate where the multi-use path crosses the roadway at an intersection and where cyclists and pedestrians are to cross".



Figure VIII: Recreational Path at Intersections

Flexible Amenity Space

On the west side between Water and Keefer Streets the existing parking lanes were removed and replaced with the flexible amenity space. At different times of day or season, this amenity space can be used for parking, loading, sidewalk cafes, street

parties and other community uses. In order to accommodate all these different uses, the amenity space is at the same elevation as the adjacent recreational path and sidewalk and separated from the street by a low roll-over curb.



Figure IX: Flexible Amenity Space

Currently, the amenity space is used for a mix of metered parking, commercial, passenger and transit bus loading, and a police zone. This flexibility is a new concept for the City.

Unifying Features

The design includes elements that are consistent to the Greenway and help identify and unify it. It also incorporates elements that are unique to the neighbourhoods it passes through. Consistent Greenway elements include the overhead street lighting, street furniture, and the use of granite paving in the channels and swirl. Neighbourhood elements include the 9 ball lights and brick sidewalks in Gastown, and the lanterns and stamped concrete sidewalks in Chinatown.

A suite of street furniture unique to the Greenway, including bike racks, benches and chairs are placed along the route. Close attention was paid to aesthetic details such as sidewalk patterns, granite paving features, decorative tree grates and banding details around the trees.

Trees and landscaping were used to create an additional buffer between vehicles and non-motorized users. In the blocks north of Hastings Street, the existing trees are fairly mature and have a full canopy in the summer months. There are fewer existing street trees in the blocks south of Hastings Street. Additional trees have been planted

at regular intervals to provide a consistent canopy along the route. In addition, distinctive tree grates were utilized throughout the Greenway.



Figure X: Gastown Brick Sidewalks



Figure XI: Tree Grate, Banding and Granite Channel



Figure XII: Granite Swirl and Chinatown Stamp Pattern

Sustainable Innovations

One of the design objectives of the Greenway is the inclusion of sustainable features, such as stormwater infiltration planter boxes, a permeable paver system, rainwater channels and light emitting diode (LED) lighting.

Stormwater infiltration planter boxes have been installed in the section of the Greenway adjacent to Andy Livingston Park. These infiltration planter boxes direct water into the planters and allow sediments to settle prior to infiltration. Trees and shrubs that are adaptable to both drought and saturation conditions were planted to maximize uptake of water. When there is excess water in the planters, water overflows back into the gutter and enters the next planter in the series. When the stormwater runoff is too heavy and the planter boxes are all at capacity, the excess water drains into the catch basins.

In the other areas of the Greenway, there was insufficient space for infiltration planter boxes; therefore, landscaping is planted at the downstream end of the blocks to allow for additional infiltration.



Figure XIII: Stormwater Infiltration Planter Boxes (Andy Livingston Park)

A permeable paver system was used in the amenity spaces to provide infiltration. The system has been installed as a pilot project and will be monitored for performance and maintenance requirements. These pavers require more maintenance than standard pavers to eliminate the buildup of sediments between the joints. Depending on the surrounding conditions and frequency of use, it is expected that sweeper trucks will need to vacuum the amenity space bi-annually to maximize infiltration.

Locally sourced granite is used to channel water down the block. The channels help drain runoff from the sidewalks and recreation paths and deposit the water in the tree pits. On the east side to the street the channel is formed using multiple rows of granite cobble. Custom v-notched slabs of granite form the west side channel.

The original street lights were upgraded to provide better illumination, to indicate the special nature of the street and provide a consistent character. The Greenway street lighting uses white light sources (metal halide and LED) whereas the adjacent street lighting is a yellow light source (high pressure sodium). After the first three blocks of reconstruction was completed, the City began a study of LED street lighting and installed a number of LED lights at various trial locations. The two block section of Carrall from Hastings to Water Streets was selected for this pilot project. LEDs produce a white light similar to the metal halide lights installed for the other blocks of the Greenway, however, it is estimated that energy consumption may be reduced by as much as 50%.

Electrical Power Sources

One of the key challenges to holding events on Carrall Street was the lack of access to electricity. To address this need, an electrical system was implemented as part of the Greenway construction to supply power in strategic locations along the street. Volunteer community groups will arrange and coordinate access to the electricity and recover all user fees from the event organizers.

Tour Buses

As the Greenway design only allows for vehicles to park in the southbound direction, it was determined that tour buses that used the northbound lane for drop-off in the Pender Street to Keefer Street block would need to adjust their operations to the southbound lane. Given this requirement, a large passenger zone was created in the amenity zone to address this need.



Figure XIV: Granite Cobble Channel

Transit Bus Service

Prior to the Greenway, buses between Cordova and Water Streets pulled out of the travel lane and stopped adjacent the curb to load or unload passengers in a pull-in bus bay. Now the buses will stop in the travel lane to access the bus stop since there are two southbound lanes, and passengers will access the bus from the amenity space. The Greenway design in the Pender Street to Hastings Street block made it difficult to accommodate a bus stop with only one travel lane in the southbound direction. Since the bus routes turn westbound at Pender Street, the bus stop was relocated around the corner to Pender Street allowing for greater flexibility within the amenity space. Due to the significant changes to the curb alignment, the existing overhead trolley wires will be relocated to provide ongoing electric trolley bus service.

PUBLIC CONSULTATION AND COMMUNITY INVOLVEMENT

An extensive public consultation process began in 2003. City staff developed a plan for the Greenway involving interested parties which included local residents, advocacy groups, social enterprises, business owners and property owners from the DTES Hastings, Gastown and Chinatown. These three neighbourhoods are quite unique with diverse needs and this was an opportunity for the communities to come together and work on an overall vision and design for the Greenway.

The Carrall Street Greenway Stewardship Group was originally formed to advocate for the development of the Greenway. As the process progressed, the group evolved to include representatives from all three communities and the diverse group of stakeholders in the area. The Stewardship Group helped guide and provided feedback during the various stages of the Greenway development as well as reaching out in their communities to build consensus on finalizing the design. Since the formation of this

group, it has also been involved in addressing social issues that collectively impact the three communities.

A series of formal open houses and design workshops were held between 2003 and 2006 to solicit design ideas and obtain feedback regarding the concept and final designs for the Greenway. Throughout the process several design options were reviewed including a full street closure along Carrall Street and the design of a bi-directional recreational path. The stakeholders had diverse and strong opinions regarding their preference for the Greenway design.

Throughout the design development, staff continued to work with many community members to fine tune design details that impacted property and business owners. Communication with business owners along Carrall Street was essential in resolving how business operations would be handled during construction and helping owners adapt to the new street design.

During construction the City continued communication and outreach with the community to keep it abreast of the Greenway work. In addition to the typical methods used to communicate with the public (e.g. updates via the City's website, emails and letters), updates were also provided to community support groups in the DTES who then verbally spread the news to residents. Given the unique design of the street, dialogue between the City and the community is expected to continue after construction is complete.

APPROVALS AND FUNDING

The concept design for the Greenway was adopted by Vancouver City Council in April 2005. In July 2006, City Council approved the final design and \$5 million for construction of the Greenway. The south end will be constructed as part of the re-development of the lands around False Creek, and the north end connection will seek funding as part of the City's future Capital financing Plan and as future opportunities arise to provide a connection to the Port Lands.

In addition, \$2 million has been budgeted for electrical infrastructure to support community programming and to construct an additional block in the south between Expo and Pacific Boulevards.

CONSTRUCTION

Scheduling

Construction of the Greenway by the City's Operations crews began in January 2007 and will be complete by the fall 2009.

The construction work required for the Greenway is significantly different than typically encountered by City crews. With the amount of detail work required, it was estimated that each block would take 4-5 months for full street reconstruction including utility relocations. For the crews to maximize efficiency, the streets were closed to vehicular traffic during construction. In order to accommodate the trolley

transit buses using Carrall Street new trolley wires had to be installed along a parallel street to re-route the buses.

Construction began in January 2007 in the Pender Street to Keefer Street block, within the Chinatown neighbourhood. The first block was approximately 90% complete in July when a labour disruption interrupted construction. In January 2008, the crews returned to Carrall Street to start the second block, between Keefer Street and Expo Boulevard. This included new elements such as the stormwater infiltration planter boxes.

Further complications in the Pender Street to Hastings Street block involved sharing and coordinating access with a private contractor rehabilitating a heritage building fronting the construction area. Delays to the building construction pushed the greenway schedule into the winter. As construction resumed on the Greenway, Vancouver received several heavy snow falls. Unusual for Vancouver, snowfall continued for many days, and operations crews were deployed throughout the city for snow removal. Ultimately, the Pender to Hastings block was completed in January 2009.

Upon completion of the block between Pender and Hastings Streets, construction skipped a block so as not to inconvenience businesses in the Gastown neighbourhood during the peak tourist season. Based on discussions with the Gastown community, it was decided that an expedited construction schedule for the Cordova Street to Water Street block would start in January 2009 and finish by May. The construction work in this block was the most labour intensive and the winter weather did not help. The radiating brick sidewalk pattern required many custom cuts to match Gastown's existing sidewalks. Laying the brick also required a dry environment at an ambient temperature warmer than typical in Vancouver during the late winter and early spring. On wet and cold days, temporary shelters were constructed and supplemental heating was used to create acceptable conditions.

Construction in the Hastings Street to Cordova Street block began in May and is scheduled to finish in the fall. Within this block additional works are being coordinated with a large heritage building and Pigeon Park. This small neighbourhood park is a heavily used gathering spot for many residents, and reconstruction will be coordinated with Parks and Engineering staff and crews.

Challenges

Construction crews working in the DTES faced some unusual challenges. Tall fencing instead of the typical construction barricades were used to help delineate the worksite and provide additional protection to the crews. Vandalism and property loss prevention also incurred more resources than the average street construction site in Vancouver. The crews took extra precautions to ensure all equipment and supplies were properly stored and never left unattended during the day, and that the site was properly secured at the end of each day. Addressing vandalism was carefully considered during planning and sequencing of construction to safeguard newly constructed sections of the Greenway from damage (e.g. timing concrete pours and allowing adequate curing time to prevent vandalism to new concrete).

COMMUNITY PROGRAMMING

The success of Carrall Street is not only dependent on building the Greenway and drawing visitors to the area but also implementing a plan to engage the community and activate the public realm to liven the street. These plans include public art and cultural programming as well as use of the Greenway for special events.

While the Greenway was under construction, two successful public art events commissioned by art galleries on Carrall Street illustrated how the local community can participate in and experience community based programming. The first event, 'Intersection: Lighting up Carrall Street Greenway', was a month long multimedia event focused at the intersection of Hastings Street and Carrall Street. It culminated with a street festival and video installation in Pigeon Park inviting local residents and visitors to participate. A second event, 'Carrall Street Public Forum', closed the Water Street to Cordova Street block for an evening. The street was illuminated with movie production lights and a public performance was held. Actors were hired to mingle with each other and interact with passer-bys on the street. Then a public forum with the actors, event organizers, community members and City staff was held to initiate dialogue regarding issues in their neighbourhood. It is envisioned that similar events will be held on the Greenway, including the Chinatown Night Market.

CONCLUSION

The Carrall Street Greenway provided an excellent opportunity for the City to explore ways of creating great streets that support transportation choices, community building and sustainable initiatives, both social and environmental.

Lessons learned from this project will allow the City of Vancouver and the region to move towards further supporting sustainability initiatives and active forms of sustainable transportation.