

Marine Drive Streetscape Guidelines

DECEMBER 2010

Marine Drive Streetscape Design Guidelines

The City of North Vancouver

141 West 14th Street
North Vancouver, BC
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EXECUTIVE SUMMARY



“There is no magic to great streets. We are attracted to the best of them not because we have to go there but because we want to go there.” [4]

- Allan Jacobs

Introduction

The Marine Drive Corridor Streetscape Design Guidelines provide a blueprint for the future of Marine Drive's pedestrian environment. It is intended to be a guide to implement the City's vision of Marine Drive as becoming part of a vibrant, diverse and highly livable community.

The Guidelines seek to balance the needs of all street users, and reflect the understanding that the pedestrian environment is about much more than just transportation – that streets serve a multitude of social, recreational and ecological needs that must be considered when deciding on the most appropriate design.

These Guidelines provide specific direction for the pedestrian environment, defined as areas where people walk, sit, rest, play and recreate – outside of the realm of moving vehicles. In general terms this refers to sidewalks and crosswalks; however, this may be expanded to include certain areas residing on private development sites, and within certain vehicular areas.

When fully realized, the Marine Drive Corridor Streetscape Design Guidelines will achieve the City's vision of creating a more livable street by helping to:

- attract more inhabitants who choose to make Marine Drive their place of residence
- encourage a greater diversity of business that choose to embrace a pedestrian friendly street
- create a safe and legible street to navigate on foot
- minimize stormwater flows into Burrard inlet

Plan Highlights

The Marine Drive Corridor Streetscape Design Guidelines contain a range of themes and ideas relating to streetscape and pedestrian facilities. These include:

- **A cohesive, unified streetscape design:** Street trees as defining the streetscape rhythm; integrated site furnishings; regularized pedestrian-oriented lighting; minimizing cluttering elements
- **Space for public life:** Safe usable public seating for neighbourhood gathering; generous curb extensions for seating and landscaping; reclaiming an excess of street space for public use; space for outdoor café, restaurant seating and merchant displays
- **Enhanced pedestrian safety:** Safe, convenient pedestrian crossings; paving expressions that improve legibility and wayfinding; landscaped boulevards that provide generous separation between pedestrian and through traffic
- **Improved urban ecology:** Streets as green corridors and habitat connectors; on-site stormwater management to reduce urban runoff into Burrard Inlet; resource-efficient elements and materials
- **Universal Design:** Generously sized, unobstructed sidewalks, curb ramps at all crosswalk locations designed for the visually impaired, accessible pedestrian signals
- **Providing easy access to Transit** – providing areas for seating and shelter at bus stop locations
- **Creative use of laneways:** Utilizing lanes adjoining Marine Drive as civic spaces with controlled vehicular access
- **Pedestrian-priority designs:** Corner and midblock pocket plazas, limited access or permanent laneway closures

• **Extensive soft landscaping:** continuous boulevard planting and regularly spaced street trees to create a unified, desirable, greener street.

• **Embracing existing natural features:** separate pedestrian bridge crossings over creeks and defined park access points that engage people with nature

• **Public art initiatives:** Key locations for integrated public art that provides a greater sense of regionalism and place, and celebrates the rich and diverse culture of the community

Next Steps

The Marine Drive Corridor Streetscape Design Guidelines is a vision for the future of the city of North Vancouver's pedestrian environment. These suggested improvements are not extravagant or uncommon – they are in use in many cities and municipalities in our region. The City must continue to seek funding to realize and maintain the vision of the Streetscape Design Guidelines.

Successful implementation of the Guidelines is dependant on ongoing capital funding, offsite capital contributions from developers, efficient maintenance, and effective education and enforcement. The plan describes a vision for an ideal Marine Drive Corridor while recognizing that the implementation timeframe is dependant on infill development, and City resources as they are made available.

To implement the vision of the plan, the City must consider a number of next steps that include the following:

- Require developers to adhere to the guidelines
- Build demonstration (pilot) projects
- Develop a framework for implementation and prioritization of street improvement projects
- Develop additional technical guidance on a number of topics including, public art implementation, and Streetscape Design Guidelines for 3rd Avenue and Forbes.



“When city residents see no reason to linger outside, they will rarely engage in such activities as standing around enjoying life. Social activities or all activities that depend on the presence of others will necessarily decrease as well.” [3]

- Jan Gehl

“A new and intensified use of public spaces reflects changes in the societies. The social and recreational opportunities offered in public spaces are in increased demand.” [3]

- Jan Gehl

“First and foremost, a great street should help make a community; should facilitate people acting and interacting to achieve in concert what they might not achieve alone.” [4]

- Allan Jacobs



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1.0 INTRODUCTION



"Let's examine our city; let's pick out those things which please us and then design our land use codes around those pleasing models."

[2]

- David Sucher

"Seats of any kind are an invitation and an announcement: 'This is a public space. Sit down and give your brain a rest.'" [3]

- David Sucher

1.1 About the Guidelines

The Streetscape Design Guidelines document was endorsed by City Council and is an official policy document to be implemented by City Staff, Developers and Community Stakeholders. The information in this document is the culmination of an extensive consultation process involving the Department of Engineering, Parks and the Environment, with input from various city departments, City advisory committees, and the general public.

The Marine Drive Streetscape Design Guidelines seek to balance the needs of all users, with a particular focus on the pedestrian environment.

The long-range vision for the Marine Drive Corridor presents an opportunity to rethink one of the City's most important primary arterial connections. The Guidelines recognize this corridor's continuing role as a primary transportation route while addressing the pedestrian's increased importance within a developing mixed use and walkable neighbourhood.

1.2 Marine Drive: Past

Historically, Marine Drive and its adjacent uses have more than adequately catered to motor vehicle access. It is an arterial road that is designated truck route, a commuter route, a prominent corridor through the North Shore, a busy transit and bike route and a primary emergency response route. Emphasis has been placed on ensuring efficient vehicular movement while pedestrian access has remained as a secondary consideration.

The resulting urban landscape has been characteristic of many suburban arterial streets, dominated by commercial development sites that are lower density, buildings with large setbacks from the street, surface parking in the front, and/or inward facing developments with surface parking behind.

Accommodating pedestrians has been a secondary consideration. The result is narrow sidewalks, limited street crossing locations and little or no separation from through traffic. Lamp standards in sidewalk zones present a nearly impassible condition for the mobility impaired.

1.3 Planning for Change

Planning for a diversity of transportation modes and uses along the Marine Drive Corridor is fundamental to ensuring that future needs are met.

The City's Transportation Plan identifies Marine Drive as a major pedestrian precinct. This is both a challenge and opportunity; considerations include:

- Maintaining its function as a major arterial
- Improving pedestrian and cyclist access
- Creating a unique, place-based sense of community

Development on the north side of Marine Drive includes street oriented retail with residential above. This is consistent with the Official Community Plan and is consistent with the Marine Drive Development Guidelines which encourage a diversity of uses along the corridor. Such mixed-use development is expected to continue allowing for a larger residential population that will transform Marine Drive into a more complete community.

Improvements to the pedestrian realm will encourage greater pedestrian activity, particularly as the community builds out in time. These Guidelines lay the ground work for the future transformation of Marine Drive.

1.4 Purpose of the Marine Drive Streetscape Design Guidelines

The Marine Drive Streetscape Guidelines is the final result after a series of visioning and planning studies, aimed at improving safety, access and the experiential quality of the street environment for pedestrians.

Implementation of these design guidelines will assist in the development of a vibrant public realm and help the City realize its vision.

The Marine Drive Streetscape Design Guidelines recognize the multi-faceted nature & use of the Marine Drive Corridor. It also gives purpose and a reasoned basis for these recommendations through supportive graphics and research of appropriate precedents and design principals. The recommendations in this document will be seen as a guide for both the City of North Vancouver and potential developers. As a design 'tool box', this will outline recommended design treatments and combinations of appropriate elements.

The elements include:

- paving
- lighting fixtures
- planting
- trees
- street furniture

The guidelines include plan drawings of typical and unique street conditions, details and specifications, giving practical and explicit direction to both City Staff and prospective proponents.

"The best streets are those that can be remembered. They leave strong, long-continuing positive impressions. Thinking of a city, including one's own, one might well think of a particular street and have a desire to be there; such a street is memorable." [4]

- Allan Jacobs





1.5 Alignment with the Official Community Plan

The Marine Drive Streetscape Design Guidelines will seek to address a broad range of community goals as described in the Official Community Plan.

- “COMMUNITY VISION: To be a vibrant, diverse and highly livable community that strives to balance the social, economic and environmental needs of our community locally.”
- “By addressing social, economic and environmental concerns as stated in this Vision, the City hopes to become a more “sustainable” community...a truly livable city with a distinct sense of place and visible links to the community’s natural and cultural past. A city that is safe, welcoming, inspiring and inviting to all people.”
- “The City of North Vancouver is committed to encouraging programs and policies, which promote transportation choices other than the single occupant vehicle. This includes: improving pedestrian paths, corridors, and street crossings to make walking more comfortable and attractive; working with employers to identify and implement ride sharing and car pooling programs; working with employers to facilitate the

use of bicycles by their employees as a means of transportation; and working with transit authorities to promote more effective, convenient, comfortable and efficient transit service.”

- “The City of North Vancouver supports policies that improve the comfort, safety and enjoyment of pedestrians. This includes the expansion and improvement of pedestrian pathways and linkages as identified in the Parks and Greenways Plan (see Chapter 9), as well as the improvement of pedestrian areas in the urban public realm such as sidewalks, crosswalks, civic plazas, and the safe separation from, but co-existence with, other modes of transportation such as bicycles and vehicular traffic.”

Other Related Plans and Policies:

- [Marine Drive Planning Study](#)
- [Street Tree Master Plan \(2004\)](#)
- [Council Report\(s\) \(3380.02 M1.02\)](#)
- [Marine Drive Lighting Master Plan Marine Drive Development Guidelines](#)
- [City of North Vancouver OCP](#)
- [North Vancouver Zoning Bylaw](#)



2.0 ACHIEVING A GREAT STREET GOALS AND PRINCIPLES



"Great Streets provide a symbolic, ceremonial, social and political role in the life of a city. They allow for the celebration of community, encourage participation and create a "sense of place". [4]

- Allan Jacobs

2.0 Goals: Achieving a Great Street

Great Streets don't happen by chance. They are a product of careful planning, disciplined implementation, and ongoing maintenance; they develop and mature over time. The Guidelines explore the qualities of existing great streets around the world and have developed a series of Goals, Objectives and Design Principles that incorporate these findings.

2.1 'Great Streets'

The Marine Drive Streetscape Guidelines aims to transform Marine Drive into a memorable street that accommodates a diversity of users. While its transformation will likely be realized over a considerable period of time, the Guidelines aim to implement the fundamentals that are characteristic to many of the great streets around the world. This document has adapted the key principles of Allan Jacob's publication, *Great Streets*, a widely accepted study on the design and planning of some of the most successful streets around the world, and the common attributes that make them work.

The Guidelines have used these principles as a basis to develop the components of the pedestrian public realm, and to provide design recommendations for adjacent building frontages that interface the street, all with the intent on creating a well proportioned and articulated street corridor that is desirable both aesthetically and experientially.

The attributes of Great Streets are organized into two sections:

- Requirements for Great Streets – those that are essential for its success
- Qualities that Enhance the Street Experience – those that are nice to have but not essential.

2.1.1 Requirements for Great Streets

1. Places To Walk With Some Leisure

A great street should be easy and safe to walk. It is the experience on foot that enables the intimate engagement of the urban environment and public socializing. Wider sidewalks and separation devices between pedestrians and vehicles are designed to comfortably accommodate pedestrians.

2. Physical Comfort

People understand and respond to comfort and the best street designers have understood that. Climate related characteristics of comfort are reasonably quantifiable. Deciduous street trees as proposed for Marine Drive will provide leafy canopies for shade in the summer months while allowing in sunlight for warmth during the winter.

3. Definition

A defined street is one where the pedestrian feels a comfortable sense of enclosure achieved by building walls and street trees. A street with good definition is typically where the building height to horizontal distance ratio is 1:4. On some development parcels the building edges are relatively high and good street definition is achieved; however, in some instances, where building heights are quite low (1-2 stories), or where they are fronted with parking, proposed street trees whose canopy heights will eventually exceed these building heights will be used to provide an adequate edge definition.

4. Qualities That Engage The Eyes

Visually engaging streets successfully modulate light on a variety of surfaces and materials. There is animation, colours, the movement of leaves in tree canopies, the movement of traffic and the shadows created by finely textured building faces. At night the visual qualities can change dramatically, with artificial lighting and colour emanating from building interiors. These night and day qualities are important in creating a visually stimulating place.

5. Edge Programming

Ensure building edge programming at grade for everyday use, especially at mid-block courtyards and where the building face turns the corner onto the adjacent street. Programming uses should continue up adjacent street for the length of the building through entries. The entries should occur at roughly 25' intervals for a maximum pedestrian interest.

6. Cohesiveness

Great streets are not generally characterized by standout, individual iconic buildings, but rather by street walls that respect each other's form and scale. The concept can extend to the way edges are expressed, whether in the form of a line of trees, or vertical elements such as lighting to create a complimentary character and scale.

7. Maintenance

Good maintenance is a clear indicator of how a community has taken care and ownership of its public realm. It is more than a matter of keeping things clean and in good repair; it is about selecting the right materials for effective maintenance and repair. Selecting paving materials, trees and lighting that are a part of City's existing inventory will ensure proper upkeep.

8. Quality Of Construction And Design

Even the best maintenance cannot improve on the quality of materials or workmanship. Materials need to be robust to withstand wear and tear. Quality workmanship is a matter of cost, but is critical to ensure a long lasting product.

Quality is often associated with cost; however, it is also about the right choice of materials and this determines the long-term success of the project.

2.1.2 Qualities that Enhance the Street Experience

Trees

Investing in street trees is smart. Trees provide adequate scale and proportion, modulate light, shade and microclimate. To be effective, street trees need to be planted relatively close to provide a continuous edge along the street, creating psychologically and physically separate uses. According to Allan Jacobs, the most effective street tree spacing is between 15 to 25 feet.

Beginnings and Endings

Great streets are defined by an identifiable beginning and end. These points should be generally fixed at logical locations. These locations should have something notable, perhaps a gateway or landmark. There are numerous opportunities to integrate public art, monuments, architectural expressions that celebrate the history, culture and geography.

Diversity and Frequency of Buildings

Diversity enhances the scale of a street, offering a variety of vertical and horizontal reference lines leading the eye down the street corridor. A finer-grain mix of buildings often means a more frequent change in ownership and building expression over time. This development form will allow the street to evolve and change.



"Street trees are a high-priority item on which to spend funds that could have a major environmental impact. Absent a commitment to do them right and to maintain them well later, the monies might just as well not be spent. Done well and maintained well, street trees are grand"

- Allan Jacobs

“Sociability is a large part of why cities exist and streets are a major if not the only public place for that sociability to develop.” [4]

- Allan Jacobs



Details

Successful street detailing provides insight into the local culture, community and the place. They may include street furnishings, paving, lighting, public art and planting. How they are integrated to provide colour, contrast, and interest.

Places

There should be special places along the length of a walk that offer opportunities for pause, to stop and sit, or as reference points along the path. These may take the form of a small corner or mid-block plaza, a noticeable public art intervention, a favorite cafe patio, or small seating area.

Accessibility

A successful street enhances the movement, comfort and safety for users of all ages and abilities. Universal access best practices for street design include elements for sidewalks, surface treatments, street furniture, signage, wayfinding, street crossings, curb ramps, pedestrian signals, transitions, cross slopes, grade breaks, pedestrian access routes, etc.

Length

Length of a street or street experience is important if to retain one's interest. Certain elements that are special in their own right may become repetitive or monotonous, if they are not interrupted with a unique landmark, building or point of interest.

Diversity

A street with a diversity of uses, usually results a livelier streets filled with a variety of people there for a variety of purposes. A mix of uses allows the street to evolve and change over time. It will also serve the community more comprehensively than if it were populated with singular uses.

Time

Some great streets grow and mature incrementally over long periods of time. With proper design and planning approaches, this can occur over a shorter duration. All the points as mentioned can be incorporated into the design of a great street, though some interventions may be more likely and effectively implemented in the immediate term than others.

Density

The greater the density, the greater the likelihood of people on the street. While many great streets may have an absence of people, perhaps at night, there is still perceived a sense of those nearby watching over. Density achieves the objective of creating “24 hour” streets, that are populated around the clock.

Parking

On-street parking can play an important role in providing great street access to businesses. In North American examples of development along major arterial parking occurs off the street, often times behind commercial buildings forcing business to turn to the rear, deadening the street. This is a particularly challenging issue along Marine Drive where there is little opportunity for on-street parking, at least with current development patterns.

Contrast

Incorporating contrast into the design of the street is an important consideration, in distinguishing it from its surrounding counterparts.

2.2 Marine Drive: Goals Objectives and Design Principles

The Marine Drive Streetscape Design Guidelines start with a clear set of directives that can be classified as Goals and Objectives, and Design Principles. These directives apply the attributes of Great Streets within the physical, economic and planning context of Marine Drive.

Goals establish a set of targets that the Design Guidelines aim to achieve. These are stated in general terms and address the fundamental aspects of achieving a Great Street.

Objectives can be described as general targets that can be measured or quantified as a way of determining the rate of success in implementing the Guidelines.

Design Principles provide several specific design directions that relate to each established Goal.

2.2.1 Goals

Community Identity Create a street that fosters a sense of community and neighbourhood identity.

Economics Create a desirable street address that contributes to the economic success of local business, services and residents.

Ecological Sustainability Create a street that celebrates, reveals and maximizes opportunities for urban ecology.

Pedestrian/User Experience Create a street that maximizes quality of experience, comfort and safety for pedestrians while maintaining a balance between all users.

Visual/Functional Connectivity Create a street that is visually and functionally cohesive.

Anticipate long term phasing of street improvements that allows for incremental character enrichment and community development over time.

Maintenance And Lasting Quality Create a street that is easy to maintain, has long lasting quality, durability and timelessness.

2.2.2 Objectives

1. Increase pedestrian usage along Marine Drive without compromising its ability to function as a high volume arterial street.
2. Improve transit amenities along Marine Drive such as bus shelters and seating that maximizes comfort, safety and universal access.
3. Provide amenities for pedestrians and cyclists that result in greater usage of the Marine Drive public realm.
4. Design standards that utilize techniques to reduce and retain runoff and enhance urban ecological function.
5. Gain stakeholder support from the landowners and commercial/residential occupants through consultations for any street improvements.
6. Encourage retail at grade that mimics the success of the pedestrian retail rhythm of the Lonsdale corridor

Marine Drive will become part of “a vibrant, diverse and highly livable community that strives to balance the social, economic and environmental needs of our community locally.”

[1]

- City of North Vancouver Vision Statement



"In streets and city spaces of poor quality, only the bare minimum of activity takes place. People hurry home." [3]

-Jan Gehl



2.2.3 Design Principles

1. Community Identity

- Create outdoor 'living rooms'
- Provide spaces in the pedestrian realm that are flexible and programmable
- Identify special locations, gateways and landmarks with public art elements or building architecture
- Establish a series of character precincts that identify and celebrate the communities along the Corridor
- Encourage place naming as a means to improve wayfinding and sense of place
- Incorporate public art into streetscape design elements such as furnishings, paving and lighting

2. Economic

- Commercial development that engages transit users, pedestrians and cyclists
- Encourages the development of fine grain retail with a diversity of services
- Supports a mixed use community (live/work/play/ access within walking distance)

3. Ecological Sustainability

- Maximize opportunities for urban habitat
- Interpretation/education/celebration of local habitat
- Celebrate/interpret larger ecological interfaces with creek corridors
- Incorporate natural rainwater management systems

4. Pedestrian/ User Experience

- Design a pedestrian realm that is conducive to spontaneous interaction
- Develop a legible separation of transportation uses
- Support interactive zones for street oriented retail in front of Commercial Retail Units
- Incorporate pedestrian and cyclist oriented way-finding system
- Provide continuous shade and rain protection along commercial and mixed use development
- Incorporate special paving as part of universal access/wayfinding system
- A variety of seating configurations to encourage casual socialization

5. Visual/ Functional Connectivity

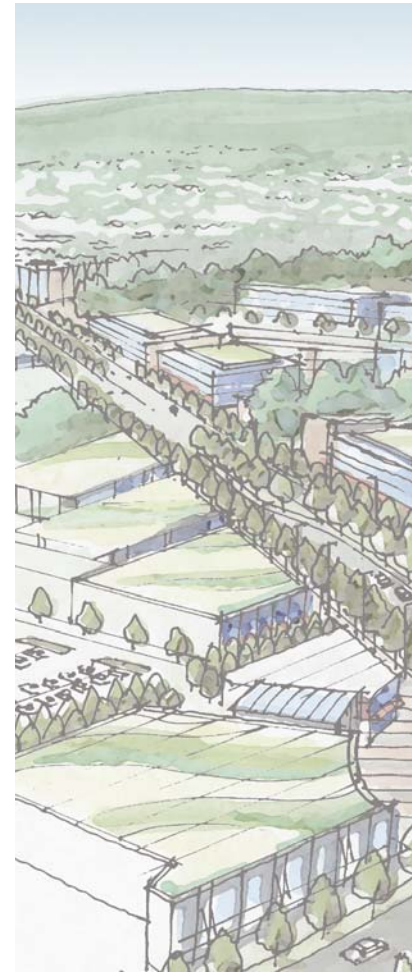
- Develop a cohesive palette of materials including paving, planting, lighting and furnishings
- Support pedestrian crossing points at all intersection locations
- Organize a hierarchy of street elements/materials in a fashion that creates distinctive character precincts
- Visually attractive landscape and building rhythms.

6. Phasing

- Support a streetscape implementation strategy that can be phased incrementally both by the City and by private developers
- Provide a streetscape design that has "strong bones" to allow for future adaptation.

7. Maintenance and Lasting Quality

- Support the use of durable, long-lasting materials in order to reduce maintenance costs
- Design that addresses long term procurement and maintenance budgets.



3.0 PLANNING APPROACH A COHESIVE STREET CORRIDOR

3.1 Context

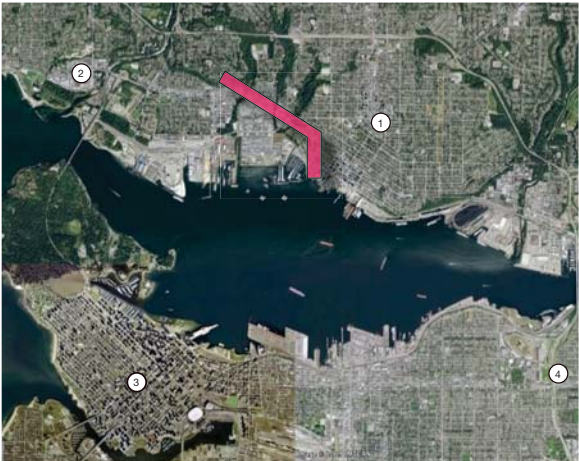
The Marine Drive Corridor is a major arterial that links the three municipalities of the North Shore. It is the most heavily used east west connector in the City of North Vancouver, serving as a primary vehicular movement corridor for commuters, patrons of commercial retail services, and goods movement. It also serves as a major bus route and increasingly is used by pedestrians and cyclists as a result of ongoing densification through the addition of retail and residential development.

Study Area

The study area extends from Mackay Road on the west to Bewicke Avenue on the east. The contents of the Guidelines focus on interventions within the pedestrian realm on both the north and south sides of Marine Drive as well as adjoining streets and laneways.

While this study focuses principally on the section of Marine Drive between Mackay Road and Bewicke Avenue, the Corridor continues eastward through the City and the Squamish Nations Reserve along West 3rd Street and Forbes Avenue connecting with Esplanade.

Future editions to the Streetscape Design Guidelines will focus on the sections of West 3rd Street and Forbes Avenue in consultation with the Squamish Nation.



Marine Drive Location in City Context

- ① North Vancouver
- ② West Vancouver
- ③ Vancouver Downtown
- ④ Burnaby



Marine Drive - Neighbourhood

- ① Capilano Mall
- ② Lonsdale Quay
- ③ Mosquito Creek Marina
- ④ Automall/Harbourside Business Park/
- ⑤ Squamish Nations Neighbourhood
- ⑥ Hamilton Neighbourhood
- ⑦ Bodwell School
- ⑧ Mahon Neighbourhood



- Commercial
- Town Centre
- Industrial
- Schools & Institutional
- Residential
- Squamish Nations
- Park, Rec. & Open Space



3.2 Physical Form

The character of the Marine Drive Corridor is continually shaped by both the built and natural environment. Land use patterns as directed by the Official Community Plan determine the form and density of interfacing buildings. Green features including the parks and creek corridors that contain and frame the urban environment provide natural respite and geographical context.

Land use/ Ownership

The Marine Drive Corridor is characterized by a number of interfacing land uses as outlined in the Official Community Plan. It is largely a commercial corridor with a defined commercial strip development on the south side and increasingly mixed-use retail / residential development on the north side of the street.

As the Corridor continues to develop as a community, the Guidelines propose a consistent palette of elements that will unify the character of the street and the varying development interfaces.

Geographical Features





The North Shore is characterized by a network of stream corridors that create neighbourhood boundaries. They are typically characterized by second growth forest ecosystems of upland and riparian vegetation adjacent to natural creeks. An integrated network of walking and biking trails run through these green belts that provide connections to the various neighbourhoods.

The Marine Drive Corridor passes through three major green corridors: Mackay Creek, Mosquito Creek and Wagg Creek. These “green thresholds” help to define the Marine Drive Corridor and its North Shore character. The Guidelines offer approaches to express the interface between the natural and urban environment, whether it be the way park trailheads interface the street or how the design of bridges can improve the visual access to and awareness of the creeks they cross.



Park Network

- ① Hamilton Park
- ② Heywood Park
- ③ Mosquito Creek Park
- ④ Kinsman Park
- ⑤ Mahon Park
- ⑥ Waterfront Park
- ⑦ Ottawa Gardens
- ⑧ Victoria Park

-  Public Transit Stops
(along Marine Drive)
-  Bus Routes
-  Truck Routes
-  Bike Routes



Movement Patterns

3.3 Movement Patterns

Marine Drive is North Vancouver’s primary east/west arterial that will continue to serve the needs of motorists, transit, cyclists and pedestrians and that will connect the adjoining communities, neighbourhoods with the businesses and services that exist along the Corridor.

Highly Traveled Corridor to Access Businesses

Marine Drive is a highly traveled corridor for both commuters and patron of the various businesses and services along its length. It is a major bus route and a designated truck route. Traditionally pedestrian access has remained as a secondary priority as evidenced by strip mall development, automotive services, fast food chains and Capilano Mall, all of which focus their access on internalized parking with limited or no streetside pedestrian access.

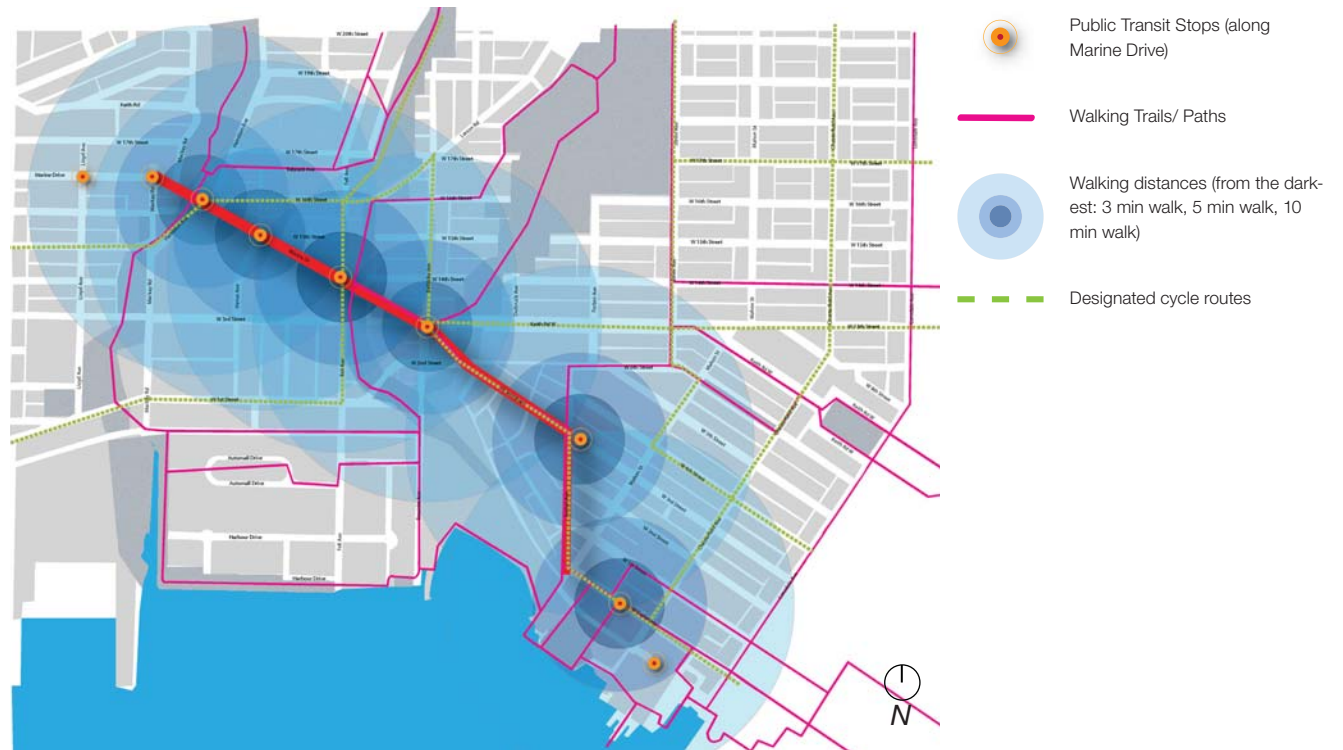
That aside, Marine Drive will continue to evolve as a major transportation corridor and highly visible location for commercial businesses and services with an increasing emphasis on pedestrian and cyclist access.




Pedestrian and Cyclist Connectivity

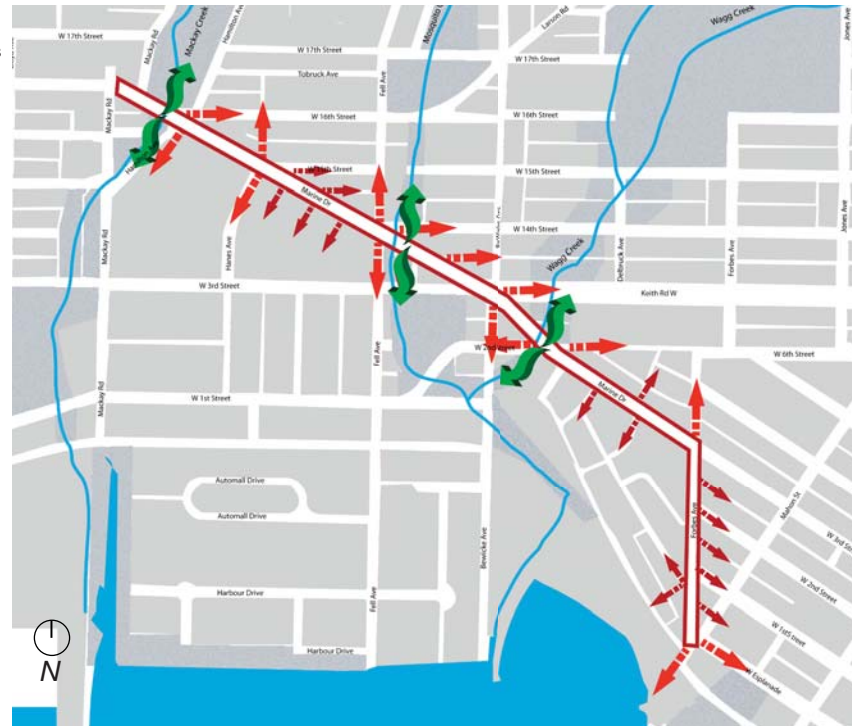
The conditions are in place to transform Marine Drive into an exceptionally walkable street. Future densification in accordance with existing land use policies will increase the diversity of business and residents. The street is a major bus route with frequent stops that enable pedestrian access to all uses within a 5 minute walking distance and access to surrounding neighbourhoods within a 10 minute walking distance.

Marine Drive is also an integral part of North Vancouver's urban trail system, with linkages to the Spirit Trail, and others along creek corridors and designated streets.

With existing plans in place for designated bike lanes, Marine Drive will also be a part of a larger cycle network that serves both commuting and recreational cyclists. The Marine Drive cycle route will connect with those along West 1st Street, Fell Avenue, Hamilton Avenue, West 16th Street, Bewicke Avenue, Keith Road West and the Spirit Trail.



-  Pedestrian Circulation - main routes
-  Pedestrian Circulation - mid block routes
-  Creek corridor crossings



3.4 Pedestrian Accessibility: Creating an Active Sidewalk Realm

Great potential exists to increase the ways in which pedestrians access and travel along the Corridor. Like many walkable great streets, there must be a diversity of uses and experiences that cater to the pedestrian and are pedestrian in scale and detail. A high frequency of access points onto and off of the street, whether it be side streets, laneways, pedestrian mews, courtyards and building entrances is beneficial. There should also be places to walk, amble, pause, rest and interact with the activities alongside the street.

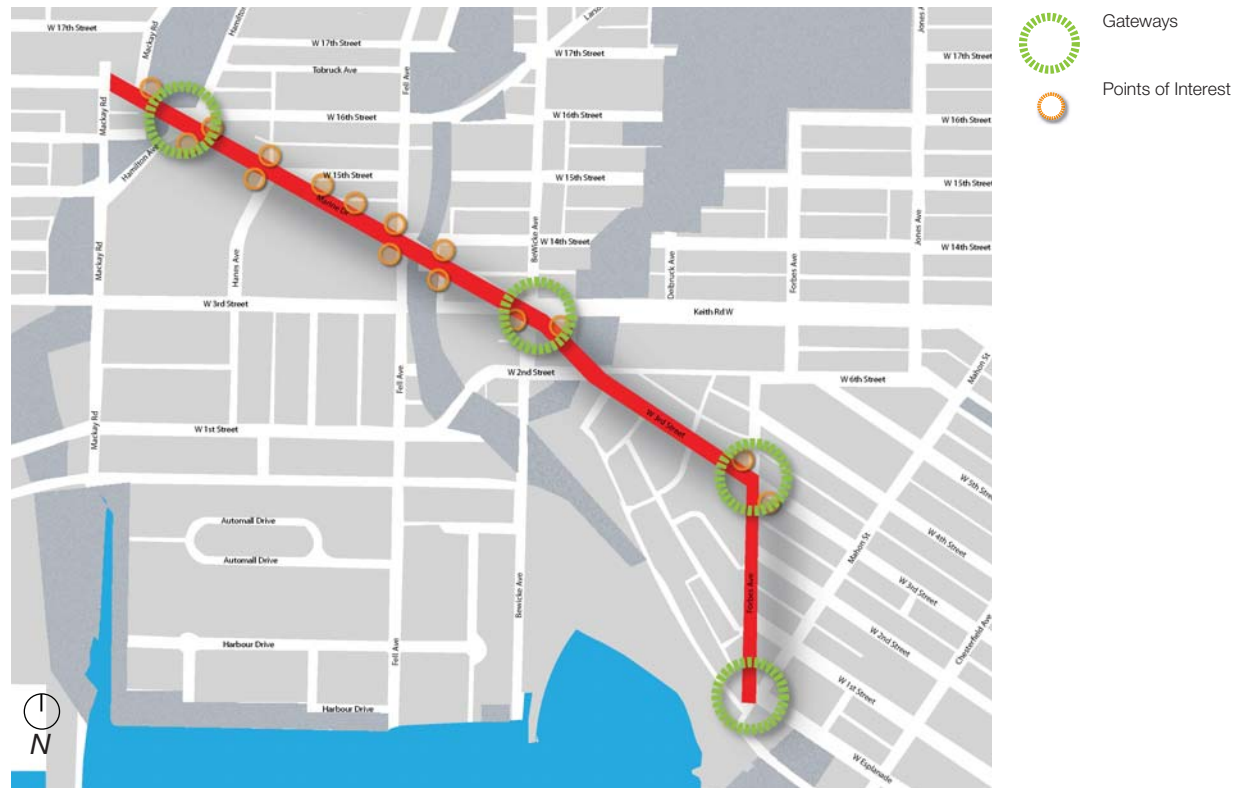
Pedestrian Access and Permeability

Sidewalk conditions on side streets should be improved with wider sidewalks, while the adjacent building corner and street frontages can be designed to engage pedestrians. To provide additional permeability, existing mid-block laneways on the north side of Marine Drive can become pedestrian access points to the mixed-used development blocks. Building entrances, mid block courtyards and pedestrian linkages provide the added level of permeability that benefits the ground oriented retail while adding more activity and purpose to the sidewalk environment. Mid-block access points can stimulate more pedestrian activity and generate increased street oriented commercial and mixed use development.

Gateways and Points of Interest

Gateways are significant landmarks that provide a transition between each character precinct. They are best located at significant geographical locations such as creek corridor crossing and changes in street and topographical orientation. They consist of elements such as landmark buildings, public plazas, and/or large public art features. They should be highly visible elements significant enough to define the overall character and image of the Marine Drive Corridor and are easily identifiable whether traveling by foot or by car.

Points of interest include special places along the pedestrian realm to pause, contemplate, sit and/ or interact with others. They are smaller and more intimate in scale and expression compared to gateway elements and may include outdoor living rooms, pocket plazas, mews, courtyards, seating alcoves, feature planting areas, and smaller public art installations.





4.0 MARINE DRIVE STREETSCAPE DESIGNS

4.0 Streetscape Design

The following section illustrates the typical conditions proposed for the pedestrian realm along Marine Drive between Mackay Road and Bewicke Ave. The designs illustrated in this section are a reflection of the City's aspiration to create a richer more cohesive pedestrian realm.

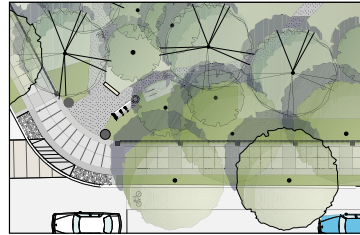
The content includes sample portions of the proposed sidewalk design characteristic and is intended to illustrate the general layout and materials of elements in relation to adjacent existing or proposed development.

These elements include:

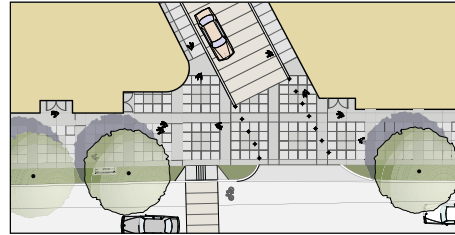
- pedestrian paving
- lighting fixtures
- planting
- trees
- street furniture

The guidelines include plan drawings of typical and unique street conditions, details and specifications, giving practical and explicit direction to both City Staff and prospective proponents. It also gives purpose and a reasoned basis for these recommendations through supportive graphics and research of appropriate precedents and design principles.

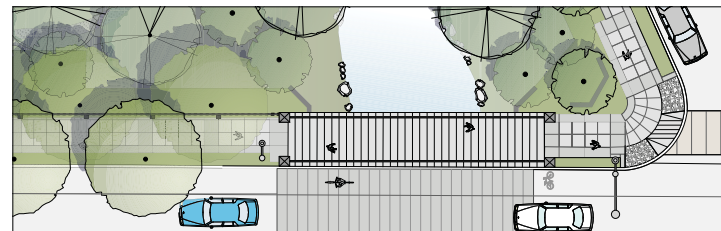
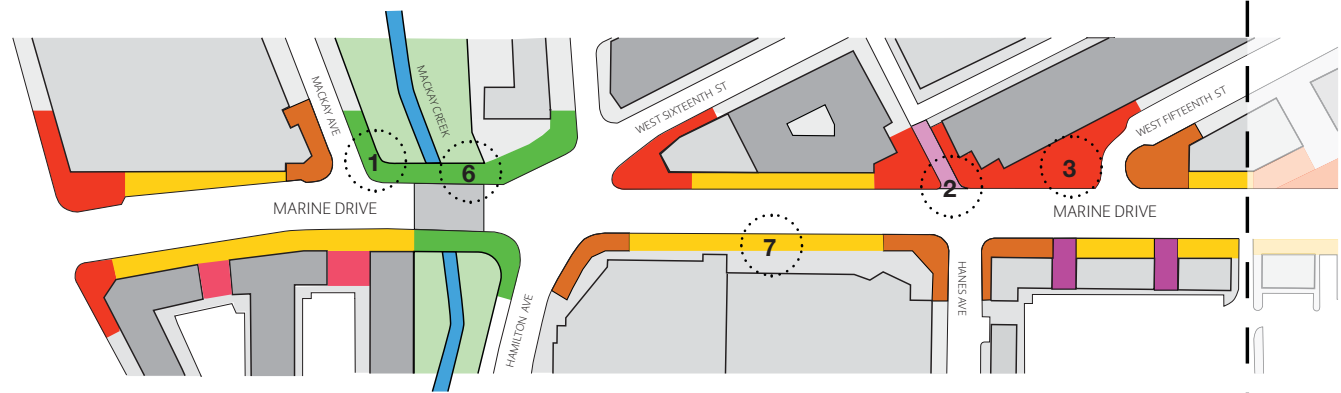
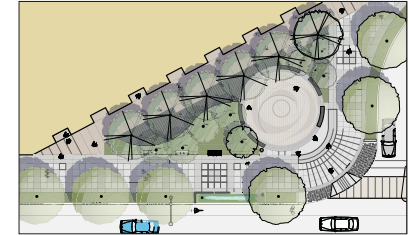
1. Park Entry



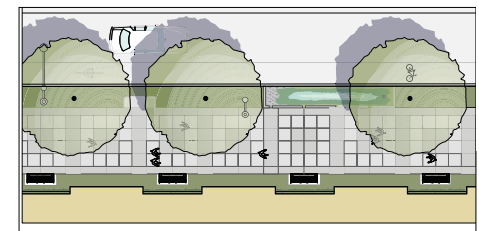
2. Pedestrianized Lane



3. Corner Plaza

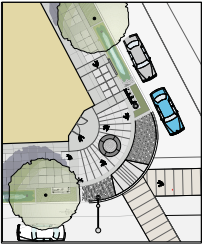


6. Creek Crossing

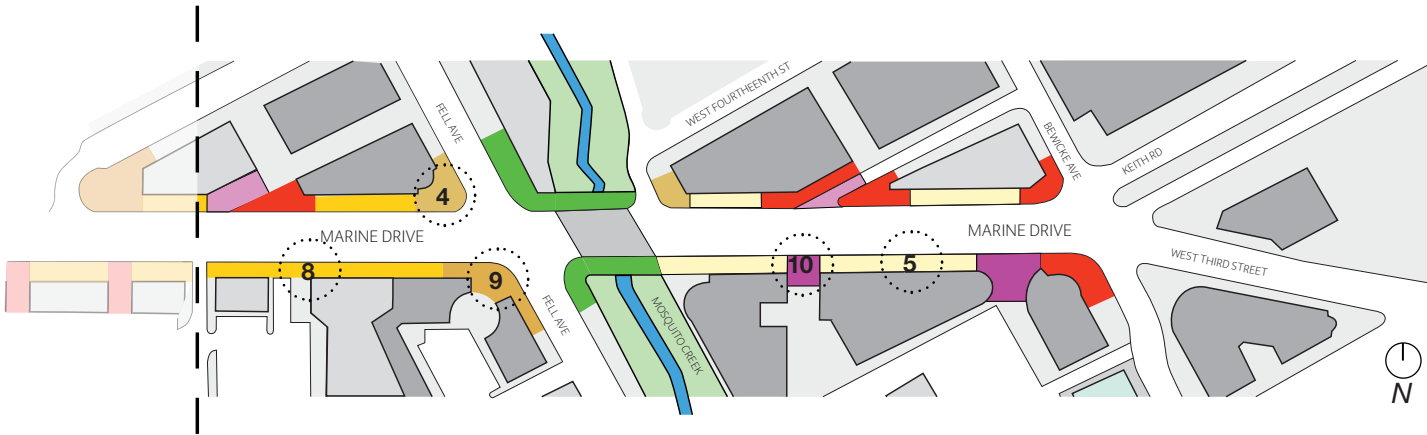
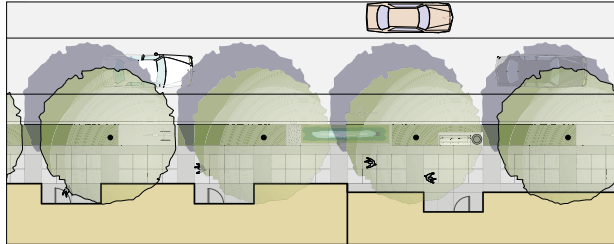


7. Typical Sidewalk Condition - Wide/Urban

4. Street Corner



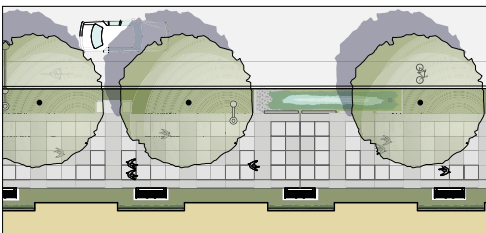
5. Typical Sidewalk Condition - Narrow



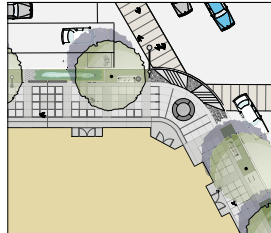
LEGEND

- TYPICAL CORNER / PLAZA TREATMENT
- PEDESTRIANIZED LANE
- EXISTING DEVELOPMENT / DEVELOPMENT PENDING APPROVALS
- TYPICAL MID-BLOCK PLAZA
- SIDEWALK CONDITION - PARK / NATURAL INTERFACE
- TYPICAL CORNER SIDEWALK CONDITION - WIDE
- TYPICAL CORNER SIDEWALK CONDITION - NARROW
- TYPICAL SIDEWALK CONDITION - WIDE
- TYPICAL SIDEWALK CONDITION - NARROW
- FUTURE INFILL DEVELOPMENT

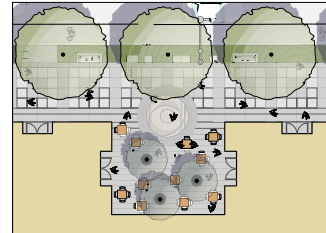
8. Typical Sidewalk Condition - Wide/Green



9. Crosswalks



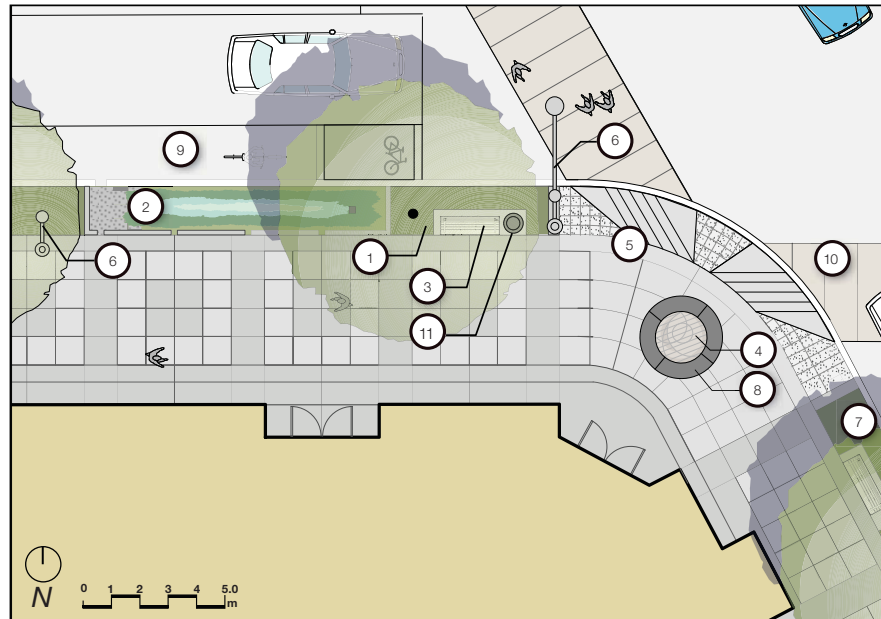
10. Mid-Block Plaza



4.1 Street Corner - Wide Angle

LEGEND

- ① Boulevard planting - Refer to page 54, 55
- ② Rain garden - see detail L018 Refer to page 56, 57
- ③ Boulevard seating - Refer to Detail 5 on sheet L010
- ④ Custom mosaic paving motif by public artist
- ⑤ Adjacent street names sandblasted in coloured concrete - Refer to Detail 4 on sheet L008 and sheet L009
- ⑥ Proposed pedestrian lighting Refer to sheet L001
- ⑦ Extend Marine Dr. blvd. planting min. 9.75m along side streets
- ⑧ Exposed aggregate banding - Refer to Detail 3 on sheet L007
- ⑨ Bike lane along boulevard
- ⑩ Pedestrian crosswalks in different paving material from street to promote visibility
- ⑪ Litter Receptacle - Refer to Detail 8 on sheet L013



Intent :

1. Provide a comfortable and memorable pedestrian experience at street corners and important pedestrian landing points along Marine Drive.
2. Incorporate unique elements into the ground plane such as paving motifs and street names that enrich the user experience and enable place identification.

3. Create opportunities for seating, generous boulevard planting and tactile perimeter paving near curbs that improve pedestrian comfort and create a greater separation from vehicular traffic.

Application :

Applicable to the pedestrian sidewalk realm at street intersections between Mackay Road and Bewicke Ave. Mackay Road and 2nd St West.



Corner treatment with water feature



Corner treatment with exposed aggregate radial band

4.2 Street Corner - Acute Angle

Intent:

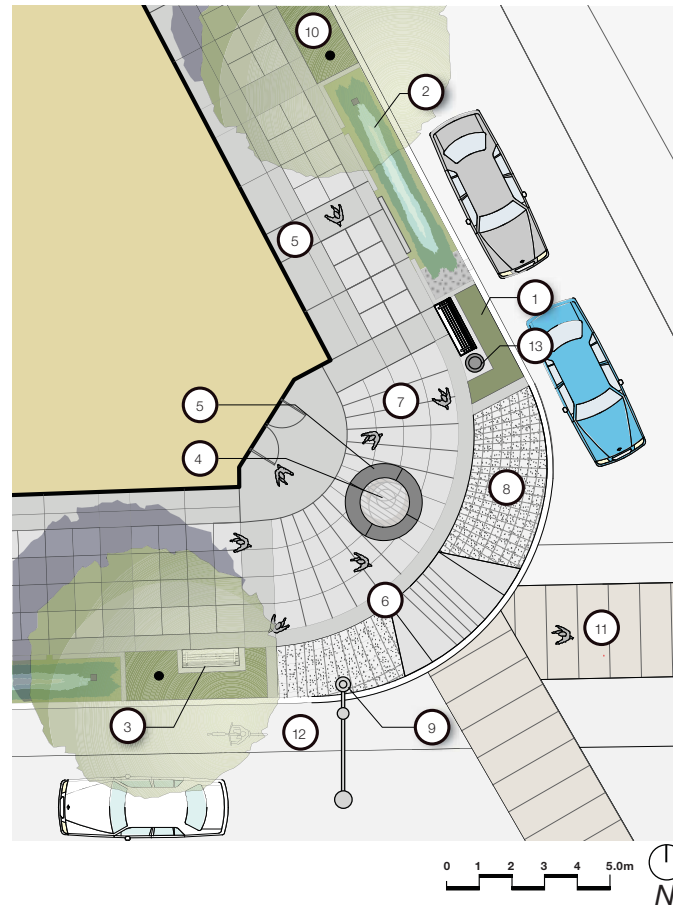
1. Provide a comfortable, legible and memorable pedestrian experience at street corners that are seen as important pedestrian landing points along Marine Drive.
2. Incorporate unique elements into the ground plane such as paving motifs and street names that enrich the user experience and enable place identification.
3. Create opportunities for seating, generous boulevard planting and tactile perimeter paving near curbs that improve pedestrian comfort and create a greater separation from vehicular traffic.

Application:

Applicable to the pedestrian sidewalk realm at street intersections between Mackay Road and Bewicke Ave



Corner treatment with water feature



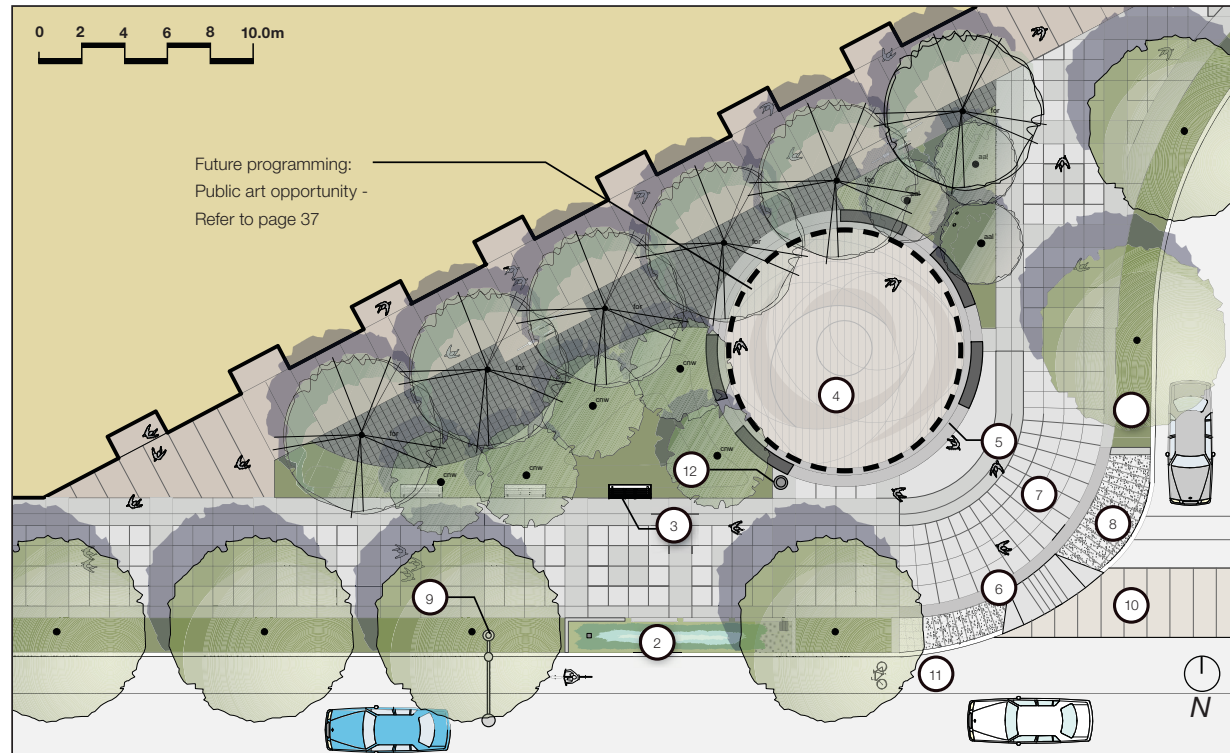
LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Rain garden - see detail L018 Refer to page 56, 57
- 3 Boulevard seating - Refer to Detail 5 on sheet L010
- 4 Custom mosaic paving motif by public artist
- 5 Exposed aggregate banding - Refer to Detail 3 on sheet L007
- 6 Adjacent street names sandblasted in coloured concrete - Refer to Detail 4 on sheet L008 and sheet L009
- 7 Broom finished concrete - Refer to Detail 2 on sheet L007
- 8 Granite Setts - Refer to Detail 1 on sheet L007
- 9 Proposed pedestrian lighting - Refer to sheet L001
- 10 Extend Marine Dr. Blvd. planting min. 9.75m along side streets
- 11 Pedestrian crosswalks in different paving material from street to promote visibility
- 12 Bike lane along boulevard
- 13 Litter Receptacle - Refer to Detail 8 on sheet L013

4.3 Corner Plazas

LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Rain garden - see detail L018 Refer to page 56, 57
- 3 Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- 4 Custom mosaic paving motif by public artist
- 5 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 6 Adjacent street names sandblasted in coloured concrete - Refer to Detail 4 on sheet L008 and sheet L009
- 7 Broom finished concrete - Refer to Detail 2 on sheet L007
- 8 Granite Setts - Refer to Detail 1 on sheet L007
- 9 Proposed pedestrian lighting - Refer to sheet L001
- 10 Pedestrian crosswalks in different paving material from street to promote visibility
- 11 Bike lane along boulevard
- 12 Litter Receptacle - Refer to Detail 8 on sheet L013



Intent :

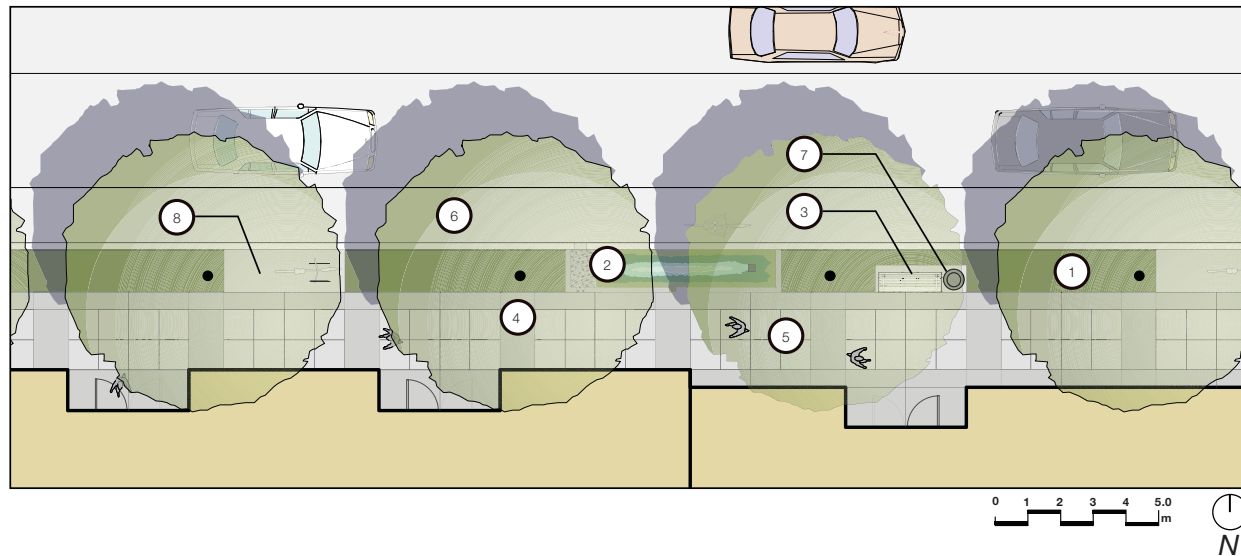
1. To provide unique points of interest and areas of respite along the Marine Drive Corridor that offer places for seating, plaza space for informal gathering and public art

2. To provide opportunities for ground oriented uses in adjacent development parcels to engage a pedestrian oriented environment.

Application :

Applicable to corners of intersecting streets and laneways along the north and south sides of Marine Drive between Mackay Ave. and Bewicke Avenue.

4.4.1 Typical Sidewalk Condition - Narrow



LEGEND

- ① Boulevard planting - Refer to page 54, 55
- ② Rain garden - see detail L018 Refer to page 55, 56
- ③ Boulevard seating - Refer to Detail 5 on sheet L010
- ④ Exposed aggregate paving - Refer to Detail 3 on sheet L007
- ⑤ Broom finished concrete - Refer to Detail 2 on sheet L007
- ⑥ Bike lane along boulevard
- ⑦ Litter Receptacle - Refer to Detail 8 on sheet L013
- ⑧ Bike Rack - Refer to Detail 7 on sheet L012

Intent :

1. To establish a public space that facilitates direct pedestrian access to retail frontages along Marine Drive
2. To establish interactive zones, allowing for outdoor seating and retail displays associated with the adjacent development
3. To create a safer and more enjoyable pedestrian experience within the sidewalk realm

Application :

Applicable to commercial and mixed use development on both sides of Marine Drive between Mackay Road and West 2nd St. Conditions vary as per the sidewalk width. An additional 10' Right of Way has been allocated on both the north and south sides of the street to provide increased space for pedestrian realm.

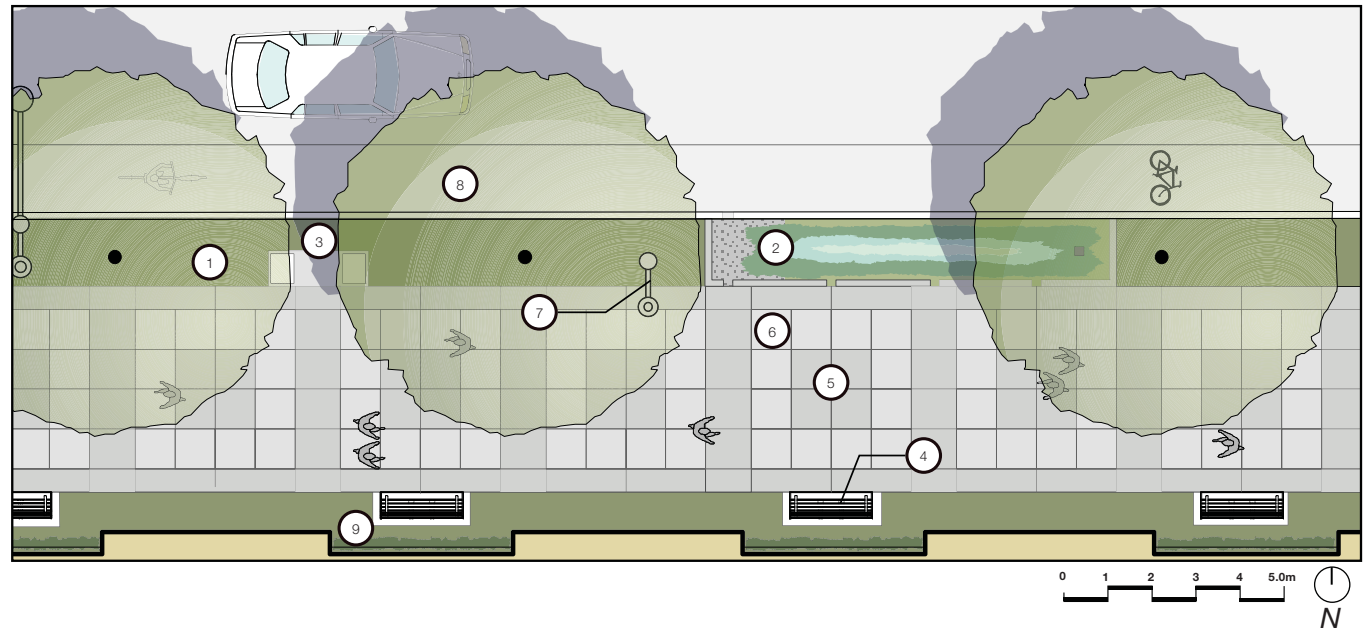


Typical rain garden treatment

4.4.2 Typical Sidewalk Condition - Wide/Green Street

LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Rain garden - see detail L018 Refer to page 56, 57
- 3 Granite seating on concrete pad - Refer to Detail 6 on sheet L011
- 4 Boulevard seating on concrete pad - Refer to Detail 5 L010
- 5 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 6 Broom finished concrete - Refer to Detail 2 on sheet L007
- 7 Proposed pedestrian lighting - Refer to sheet L001
- 8 Bike lane along boulevard
- 9 Wall plantings to provide green buffer between pedestrian realm building face



Intent :

1. To establish a public space that facilitates a visually appealing interface with building frontages where no entrances exist
2. To eliminate continuous, blank facade treatment; and to create a safer and more enjoyable pedestrian experience within the sidewalk realm.

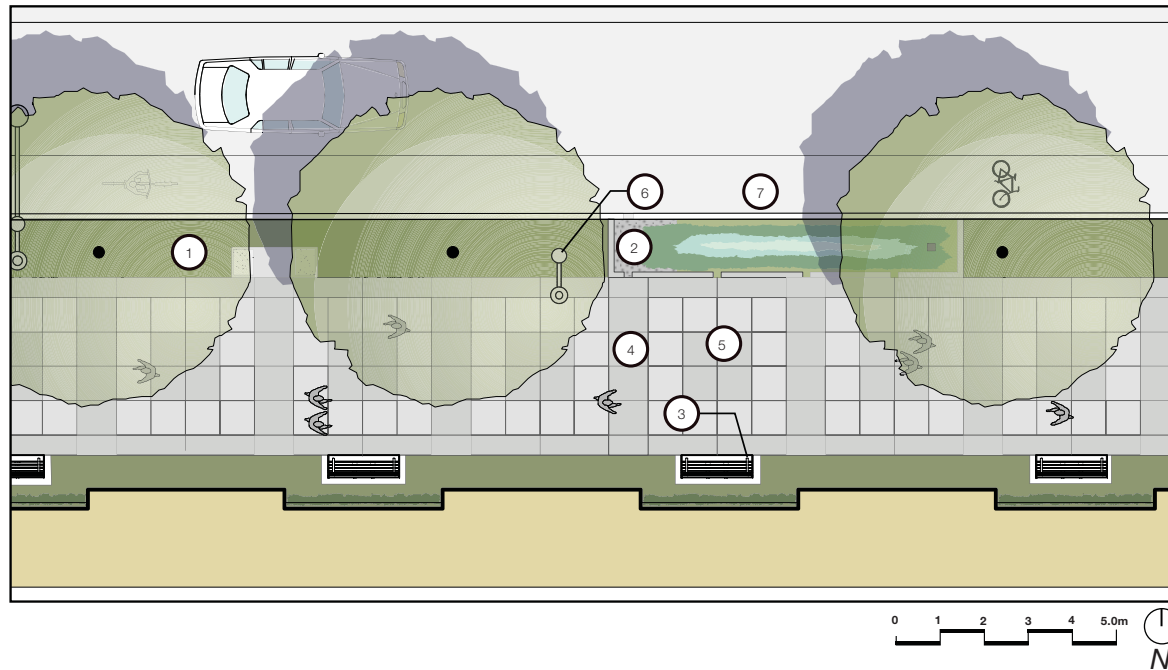
Application:

Applicable to commercial and mixed use development on both sides of Marine Drive between Mackay Road and 2nd St West. To be employed where there are few to no retail access points, building faces should be articulated with a combination of vertical planting and visual fenestration. Low planting and seating create an actively used space along the building edge. Also see section 5.1. Conditions vary as per the sidewalk width.



Boulevard planting and street trees

4.4.3 Typical Sidewalk Condition - Wide/Urban Street



LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Rain garden - see detail L018 Refer to page 56, 57
- 3 Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- 4 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 5 Broom finished concrete - Refer to Detail 2 on sheet L007
- 6 Proposed pedestrian lighting - Refer to sheet L001
- 7 Bike lane along boulevard
- 8 Litter Receptacle - Refer to Detail 8 on sheet L013

Intent :

- 1. To establish a public space that facilitates direct pedestrian access to retail frontages along Marine Drive
- 2. To establish interactive zones, allowing for outdoor seating and retail displays associated with the adjacent development
- 3. To create a safer and more enjoyable pedestrian experience within the sidewalk realm

Application :

Applicable to commercial and mixed use development on both sides of Marine Drive between Mackay Road and 2nd St West. Conditions vary as per the sidewalk width. An additional 10' Right of Way has been allocated on both the north and south sides of the street to provide increased space for pedestrian realm.



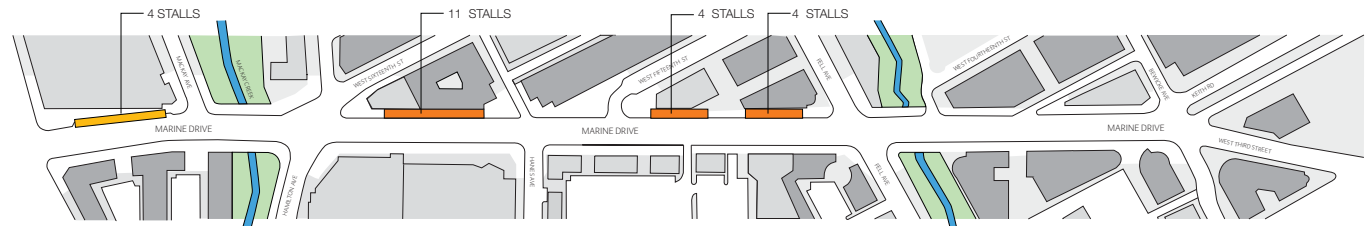
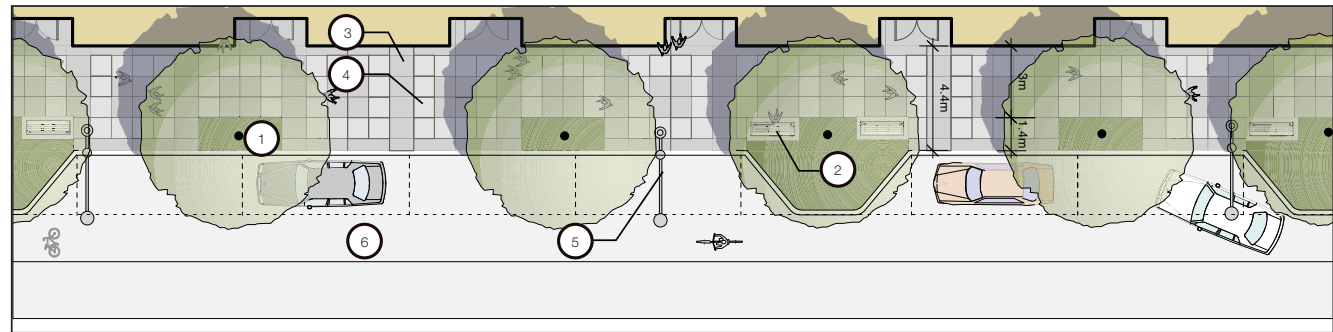
Tables and chairs from adjacent businesses activate the public realm

4.4.4 Typical Sidewalk Condition Option 1 - With On-Street Parking

LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- 3 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 4 Broom finished concrete - Refer to Detail 2 on sheet L007
- 5 Proposed pedestrian lighting - Refer to sheet L001
- 6 Bike lane along boulevard

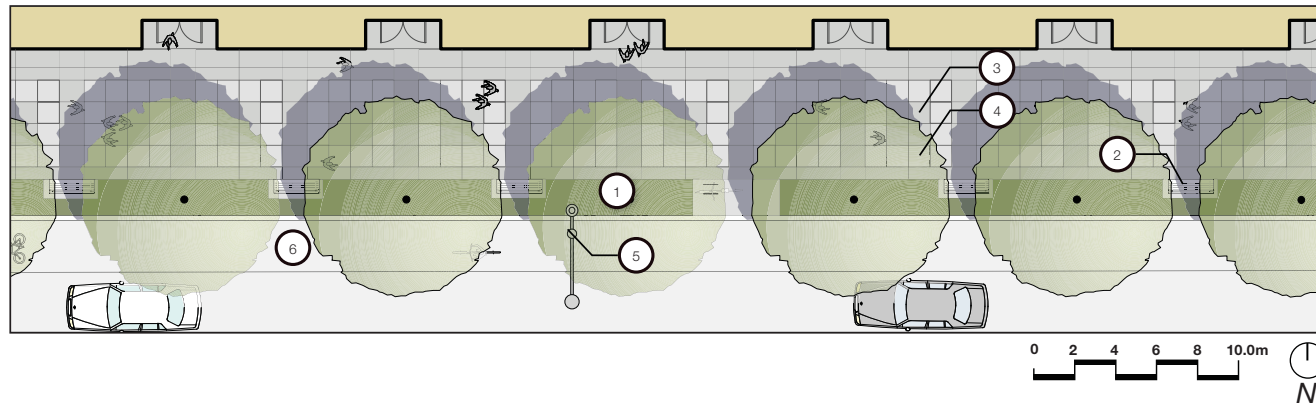
- EXISTING ON STREET PARKING
- AREAS FOR EITHER ON-STREET PARKING OR WITH A WIDER SIDEWALK CONDITION



Intent : On-street parking provides the benefit of improving vehicle access to street oriented commercial retail and at the same time adding greater purpose and function to the sidewalk realm by increasing pedestrian foot traffic.

Application : Opportunities for on-street parking will be evaluated on an individual development application basis.

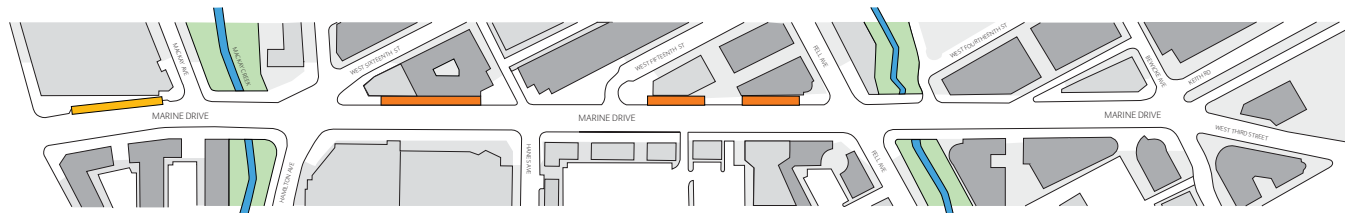
4.4.5 Typical Sidewalk Condition Option 2 - Without On-Street Parking



LEGEND

- ① Boulevard planting - Refer to page 52,53
- ② Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- ③ Exposed aggregate paving - Refer to Detail 3 on sheet L007
- ④ Broom finished concrete - Refer to Detail 2 on sheet L007
- ⑤ Proposed pedestrian lighting - Refer to sheet L001
- ⑥ Bike lane along boulevard

- EXISTING ON-STREET PARKING
- AREAS FOR EITHER ON-STREET PARKING OR WITH A WIDER SIDEWALK CONDITION



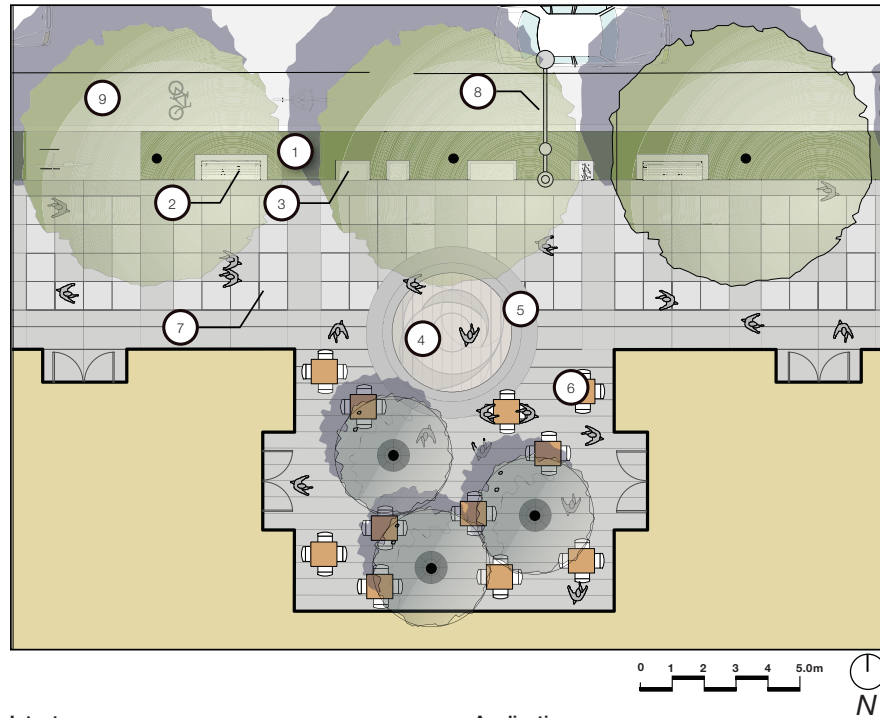
Intent : Maintain Marine Drive's priority purpose as an arterial street without on-street parking. Where street oriented commercial retail exists, parking would be provided underground or on side streets.

Application : Applicable along the north and south sides of Marine Drive between Mackay Ave and Bewicke Avenue.

4.5 Mid-Block Plaza

LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- 3 Granite seating on concrete pad - Refer to Detail 6 on sheet L011
- 4 Custom mosaic paving motif by public artist
- 5 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 6 Table and chairs for public use
- 7 Broom finished concrete - Refer to Detail 2 on sheet L007
- 8 Proposed pedestrian lighting - Refer to sheet L001
- 9 Bike lane along boulevard



Intent :

1. To establish "outdoor living rooms" or open courtyards within development parcels that are oriented towards Marine Drive

2. To provide places for seating, public art and other programming elements that create a unique point of interest for pedestrians; to provide more varied articulation of building edge treatment offering greater access and visual exposure of ground oriented uses.

Application :

Incorporate into commercial retail and mixed use development sites between Mackay Road and 2nd St. West.



Mid-block plaza with tables and chairs adjacent to local commerce

4.6 Pedestrianized Lane

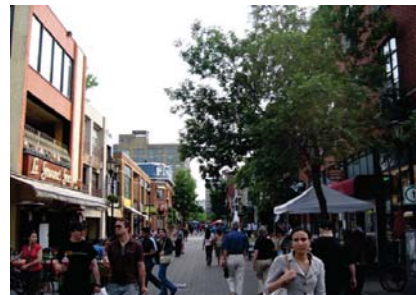


LEGEND

- ① Boulevard planting - Refer to page 54, 55
- ② Boulevard seating on concrete pad - Refer to Detail 5 on sheet L010
- ③ Exposed aggregate paving - Refer to Detail 3 on sheet L007
- ④ Broom finished concrete - Refer to Detail 2 on sheet L007
- ⑤ Pedestrian crosswalks in different paving material from street to promote visibility
- ⑥ Bike lane along boulevard
- ⑦ Bollards to indicate vehicular access across pedestrian realm
- ⑧ Roll over curb

Intent : Maintain the pattern of existing laneways to provide more pedestrian permeability and connectivity along the Marine Drive corridor.

Application : Laneways that currently allow full vehicular access to Marine Drive will be limited to pedestrians and emergency vehicles. The land will be defined by paving patterns and low bollards to create a level, barrier free pedestrian environment.



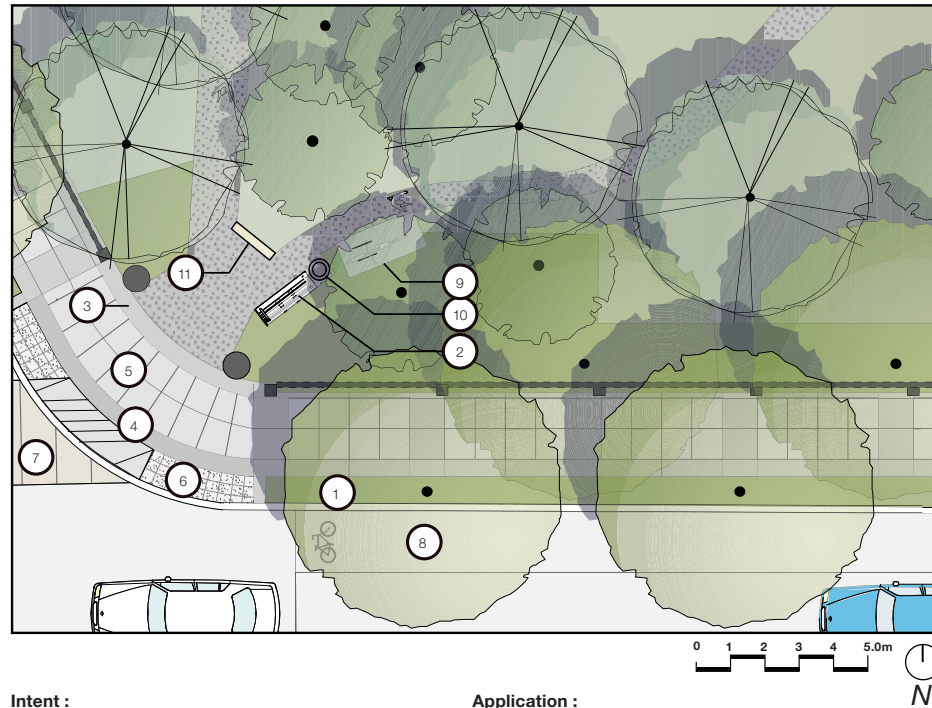
Narrow laneways provide a comfortable realm for pedestrians



4.7 Park/Natural Interface

LEGEND

- 1 Boulevard planting - Refer to page 54, 55
- 2 Park seating on concrete pad - Refer to Detail 5 on sheet L010
- 3 Exposed aggregate paving - Refer to Detail 3 on sheet L007
- 4 Adjacent street names sandblasted in coloured concrete - Refer to Detail 4 on sheet L008 and sheet L009
- 5 Broom finished concrete - Refer to Detail 2 on sheet L007
- 6 Granite Setts - Refer to Detail 1 on sheet L007
- 7 Pedestrian crosswalks in different paving material from street to promote visibility
- 8 Bike lane along boulevard
- 9 Bike rack - Refer to Detail 7 on sheet L012
- 10 Litter Receptacle - Refer to Detail 8 on sheet L013
- 11 Park Entry Signage



Intent :

1. Identify parks and open spaces as unique geographical interfaces along the Marine Drive Corridor.
2. Establish clear entry points and landscape edges that create a memorable interface between the open space and sidewalk realm

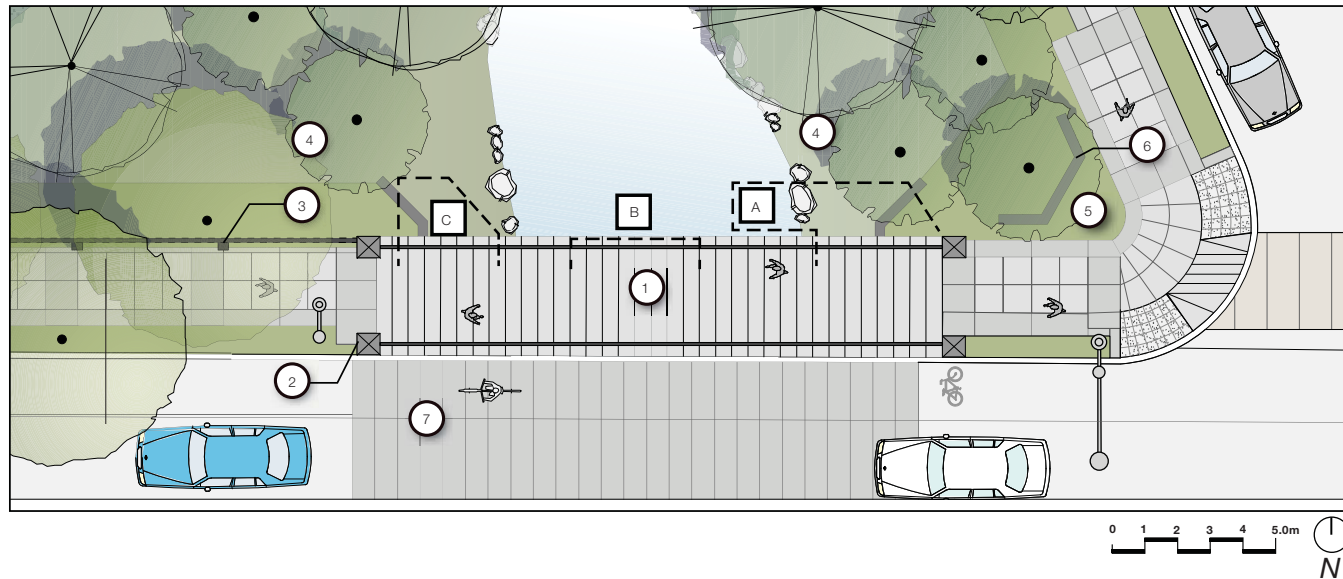
Application :

Define edge interfaces between green spaces and the sidewalk realm by providing signage, low fencing or shrub planting and clearly defined entry points into parks and the constituent trail systems.

Note:

Refer to Heywood Park masterplan for more information

4.8 Creek Crossing



LEGEND

- 1 Metal bridge with concrete decking and metal grating (Public Art opportunity)
- 2 1m height concrete fence posts
- 3 Optional fencing
- 4 Existing park planting
- 5 Native floral planting
- 6 Concrete Signage Feature (Public Art opportunity)
- 7 Textured Driving Surface

Optional Additions :

- A Staircase access to waterfront
- B Mid-bridge viewing point with interpretive signage (Public Art Opportunity)
- C Mid-level viewing deck

Intent : Identify the creek corridors as unique geographical interfaces or "green thresholds" through which Marine Drive passes. Consider the design of proposed bridges, or the modification of existing bridges to improve visual access, and enhance the experience of crossing over the creek corridors, particularly from a pedestrian perspective. Recognize that these creeks are salmon bearing streams in an urban environment and resources to be made apparent and preserved.

Application : Establish separated pedestrian bridge crossings over Mackay Creek and Mosquito Creeks that enable a more intimate pedestrian interface with the creek corridors. Incorporate integrated public art into the design of bridges and associated interpretive features.



Exposed creekways



Park interpretive signage

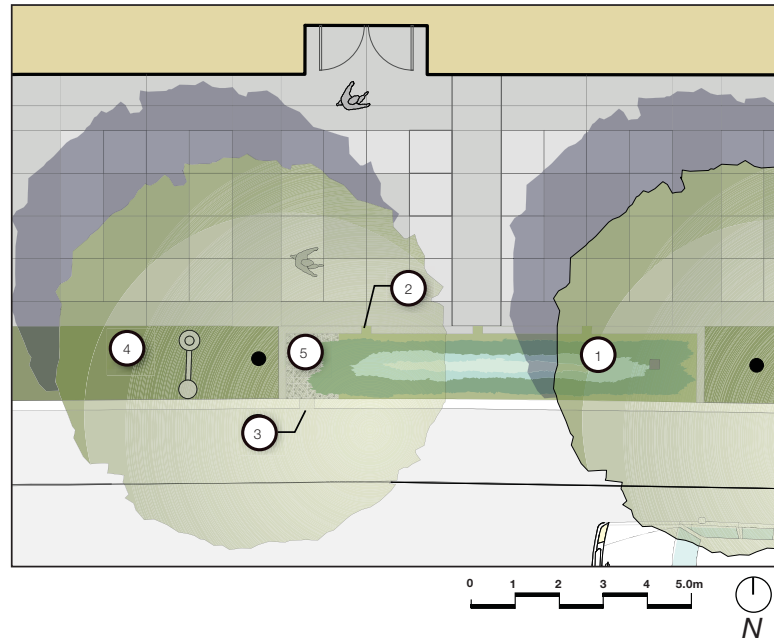


Pedestrian Bridge

4.9 Rain Garden

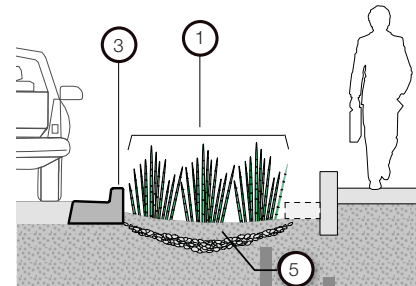
LEGEND

- 1 Raingarden planting - see detail L018
Refer to page 56, 57
- 2 Precast concrete spout mortared in place
- 3 300 mm curb - see detail L017
- 4 Boulevard planting
Refer to page 54, 55
- 5 Gravel soak-away



Intent : To reduce peak volumes of rainwater runoff, increase groundwater recharge and to create opportunities for urban ecology, ecological awareness, biodiversity, and an aesthetic and diverse plant palette at the street level .

Application : Applicable at street corner and mid block locations along Marine Drive and along intersecting side streets where significant volumes of street runoff can be diverted from conventional catch basins.



Rain Garden - Section
Refer to Detail L018 in Appendix



Curb inlet to collect rainwater off pedestrian path



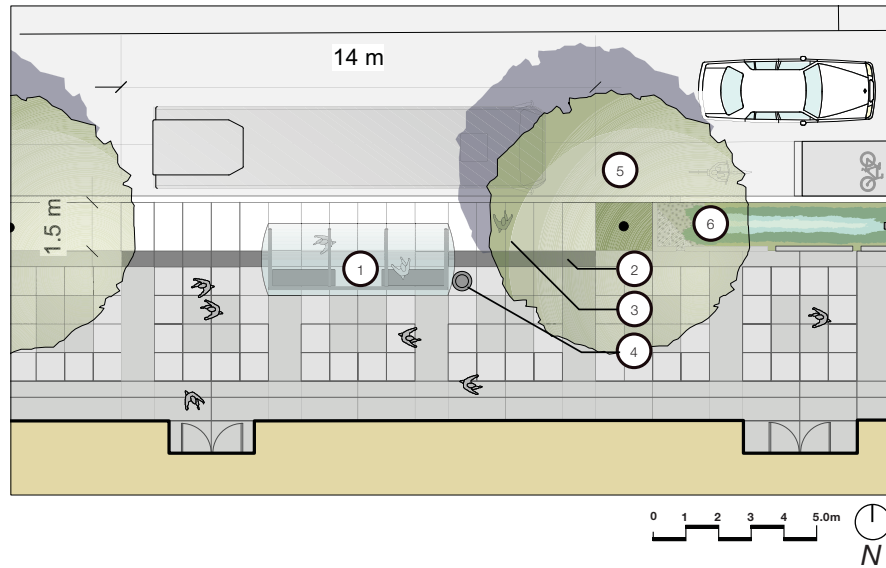
Aquatic plantings



4.10 Transit Stop



Curb side transit stop



LEGEND

- 1 Bus Shelter to be provided by Pattison Outdoor
- 2 Demarcation Line (0.5 mm width)
- 3 Barrier free standing zone, colour concrete - Refer to Detail 3 on sheet L007
- 4 Litter Receptacle - Refer to Detail 8 on sheet L013
- 5 Bike lane along boulevard
- 6 Rain Garden - see detail L018 Refer to page 56, 57

Intent: To improve access to transit and increased ridership by providing bus stops that are safe, comfortable and barrier free.

Application: Transit stops are to be a minimum of 14.0m in length to accommodate single and articulated busses. A minimum 1.5m wide barrier free standing zone to provide adequate access onto and off of busses. Bus shelters with seating are to be provided at each bus stop to provide ample weather protection both for able bodies and wheelchair users. Demarcation line is provided to delineate transit stop from sidewalk zone.



5.0 PUBLIC ART STRATEGY

5.1 Public Art Interventions



Large scale interventions



Medium scale interventions



Fine Grain interventions

LARGE SCALE INTERVENTIONS

- 1) Bridge Crossings

Financial Sources

- 1) Public Art Reserve Fund;
- 2) From infrastructure upgrades championed by the City;
- 3) Through capital funding sources

Design and Implementation Strategies

- 1) Artistic application is part of the integrated design approach;
- 2) involving the replacement or refurbishment of existing bridge crossings

MEDIUM SCALE INTERVENTIONS

- 1) Furnishings and Infrastructure as Art
- 2) Feature Lighting Elements

Financial Sources

- 1) Art contribution monies of new developments;
- 2) Funding by the City through capital funding sources

Design and Implementation Strategies

- 1) Inclusion of public artist as part of integrated design team

FINE GRAIN INTERVENTIONS

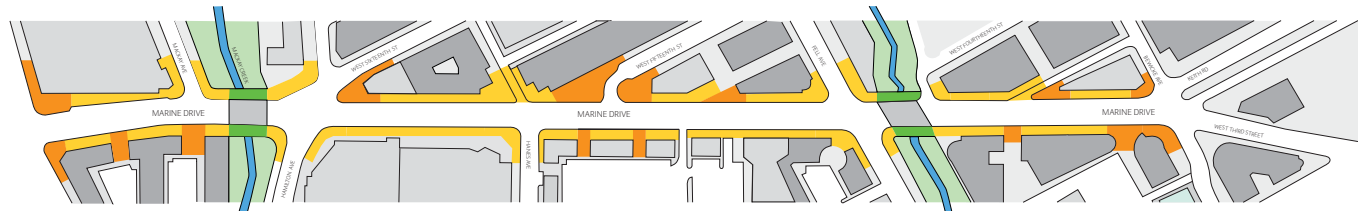
- 1) Enhanced Paving Patterning
- 2) Feature Paving Mosaics
- 3) Banners
- 4) Feature Landscape Elements

Financial Sources

- 1) Art contribution monies of new developments;
- 2) Funding by the City through capital funding sources

Design and Implementation Strategies

- 1) Inclusion of public artist as part of an integrated design team;
- 2) Implementation of the Marine Drive Streetscape Design Guidelines for paving applications



5.2 Public Art Elements

Bridges

Marine Drive crosses three creeks; Mackay, Mosquito, and Wagg. These crossings are important intersections of the natural world with civic infrastructure and hold significant opportunities for development into special structures and/or art pieces. These could be created at a variety of scales, ranging from smaller additions of railings and lookouts to existing bridges, up to complete rebuilding of crossings in an expressive form, which clearly connects both pedestrians and drivers to the experience. Additionally there are opportunities to utilize public art in creating pedestrian eddies or lay-bys, as places of contemplation adjacent to the bridges, to make momentary connections to these natural systems.

Funding for these projects could be garnered from the public art reserve fund and/or from infrastructure upgrades championed by the city, through capital funding sources.



Furnishings and Infrastructure as Art

Part of the construction of a comfortable and well-scaled street is the inclusion of people-sized elements, which help to ground and centre spaces. The use of furniture, as art, accomplishes this by giving the pedestrian a place to pause, both physically and cerebrally. It is an opportunity to make a space feel memorable and special, in an intimate way.

These furnishings and infrastructure elements could come as repeated elements, stretched along the length of the street and/or be sited in specific locations, unique and memorable. They could be placed in public sidewalk spaces, and/or within the new developments' network of walking and sitting spaces, be they bike racks, seating elements, or a repeated motifs in the ground plane.

Funding for these projects could be garnered from art contribution monies of new developments, and/or funded by the city, through capital funding sources.



Lighting

As a means to give character and beauty to the street, lighting projects can respond to both the scale of drivers and pedestrians. As Marine Drive will continue to serve as a major transport corridor on the North Shore, the evening and rainy day experience can be mediated with the inclusion of both site-specific light sculptures and/or a street-length roadway/pedestrian system of lights which are both functional and memorable. This is an opportunity for artists to reflect on the history of the street as a 'strip', which has now transitioned into a more complex environment. Strategic locations for site-specific lighting projects can help to give focus to important nodes along the street system and become urban-scaled foci for the neighborhood. Artists could also become collaborators in the development of business signage for the area. Careful placement of these elements should ensure that they do not cause visual discomfort for residents and other users of the area. These could be placed in public sidewalk spaces, and/or within the new developments' network of walking and sitting spaces. The master plan illustrates that they can become key gateway elements in and out of the area.

Funding for these projects could be garnered from art contributions for new developments. The network of continuous special roadway lighting can be funded as an integral piece of a city infrastructure project, through capital funding sources.





6.0 DEVELOPMENT INTERFACE

6.1 Adaptability and Flexibility

Retail store frontages that are designed to be flexible and adaptable to the individual requirements of retailers are encouraged. Building designs should be responsive to the need for retailers to individualize their frontages in a manner that preserves the integrity of the overall building design and street wall definition.



Recessed store fronts to allow flexible product display and merchandising are strongly encouraged.



Design building facades to allow for flexibility in size and location of building openings.



Fully operable store fronts are encouraged in order to enliven pedestrian realm and increase opportunities for retail functions on the sidewalk.



Design developments to allow straightforward subdivision of retail units, based on a 25-35 foot module.

6.2 Protection from the Elements

Building designs should provide thoughtful resolution to protection from the elements. Buildings that provide simple and well integrated design solutions to protect pedestrians from the sun, rain, wind and especially noise are encouraged.



Integrate protection into overall design of building through massing, rhythm, colour, and scale.



Design protection to be integrated with design of building. Temporary fabric canopies are discouraged.



When building is set back from sidewalk, provide adequate protection for outdoor seating or merchandising.



Protection from rain for pedestrians is strongly encouraged. Avoid canopies or awnings which are only included for signage or building articulation.

6.3 Depth

Buildings that incorporate depth into the façade treatments at grade level are encouraged. Well integrated depth can contribute to the sense of diversity at street level, and support the hierarchy between store entrances and retail shop fronts. Additional depth provides the opportunity for retailers to display their wares without encroaching on the sidewalk areas and introduces the potential for small scale seating, interactive zones and other interventions.



In larger developments, provide courtyards with access directly onto Marine Drive sidewalk. Include retail and commercial units which front onto courtyard.



Entry recesses and setbacks which reinforce the 25-35 foot rhythm and promote a finer grain in larger developments are strongly encouraged.



For irregular shaped sites, street level setbacks which extend from the primary Marine Drive elevation around to the secondary side elevations is strongly encouraged. This provides opportunities for additional merchandising and promotes pedestrian access onto and from secondary streets

6.4 Scale and Massing

Buildings that help form and contribute to a clearly defined and cohesive urban street wall experience are encouraged. The Marine Drive area is transitional; building designs should be responsive to the anticipated future context of the site with respect to form and massing. Building massing should also celebrate the unique shapes of some of the development sites. The potential for well proportioned "flat iron" type buildings is encouraged for many of the sites along the north side of Marine Drive.



Massing for new developments to be located directly adjacent to sidewalk in order to form a strong and cohesive street wall. Primary pedestrian entries and merchandising opportunities to face directly onto Marine Drive sidewalk.



Minimum building heights to be 25-30 feet at face of sidewalk. Minimize number of setbacks on Marine Drive elevation to reinforce strong street wall.



Simple building massing is strongly encouraged. Variation in solid and void within the overall massing is to be restrained and related to protection from the elements only.

6.5 Diversity

Building developments should encourage and support a broad range of street oriented retail opportunities and pedestrian experiences to contribute to the overall vitality of the street. Where possible, two storey retail spaces will further enhance the diversity of scale created by ground oriented retail.



Developments to provide a cohesive framework of protection from the elements, signage, massing, detailing and materials, within which smaller retail and commercial businesses can develop their own identity. Street oriented retail and commercial units to be based on 25-35 foot module.



Where feasible, provide 2 storey retail and commercial spaces facing directly onto Marine Drive sidewalk.



Primary pedestrian entrances to all retail and commercial units to be from Marine Drive sidewalk.

6.6 Signage and Integration

Successful signage will need to respond to the needs and requirements of pedestrian and vehicular users both. Careful consideration should be given to the creative resolution of these potentially divergent requirements.

For further detail refer to CNV Sign Bylaw.



Signage is to reinforce the scale and rhythm of overall building.



Fresh and innovative signage mediums strongly encouraged.



Signage to maintain transparency to building. For larger scale retail store fronts, signage provides opportunities for finer grain articulation.



Innovative design which addresses the scale and speed of pedestrians, cyclists and automobiles is strongly encouraged.

6.7 High Quality Material and Detailing

Building materials and detailing should be based on long-term durability, appearance, ease of maintenance, and proven performance in the North Vancouver climate. The use of materials based on sustainable and renewable resources is encouraged. The use of authentic “real” materials is favoured over the use of materials that are artificial or that mimic the qualities of other materials.



Expand on palette of materials through the use of highly sustainable and durable materials (fibre-cement panels, certified wood, high performance glazing).



Enhance the existing “sense of place” through the use of durable materials
Building facades which allow a high level of occupant control is strongly encouraged (brick and stone).



Simple detailing and envelope flashing is encouraged. Avoid excessive flashing profiles and material waste.



Building facades which allow a high level of occupant control is strongly encouraged.

6.8 Grain

Building designs should be responsive to the dimensions of the original land subdivision, especially for the retail functions at the pedestrian level. Development that creates fine grained (widths of 25-35 feet) retail frontages is encouraged.



Retail and commercial units in larger developments to be based on traditional 25-35 foot module.



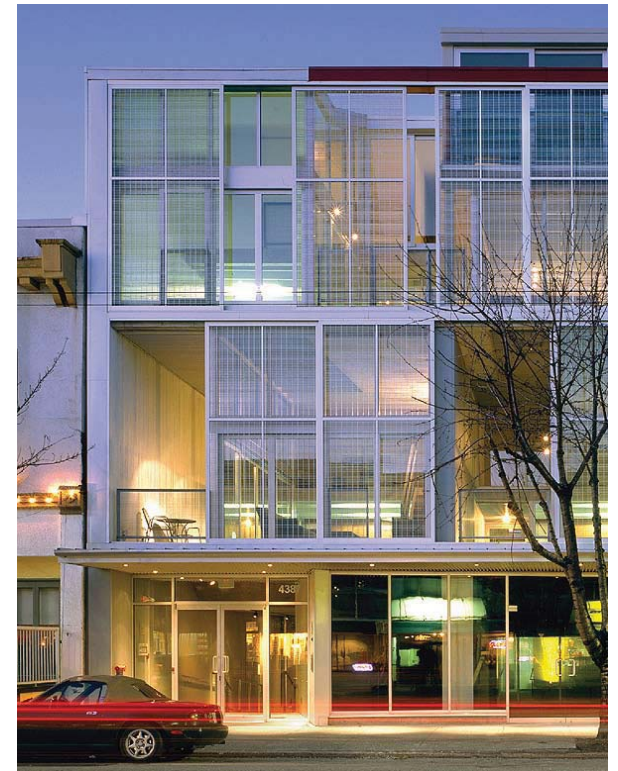
Where feasible, smaller lot developments are strongly encouraged.

6.9 Transparency

Buildings that incorporate a high degree of visual transparency along the street edge are encouraged. Transparency contributes to the lively sense of diversity at street level during daylight hours, improves the sense of safety for pedestrians. Developments should consider the careful incorporation of night-time store front illumination to maintain the sense of diversity and safety after hours.



Maintain night-time illumination at retail and commercial street front units for pedestrian safety.



Allow full control by occupants of windows and coverings. Innovative solutions for privacy and transparency are strongly encouraged.

6.10 Street Animation

Buildings that incorporate multiple opportunities for everyday uses at the street are strongly encouraged. Providing these opportunities can increase the dwell time of pedestrians on the sidewalk and potential “window-shopping”, therefore enhancing potential successes of commercial and retail tenants.



Retail merchandising is to be oriented to sidewalk without compromising street edge transparency.



Transparency from residential, retail and commercial is strongly encouraged. This is to encourage a sense of “eyes on the street” at all times of the day.



Provide opportunities for everyday uses along length of street frontage, in mid-block courtyards, and where building face turns a corner, along adjacent street frontages.

7.0 STREETScape ELEMENTS





Zelkova serrata 'Green Vase'



Acer rubrum



Liquidambar styraciflua 'Worplesdon'

7.1 Boulevard Planting

Street Trees

Healthy and majestic street trees are an important environmental feature and element in North Vancouver. The street tree requirements and selection applies to the public streets as well as the public lanes.

Boulevard Street Tree Requirements

1. Minimum caliper of 7cm
2. All trees must follow BCLNTA and BCSLA Standards
3. Sufficient growing medium to be installed to ensure healthy growth of street trees. Growing medium and soil cells should be utilized as per Appendix L014 - L016.
4. Trees along the street are to be continuous and not more than 10m o.c.
5. Final selection and approval of street trees to be done by the City of North Vancouver.
6. Street Trees are to be uniform in shape and form and of the highest quality

Recommended Boulevard Plant List

Street Trees*

Acer rubrum 'Armstrong'	Armstrong Red Maple
Acer rubrum 'Morgan'	Morgan Red Maple
Acer platanoides 'Easy Street'	Easy Street Norway Maple
Carpinus betulus 'Frans Fontaine'	Franz Fontain Hornbeam
Fraxinus americana 'Autumn Applause'	Autumn Applause White Ash
Liquidambar styraciflua 'Worplesdon'	Worplesdon Sweet Gum
Zelkova serrata 'Green Vase'	Japanese Zelkova
Quercus palustris 'Green Pillar'	Green Pillar Pin Oak

Shrubs

Cornus sericea 'Kelseyii'	Kelsey Dogwood
Rosa 'Gourmet Popcorn'	'Gourmet Popcorn' Rose
Sarcococca hookeriana humilus	Himalayan Sweet Box
Senecio greyii	Senecio
Symphoricarpos chenaultii 'Hancock'	Hancock Trailing Snowberry
Vaccinium ovatum 'Thunderbird'	'Thunderbird' Evergreen Huckleberry
Buxus x 'Wintergem'	Wintergem Boxwood

Ground Covers

Arctostaphylos uva ursi	Bearberry (Kinnikinnick)
Erica carnea 'Springwood Pink'	Springwood Pink Heather
Erica carnea 'Springwood White'	Springwood White Heather
Gaultheria shallon	Salal
Lonicera pileata	Privet Honeysuckle
Mahonia nervosa	Cascade Oregon Grape
Mahonia repens	Spreading Oregon Grape
Rubus calcynoides 'Emerald Carpet'	Emerald Carpet Creeping Rubus
Paxistima canbyi	Cliff-green
Waldsteinia ternata	Barren Strawberry

* Refer to CNV Street Tree Masterplan for Species Options



Weeping Brown Sedge



Variegated Sage



Goldsturm Black-Eyed Susan



Persian Epimedium



Elijah Blue Fescue



Frances Williams Hosta

Recommended Boulevard Plant List (cont'd)

Perennials/Grasses/Ferns

Carex flagellifera 'Kiwi'	'Kiwi' Weeping Brown Sedge
Carex morrowii 'Ice Dance'	Variegated Sedge
Carex pendula	Drooping Sedge
Echinecea pupurea	Purple Cone Flower
Epimedium rubrum	Red Epimedium
Epimedium x versicolor 'sulphureum'	Persian Epimedium
Festuca glauca 'Elijah Blue'	Elijah Blue Fescue
Festuca valesiaca 'Glaucantha'	Wallis Fescue
Hosta 'Frances Williams'	Frances Williams Hosta
Hosta 'Gold Standard'	Gold Standard Hosta
Iris siberica	Siberian Iris
Juncus effusus 'Goldstrike'	'Goldstrike' Rush
Juncus inflexus 'Lovesick Blues'	'Lovesick Blues' Weeping Rush
Polysticum munitum	Western Swordfern
Rudbeckia fulgida 'Goldsturm'	Goldsturm Black-Eyed Susan
Sedum 'Purple Emperor'	Purple Emperor Sedum



Purple Cone Flower



Siberian Iris

7.2 Rain Garden Planting

Where possible, rain garden planting is proposed along Marine Drive to intercept stormwater runoff and help improve water quality.

In considering shrub and tree planting ensure there is sufficient room for mature plant growth, and that sightlines for pedestrians and vehicles will not be compromised.



Iris Douglasiana

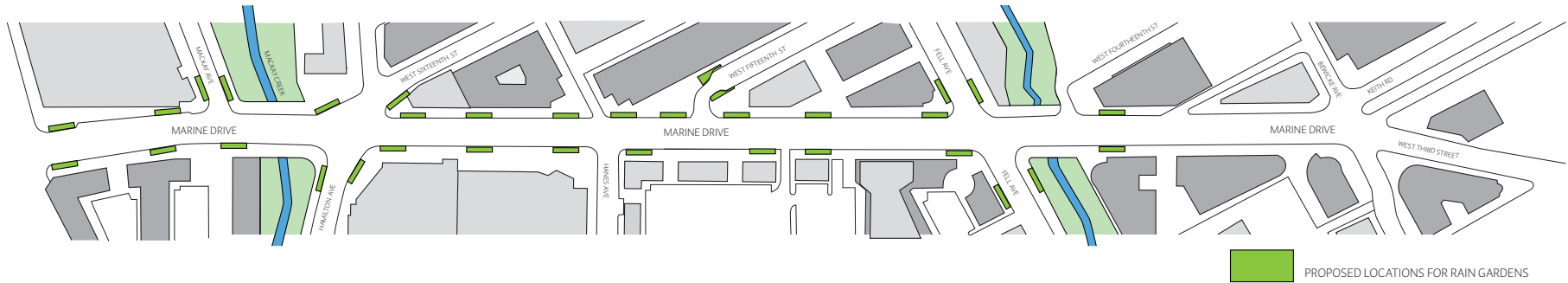


Amelanchier alnifolia



Recommended Rain Garden Plant List

Bottom Channel		Exposure	Size
Emergent Plants			
Carex aquatilis var dives(sitchensis)	Sitka Sedge	Full Sun/Part Shade	0.6-1.2m
Carex obnupta	Slough Sedge	Full Sun/Part Shade	0.3-1.2m
Carex rostrata	Beaked Sedge	Full Sun	0.3 - 1 m
Carex stipata	Sawbeak Sedge	Full Sun	0.6 - 1.2m
Carex tumulicola	Berkeley Sedge	Full Sun/Part Shade	0.6 - 1.2m
Deschampsia cespitosa	Tufted Hair Grass	Full Sun/Part Shade	0.6 - 1.2m
Eleocharis palustris	Creeping spikerush	Full Sun/Part Shade	0.3 - 1 m
Iris douglasiana	Douglas Iris	Full Sun	0.3 - 0.6m
Juncus acuminatus	Tapered Rush	Full Sun/Part Shade	0.3 - 1 m
Juncus effusus	Common Rush	Full Sun	0.3 - 1 m
Juncus tenuis	Slender Rush	Full Sun	0.3 - 1 m
Scirpus lacustris	Hard Stemmed Bullrush	Full Sun	1 - 2m
Scirpus microcarpus	Small Fruited Bullrush	Full Sun/Part Shade	0.6 - 1 m
Shrubs - Evergreen			
Vaccinium ovatum	Evergreen Huckleberry	Full Sun	0.6-1.2m



Recommended Rain Garden Plant List (cont'd)

Side Slopes		Exposure	Size
Groundcovers			
Gaultheria shallon	Salal	Full Sun/Part Shade	0.3 - 0.5m
Mahonia repens	Spreading Oregon Grape	Full Sun/Part Shade	0.1 - 0.2m
Shrubs - Deciduous			
Symphoricarpos albus	Snowberry	Full Sun/Part Shade	1 - 1.2m
Shrubs - Evergreen			
Mahonia nervosa	Cascade Oregon Grape	Full Sun/Part Shade	0.3 - 0.5m
Perennials/Grasses			
Aquilegia formosa	Red Columbine	Full Sun/Part Shade	0.5 - 1.0m
Aster subspicatus	Douglas Aster	Full Sun	0.3 - 0.6m
Helictotrichon sempervirens	Blue Oat Grass	Full Sun	0.3 - 0.6m
Hemerocallis var.	Day Lily	Full Sun	0.3 - 0.6m
Lupinus polyphyllus	Large Leaved Lupine	Full Sun/Part shade	0.6 - 1.0m
Pennisetum alopecuroides 'Hamelin'	Hamelin Dwarf Fountain Grass	Full Sun/Part Shade	0.5 - 1.0m
Ferns			
Polystichum munitum	Western Swordfern	Part Sun/Shade	0.6-1.2m
Blechnum spicant	Deer fern	Part Sun/Shade	0.3 - 0.6m

7.3 Maintenance of Boulevards and Rain Gardens

It is recommended that landscape maintenance of the boulevards and rain gardens occur for a period of two years prior to being turned over to the City.

It is the responsibility of the adjacent landowner / strata to maintain the boulevards by:

- watering the street trees
- watering the boulevard plant material

Any pruning, thinning, or maintenance required on the street trees must be completed only by the City of North Vancouver. Private property owners are responsible for their own unless subject to an agreement under 219 covenant.

7.4 Structural Soils and Soil Cells

Healthy street trees are an important element of the overall landscape framework for Marine Drive. To ensure the trees will be healthy, assist in cooling the urban heat island, capture rain water, and provide the other aesthetic and environmental benefits, a significant amount of growing medium is needed. "The current recommendation for urban trees is a minimum of 1000 - 1200 cubic feet (28.3 -34.0 cubic meters) of soil to support a tree of 16-20 inches (40.6 - 50.8 cm) DBH with larger volumes needed to support even larger trees." (1) Soil cells should be installed under all sidewalk pavement and paver areas recognizing that it is not always practical to install soil cells in the same corridor as utilities.

Soil cells also allow for storage of rainwater which additionally support a healthier street tree.

The City will evaluate whether soil cells should be installed proximate to utilities by taking into account:

- the need to protect/buffer existing or planned utilities (but not unplanned utilities),
- the scheduling order of installations,
- and the availability of qualified inspection staff to oversee the installation. Double depth soil cells are to be used where applicable.

Where soil cells are not used, structural soils should be used. Structural soils should be used for all laneway trees.

The diagrams found in Appendix L014 - L016 demonstrate two soil cell configurations, but not necessarily the only possible ones.

• Option 1 would promote more uniform root growth around the base of the tree, in addition this separated layout allows soil cells to be used under curved sections of the public realm.

• Option 2 would allow tree roots to travel further distances due to the continuous nature of the layout.

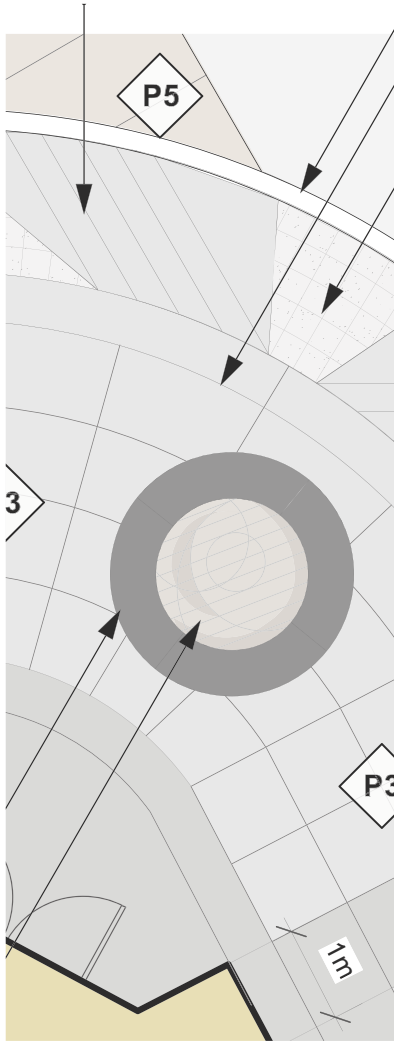
This layout would also be quicker to install, but would not work in curved or irregularly shaped sections of the public realm.

It is recommended that landscape maintenance of the boulevards and rain gardens occur for a period of two years prior to being turned over to the City.

It is the responsibility of the adjacent landowner / strata to maintain the boulevards by:

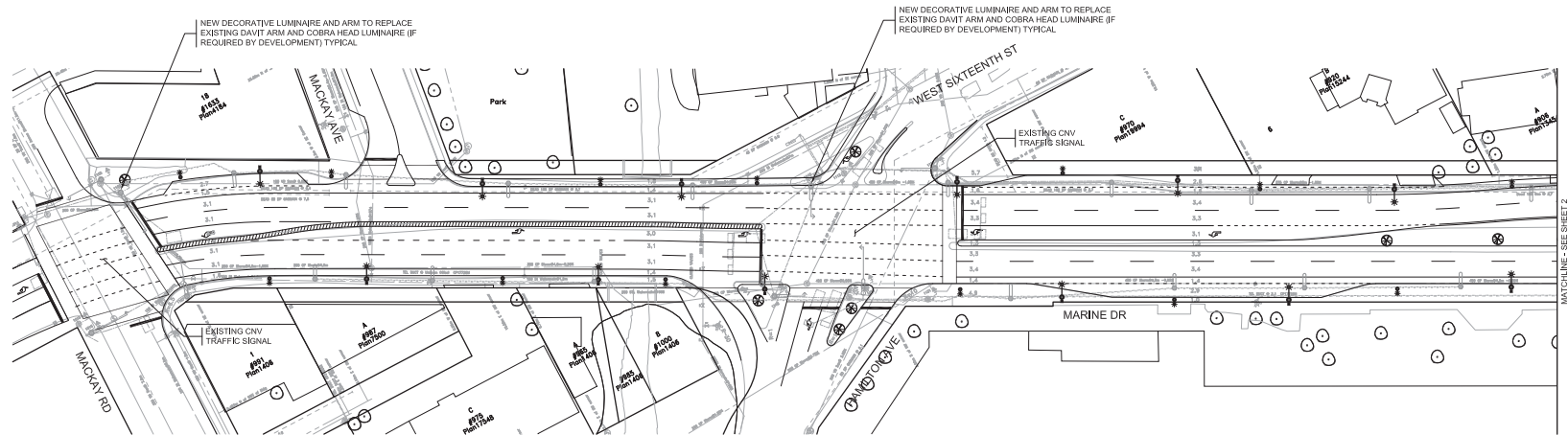
- watering the street trees
- watering the boulevard plant material

AP






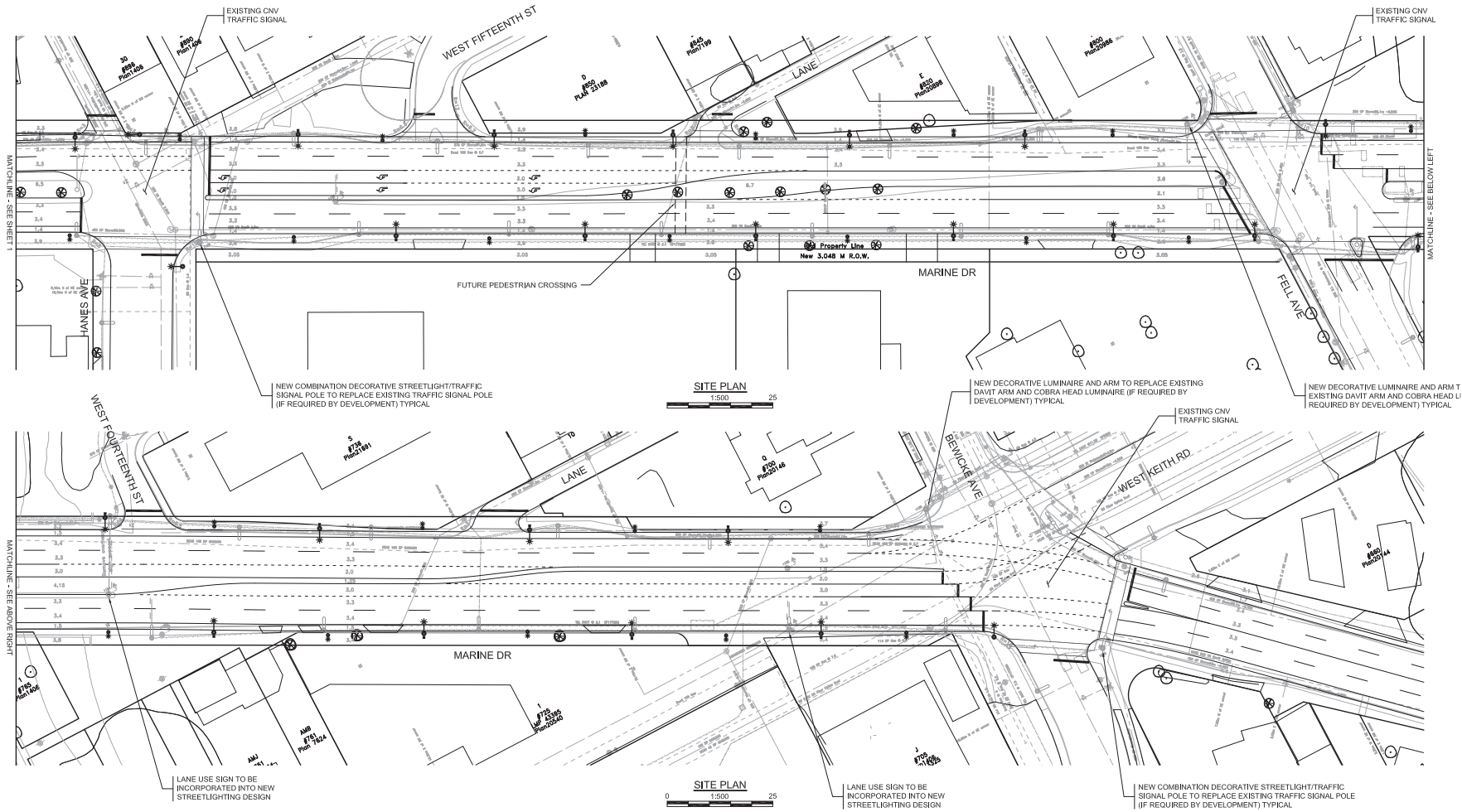
APPENDIX

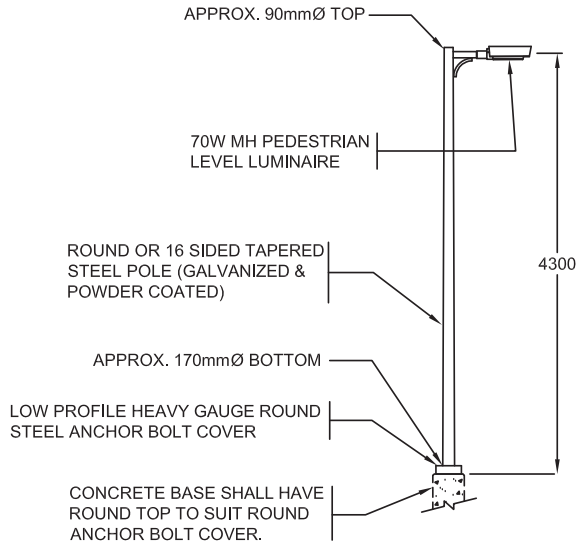
Proposed Lighting Plan - as provided by the City of North Vancouver



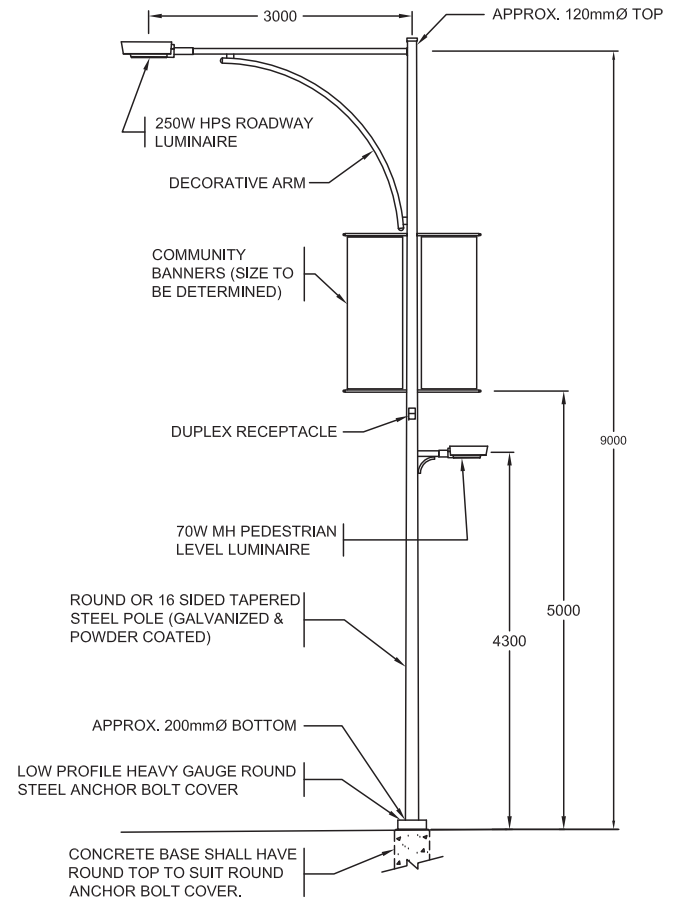
SITE PLAN
0 25

- 
 PROPOSED DECORATIVE DAVIT STREETLIGHT POLE 9.0m - 250W HPS C/W 70W MH PEDESTRIAN LUMINAIRE
- 
 PROPOSED DECORATIVE PEDESTRIAN LUMINAIRE AND POLE 4.3m - 70W MH
- 
 EXISTING STREETLIGHT POLE
- 
 EXISTING TRAFFIC SIGNAL POLE C/W LUMINAIRE

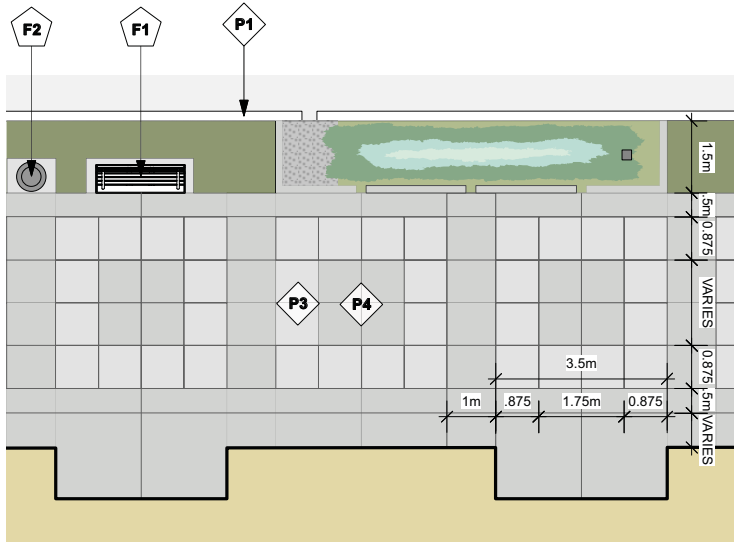




drawing no.	drawing title				
L001	Pedestrian Lighting Detail				
scale	plot scale	date	revised		



drawing no.	drawing title				
L002	Street Lighting Detail				
scale	plot scale	date	revised		

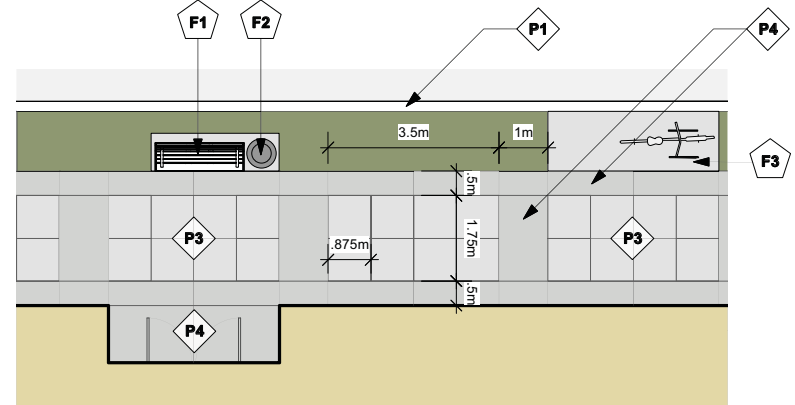


PAVING

- P1** CURB + GUTTER - MMCD #C4, VOLUME II, 2000
- P3** 2
L007 CONCRETE SIDEWALK WITH LIGHT BROOM FINISH AND SAW CUT SCORE LINES
- P4** 3
L007 EXPOSED AGGREGATE CONCRETE WITH TROWEL JOINTS

FURNISHINGS

- F1** 5
L010 **STANDARD MARINE DRIVE BENCH**
MODEL: RB-28
LENGTH: 1.8M
MATERIALS: STEEL
COLOUR: BLACK
FINISH: POWDERCOAT
MOUNTING: SECURE TO CONCRETE PAD
SUPPLIER: VICTOR STANLEY
- F2** 8
L013 **STANDARD MARINE DRIVE LITTER RECEPTACLE**
MODEL: IRONSITES SERIES SD-42
FINISH: SHOTBLAST
COLOUR: BLACK
SUPPLIER: VICTOR STANLEY



PAVING

- P1** CURB + GUTTER - MMCD #C4, VOLUME II, 2000
- P3** 2
L007 CONCRETE SIDEWALK WITH LIGHT BROOM FINISH AND SAW CUT SCORE LINES
- P4** 3
L007 EXPOSED AGGREGATE CONCRETE WITH TROWEL JOINTS

FURNISHINGS

- F1** 5
L010 **STANDARD MARINE DRIVE BENCH**
MODEL: RB-28
LENGTH: 1.8M
MATERIALS: STEEL
COLOUR: BLACK
FINISH: POWDERCOAT
MOUNTING: SECURE TO CONCRETE PAD
SUPPLIER: VICTOR STANLEY
- F2** 8
L013 **STANDARD MARINE DRIVE LITTER RECEPTACLE**
MODEL: IRONSITES SERIES SD-42
FINISH: SHOTBLAST
COLOUR: BLACK
SUPPLIER: VICTOR STANLEY
- F3** 7
L012 **STANDARD MARINE DRIVE BIKE RACK**
TYPE: LANDSCAPE FORMS - RING
CAPACITY: 2
FINISH: GALVANIZED FINISH

drawing no.

L003

drawing title

SIDEWALK - WIDE

scale

plot scale

date

revised

the city of north vancouver

drawing no.

L004

drawing title

SIDEWALK - NARROW

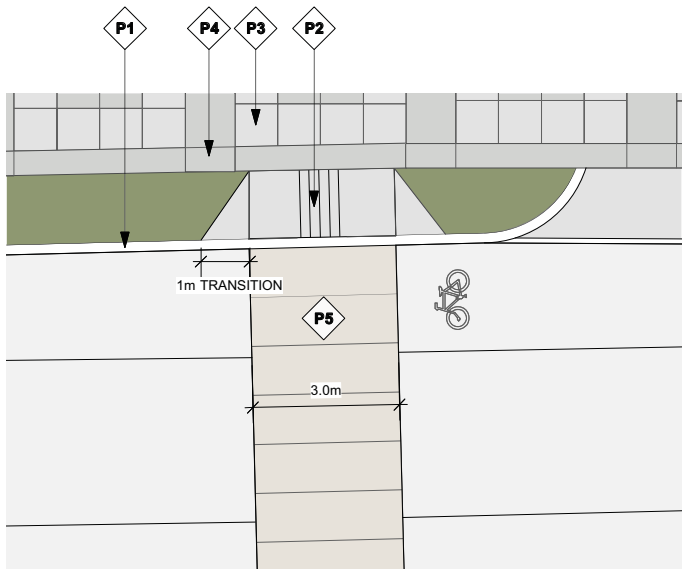
scale

plot scale

date

revised

the city of north vancouver



PAVING

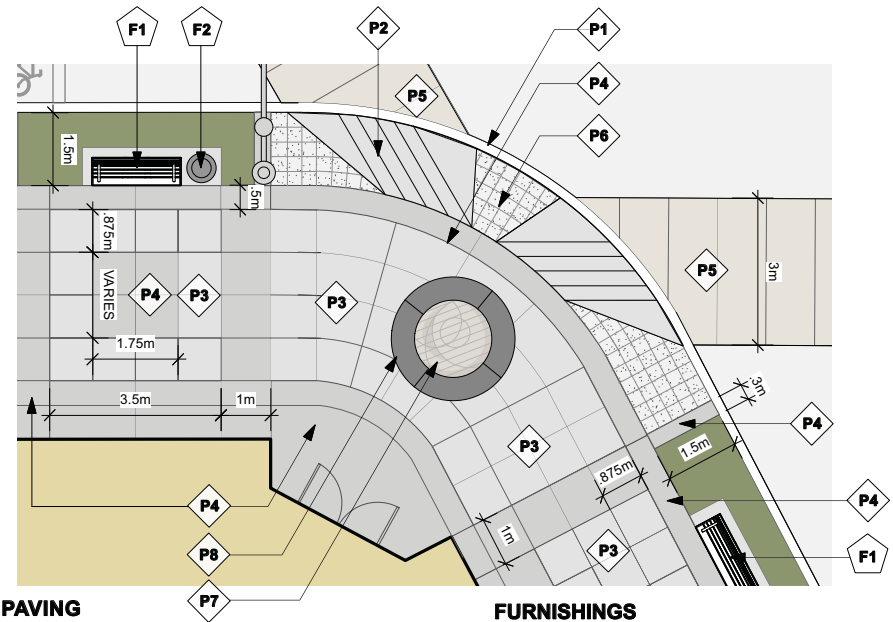
- P1** CURB + GUTTER - MMCD #C4, VOLUME II, 2000
- P2** PEDESTRIAN CURB LETDOWN - MMCD #C8, VOLUME II, 2000
- P3** $\frac{2}{L007}$ CONCRETE SIDEWALK WITH LIGHT BROOM FINISH AND SAW CUT SCORE LINES
- P4** $\frac{3}{L007}$ EXPOSED AGGREGATE CONCRETE WITH TROWEL JOINTS
- P5** $\frac{2}{L007}$ CONCRETE, LIGHT BROOM FINISH WITH SAW CUTS

drawing no.
L005

drawing title
CROSSWALK - TYPICAL

scale	plot scale	date	revised
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the city of vancouver



PAVING

- P1** CURB + GUTTER - MMCD #C4, VOLUME II, 2000
- P2** PEDESTRIAN CURB LETDOWN - MMCD #C8, VOLUME II, 2000
- P3** $\frac{2}{L007}$ CONCRETE SIDEWALK WITH LIGHT BROOM FINISH AND SAW CUT SCORE LINES
- P4** $\frac{3}{L007}$ EXPOSED AGGREGATE CONCRETE WITH TROWEL JOINTS
- P5** $\frac{2}{L007}$ CONCRETE, LIGHT BROOM FINISH WITH SAW CUTS
- P6** $\frac{1}{L007}$ 100x100x80mm GRANITE SETS, MORTAR SET
- P7** FRACTURED GLASS MOSAIC BY PUBLIC ARTIST
- P8** $\frac{4}{L008}$ COLOURED CONCRETE

FURNISHINGS

- F1** $\frac{5}{L010}$ **STANDARD MARINE DRIVE BENCH**
MODEL: RB-28
LENGTH: 1.8M
MATERIALS: STEEL
COLOUR: BLACK
FINISH: POWDERCOAT
MOUNTING: SECURE TO CONCRETE PAD
SUPPLIER: VICTOR STANLEY
- F2** $\frac{8}{L013}$ **STANDARD MARINE DRIVE LITTER RECEPTACLE**
MODEL: IRONSITES SERIES SD-42
FINISH: SHOTBLAST
COLOUR: BLACK
SUPPLIER: VICTOR STANLEY

drawing no.
L006

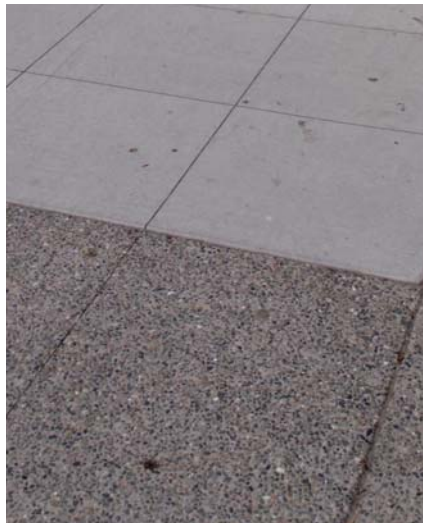
drawing title
STREET CORNER - TYPICAL

scale	plot scale	date	revised
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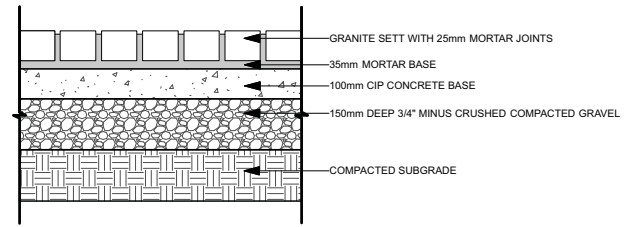
the city of vancouver



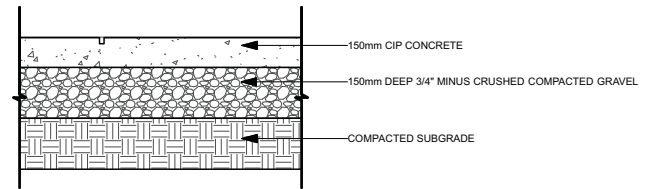
Granite Sett



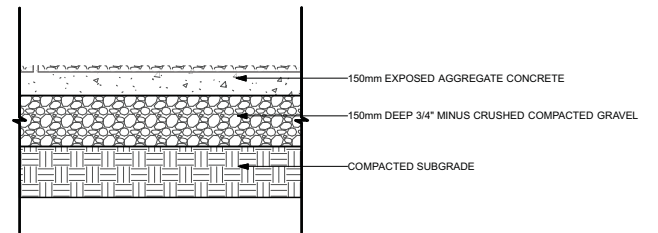
Broom Finish Concrete and Exposed Aggregate Concrete



1 Granite Setts Detail
Scale 1:20

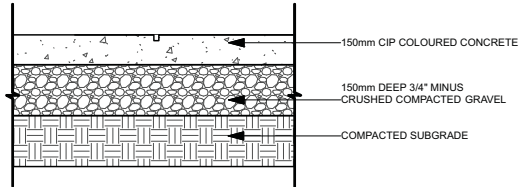


2 Broom Finish Concrete Detail
Scale 1:20



3 Exposed Aggregate Concrete Detail
Scale 1:20

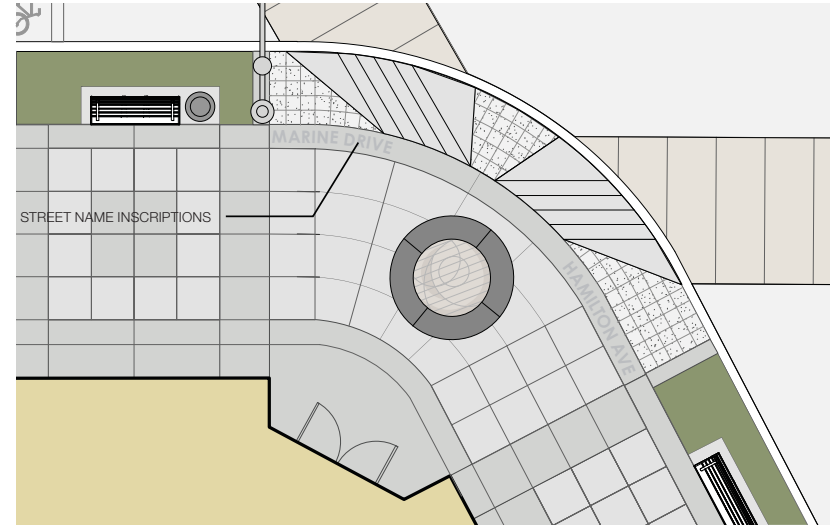
drawing no.		drawing title			
L007		PAVING MATERIALS			
		scale	plot scale	date	revised



4 Coloured Concrete Detail
Scale 1:20

NOTES:

COLOURED CONCRETE TO BE DONE WITH AD-MIXTURE
"CHARCOAL" L.M. SCOFIELD COMPANY C-24 OR CITY APPROVED
EQUIVALENT



NOTES :

STREET NAMES TO BE SANDBLASTED INTO COLOURED CONCRETE USING STENCIL TEMPLATE

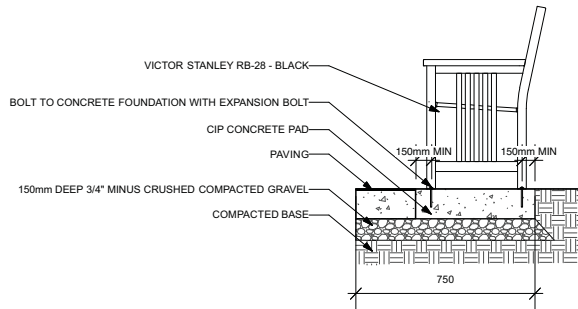
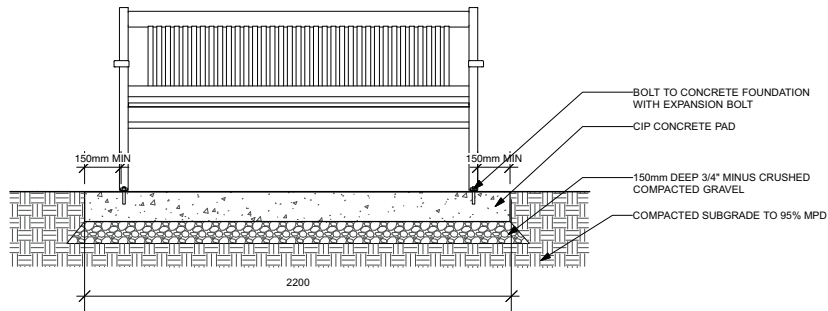
CITY TO COORDINATE FABRICATION OF TEMPLATES

STREET NAME CHARACTERS TO BE IN CENTURY GOTHIC WITH A MAXIMUM CHARACTER LENGTH OF
30CM, AND ALIGNED FROM OUTSIDE EXTREMITIES OF COLOUR BAND AS ILLUSTRATED

INSCRIPTION TO BE COORDINATED WITH LOCAL PUBLIC ARTIST

drawing no.		drawing title			
L008		COLOURED CONCRETE DETAIL			
scale	plot scale	date	revised		

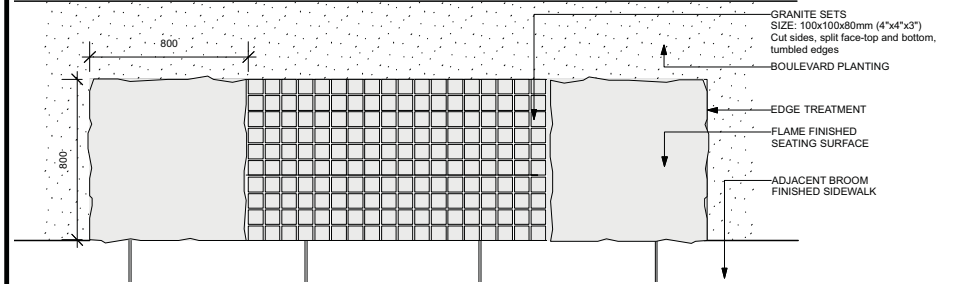
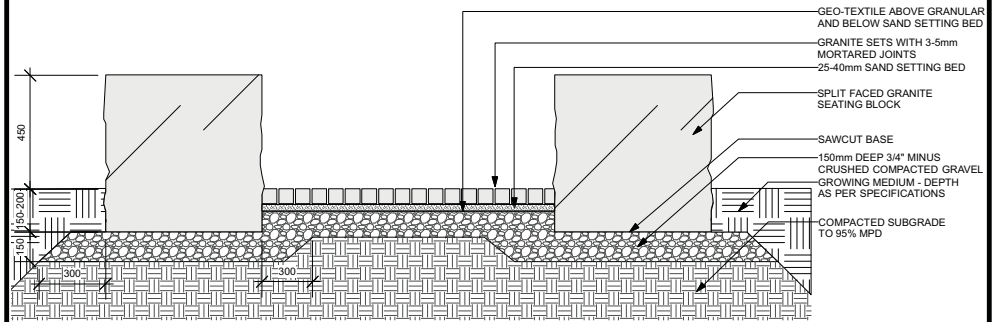
drawing no.		drawing title			
L009		STREET NAME SANDBLASTING			
scale	plot scale	date	revised		



5 Bench Detail
Scale 1:25



Victor Stanley RB-28



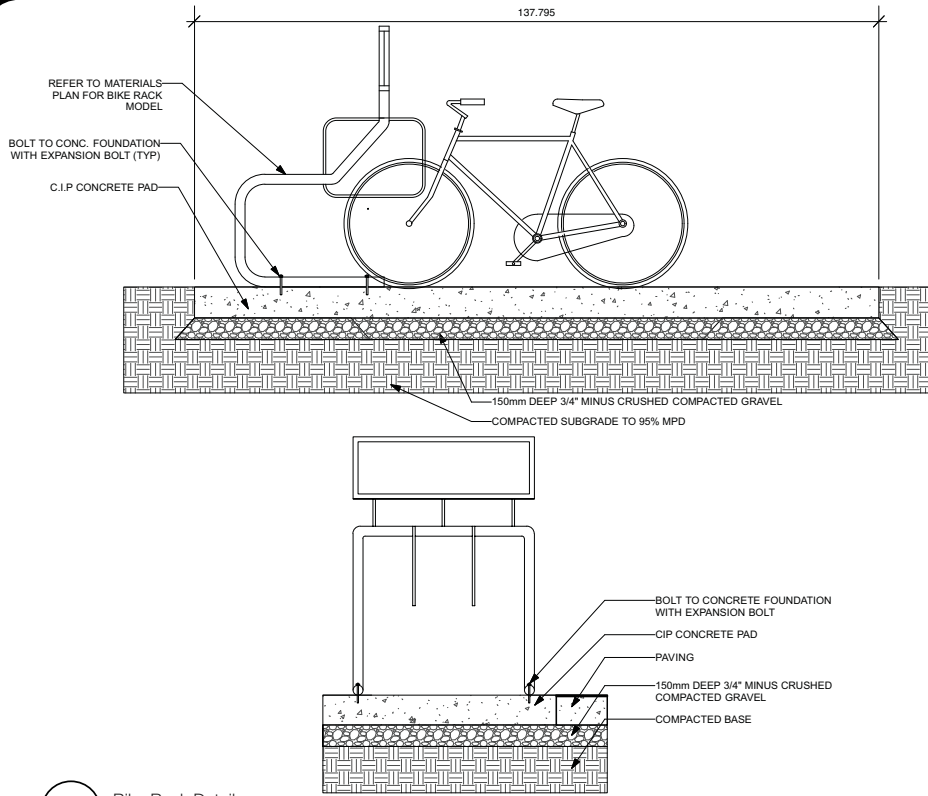
6 Granite Seating Detail
Scale 1:25



Granite Seat

drawing no.	drawing title				
L010	BENCH DETAIL				
scale	plot scale	date	revised		

drawing no.	drawing title				
L011	GRANITE SEATING DETAIL				
scale	plot scale	date	revised		

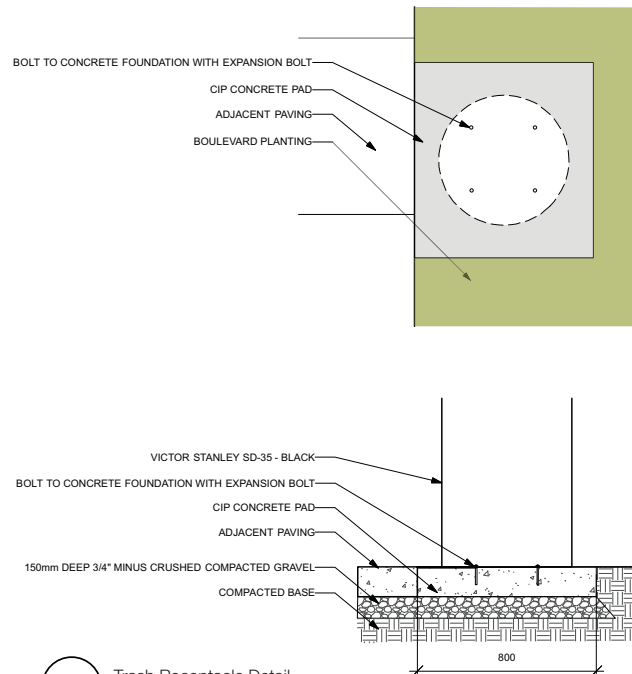


7 Bike Rack Detail
Scale 1:25



Creative Pipe Bike Rack - provided by C Media Outdoor Advertising Inc

drawing no.	drawing title			
L012	BIKE RACK DETAIL			
scale	plot scale	date	revised	



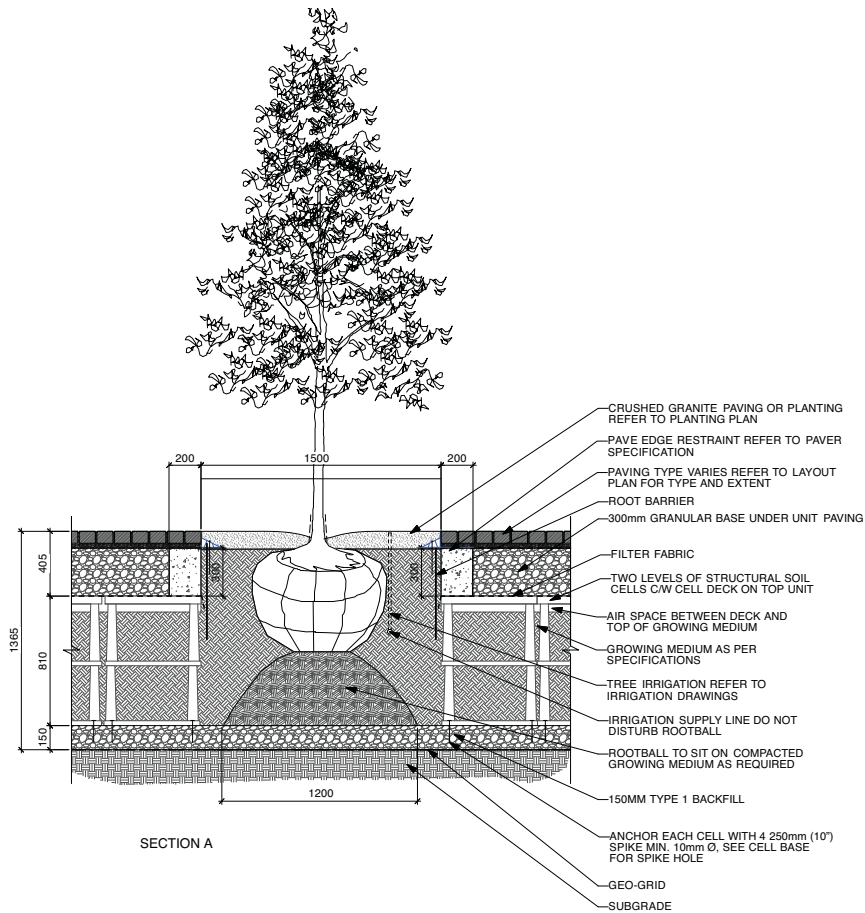
8 Trash Receptacle Detail
Scale 1:25



Victor Stanley SD-42 Litter Receptacle

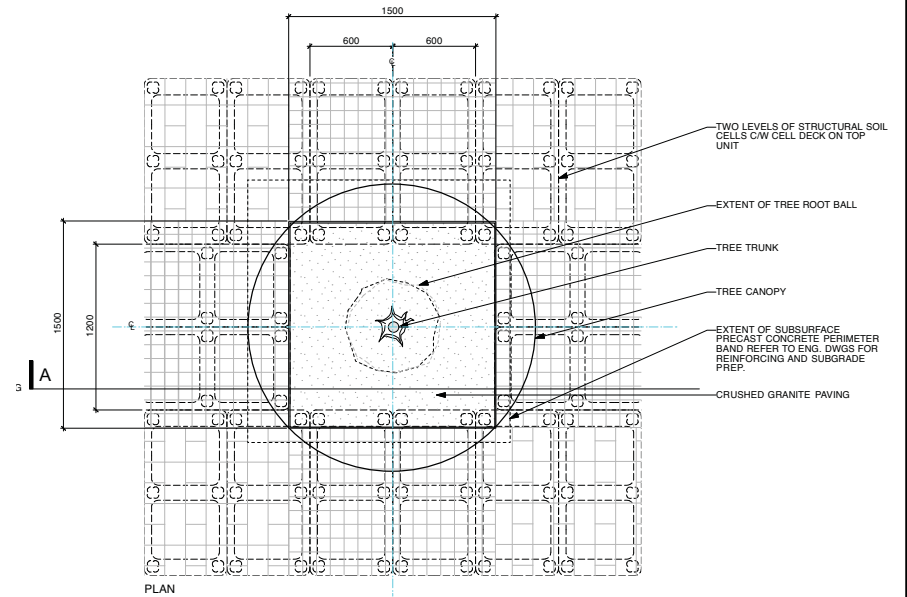
Note: Litter receptacle to include Rain Bonnet and side door opening

drawing no.	drawing title			
L013	LITTER RECEPTACLE DETAIL			
scale	plot scale	date	revised	



SECTION A

9 Structural Soil Cell in Plaza - Plan
NTS



PLAN

Notes:

1. Trees In Paved Areas To Be Planted Within Structural Soil Cell System Refer To Layout Plan For Extent.
2. 150mm Drainage Course And Geo-grid Drainage Mat To Line All Peripheral Sides And Bottom Of Soil Cell System.
3. Soil Cell System Shall Be 2 Units Deep To Ensure Adequate Soil Volume Of Growing Medium.
4. Refer to Detail 5/LW-501 for Unit Pavers Detail Over Structural Soil Cells.
5. Refer to Drawing LW-513 for Additional Soil Cell Details.

10 Structural Soil Cell in Plaza - Plan
NTS

drawing no.	drawing title			
L014	OPTIONAL SOIL CELL PLAZA PLANTING -SECTION			
scale	plot scale	date	revised	

drawing no.	drawing title			
L015	OPTIONAL SOIL CELL PLAZA PLANTING DETAIL			
scale	plot scale	date	revised	

drawing no.
L016

drawing title
STRUCTURAL SOIL BOULEVARD PLANTING DETAIL

scale plot scale date revised

NOTES:

THIS TREE PLANTING DETAIL IS FOR A LINEAR STREET WITH A CURB AND PARALLEL TO STREET FOR USE IN HARD SURFACE BOULEVARD AREAS.

ALL PLANTS & PLANTING ARE TO CONFORM TO THE B.C. LANDSCAPE STANDARD.

STRUCTURAL SOIL MATERIALS AND INSTALLATION SHALL CONFORM TO ALL APPLICABLE STANDARDS AND PROJECT SPECIFICATIONS.

PROTECT TREE FROM DAMAGE DURING TRANSPORT. TREE ROOTS NOT TO BE EXPOSED TO SUN OR FROST.

CONFIRM TREE LOCATION AGAINST ALL REQUIRED OFFSETS.

CONFIRM LOCATION OF UTILITIES. STREET TREE PLANTING PITS BE DUG BY HAND AS UNDERGROUND SERVICES MAY EXIST.

CONFIRM FREE DRAINING SUBSOIL.

IF REQUESTED BY CNV, PROVIDE IRRIGATION TO CNV REQUIREMENTS.

DO NOT CUT LEADER.

TREE GRATE (OR OTHER TREE PIT TREATMENT AT THE DISCRETION OF THE CITY OR AS PER SPECIFICATION, VERIFY REQUIRED MODEL AND DETAILS.

TREE TO BE AT CENTER OF HOLE IN TREE GRATE WITH THE TOP OF ROOTBALL TO BE 100mm BELOW BOTTOM OF THE GRATE.

FINISHED GRADE OF PLANTING, INCLUDING MULCH TO BE EQUIVALENT TO NURSERY GROWING GRADE OF TREE.

50mm DEPTH MULCH OVER PLANTING WELL. MULCH TO BE BACK FROM TRUNK A MINIMUM DISTANCE OF 800mm.

PROVIDE 900mm MINIMUM DIAMETER, 80mm DEEP WELL IN GROWING MEDIUM FOR FIRST YEAR OF WATERING.

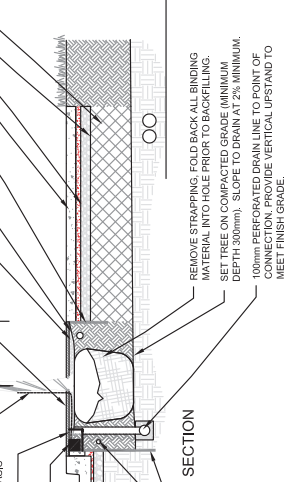
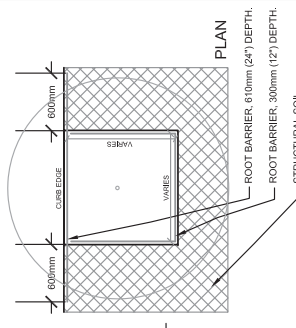
ROOT BARRIER, 300mm (12") DEPTH.

HARD SURFACE

COMPACTED BASE GRAVEL, MINIMUM 100mm DEEP

GEOTEXTILE FABRIC SEPARATION ON 600mm DEEP CONTINUOUS STRUCTURAL SOIL CHANNEL.

PROVIDE PLAN FOR EXTENT OF STRUCTURAL SOIL.



RW90 IN PVC CONDUIT (OFFSET 100mm BEHIND CURB)

ROOT BARRIER, 80mm (24") DEPTH.

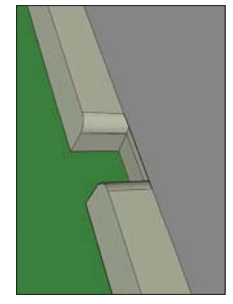
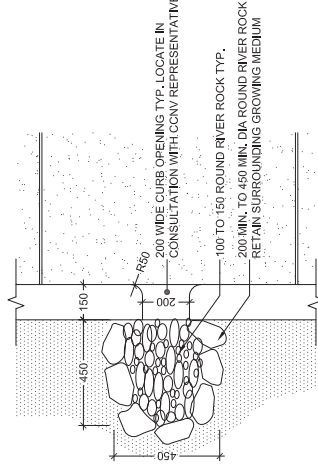
drawing no.
L017

drawing title
CURB CUT FOR BOULEVARD PLANTING

scale plot scale date revised

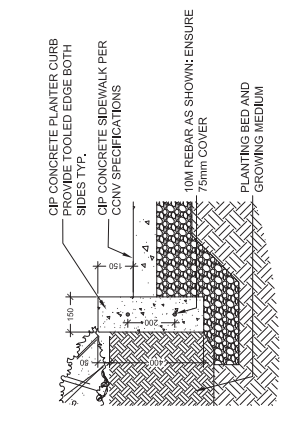
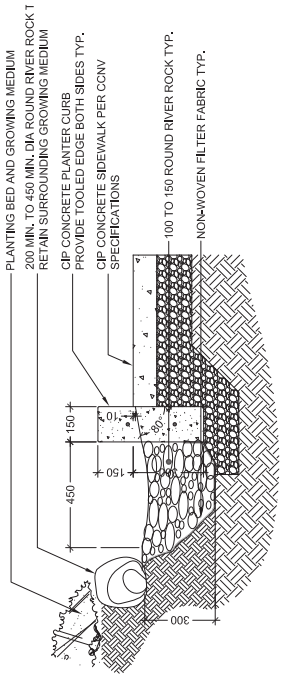
General Notes:

- Structural soil and geotextile fabric shall must be approved by CNV representative prior to casting of concrete.
- Layout drawings showing locations of control + expansion joints are required and must be approved by CNV representative. Control joints shall be staggered. Control joints to be min. 2000mm max, 3000mm o.c. Confirm in field during construction with CNV representative. Refer to ST-0917 for control joint details.
- Specifications: All components and workmanship conform to Specification Section Concrete Reinforcement Section 09200 and Cast In Place Concrete 09300
- Concrete: Type 10 Normal
- Cement Types: Type 10 Normal
- Concrete compressive strength @ 28 days: 35MPa
- Water/Cement Ratio: 0.45
- Air Entrainment: 3% to 8%
- Exposure Class: C-2
- Finish: All vertical concrete is architectural finish with consistent finishing and no exposed voids or imperfections.
- No exposed snap or form ties.



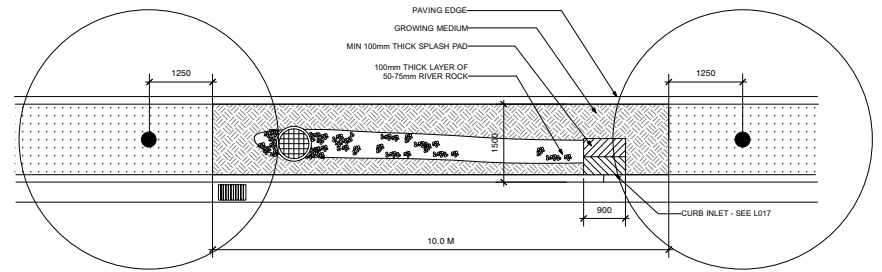
PLAN: WITH CURB CUT

PERSPECTIVE: CURB CUT

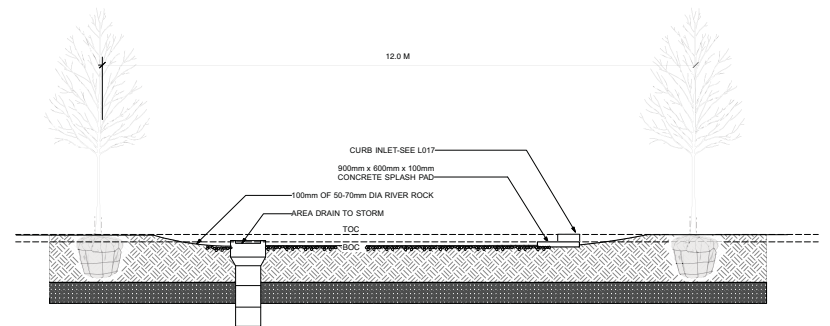


SECTION: WITH CURB CUT

SECTION: STANDARD CURB



11 Rain Garden Detail - Plan
 NTS



12 Rain Garden Detail - Section
 NTS

drawing no.		drawing title			
L018		RAIN GARDEN BOULEVARD DETAIL			
		scale	plot scale	date	revised
					-

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Resources

Kerr Wood Leidel - Civil Engineer

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[2] David Sucher "City Comforts: How to Build and Urban Village" City Comforts. 1995

[3] Jan Gehl. Life Between Buildings. Arkitektens Forlag. 1971.

[4] Allan Jacobs " Great Streets" 1993. First MIT Press