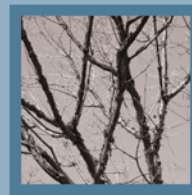
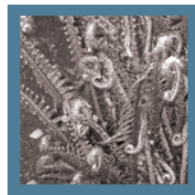


South Island Highway (19A) Conceptual Design - Phase 2



City of
**Campbell
River**
Engineering Services



June 2005



Lanarc Consultants Ltd.
Richard Drdul Community Transportation Planning
Highland Engineering and Surveying
AMEC Americas Ltd.

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Foreword

This document represents the recommendations for long-term improvements to the South Island Highway (19A) and adjacent public lands in the City of Campbell River. Please see the Project Introduction for Limits of the Study Area.

This report, after review by the South Island Highway Liaison Committee and Staff, will be forwarded for Council consideration. Refinements to the document may follow prior to final adoption by Council.

Comments, or queries about the status of the project should be directed to the City of Campbell River, in the name of:

Ron Neufeld, P.Eng.

ron.neufeld@dcr.ca

South Island Highway Liaison Committee Motion

At the April 12, 2005 Meeting of the South Island Highway Liaison Committee, the following motion was moved by Theo Piercy, and seconded by Ken Barth:

The South Island Highway Liaison Committee endorses the plan as amended and requests that it be put forward to Council for their review and consideration.

Approved unanimously.

Acknowledgements

It is a rare opportunity as consultants to be given a mandate to prepare concepts for 6.5 kilometres of waterfront – especially when the waterfront is as spectacular as that offered by Campbell River. The authors wish to recognize and thank the many organizations and individuals that provided their time and experience to this project – listed below, in no order of priority:

Lanarc Consultants Ltd.

David Reid, FCSLA, Landscape Architect, Planner, Principal
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Councillor Mary Ashley (Alternate)

Ken Barth

Steve Januszewski

John Clark

Theo Piercy

Bill Cosulich

Keith Price

Phil Skognes (staff)

Ron Neufeld (staff)

Sean Roy (staff)

Support Staff: Anneke Young

In particular, we would also like to express our gratitude to the volunteer members of the South Island Highway Liaison Committee – who gave freely of their time and expertise to help us understand and find the appropriate solution for Campbell River.

We also appreciate the many responses we received from the general public, both at the workshops and by writing in response forms and letters.

Thank you.

Introduction

The Project

Improvements to Highway 19A in Willow Point are now under construction. What improvements should be made to the rest of Highway 19A in the long term?

How do we provide a safe, beautiful, sustainable and cost effective transportation and waterfront corridor – a source of pride and economic stimulus for Campbell River?

The City of Campbell River has assembled a consulting team and liaison committee to create a concept plan for the remainder of the Highway 19A corridor, including two areas:

1st Ave. to Hilchey

and

Willow Creek to Jubilee Parkway

The project is focussed on public land in the corridor . The project limits are:

Public Highway right of way

- Adjacent road stubs
- Public parks
- City lands in the corridor

Private lands are not a part of the project.

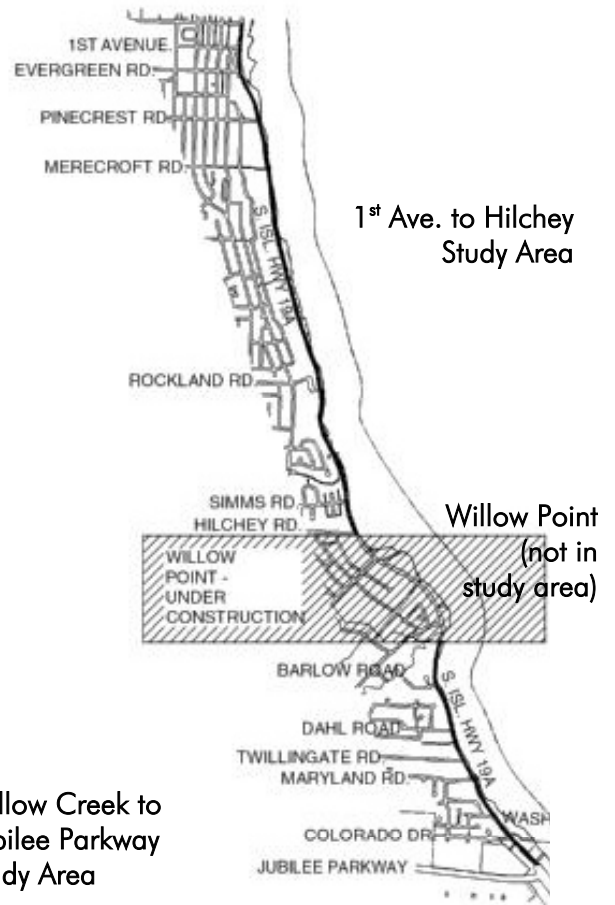


Figure 1: Extent of the South Island Highway Concept Plan Phase 2 Project.

Photo Credit: Lanarc Consultants Ltd.



Figure 2: Existing South Island Highway in Campbell River .

Project History

The primary gateway from the South Island into Campbell River is the waterfront highway known as the South Island Highway (19A). The majestic ocean views and accessible beaches create a strong draw for existing and new residents in the corridor. They also attract a growing number of tourists every year.

Despite its natural attractions, the Island Highway corridor is dominated by the automobile. With the exception of the Seawalk, pedestrian, cycling and transit facilities are minimal. Roadway efficiency and safety is being compromised by a lack of crosswalks, turning lanes and traffic controls.

In recognition of the need for improvements to the area, the City completed guidelines in 1989 and 1993. In 1996/97 the City established the Willow Point Highway Committee, and prepared conceptual plans for improvements between Barlow and Hilchey Roads. Since then, private developments along that section have been required to comply with the objectives set out in the plan.

In 2003 the Island Highway between the City's south boundary and the Quadra Island Ferry terminal was devolved from the Province to the City, placing the financial burden for upgrading the roadway on the shoulders of the citizens of Campbell River.

In late 2003, Council and adjacent property owners approved a Local Improvement Program for the upgrading of the Willow Point section of the Island Highway. This is now under construction, with the objective of completion by mid-2005.

In recognition that the Willow Point segment is the first phase of a larger project, Council approved a Phase 2 plan that will produce conceptual drawings for the remainder of the highway from 1st Ave to Hilchey, and from Willow Creek to the Jubilee Parkway.

Lanarc Consultants is leading a team of planners, landscape architects and engineers to complete the South Island Highway Concept Plan – Phase 2.

Process

The South Island Highway Liaison Committee has been formed to identify opportunities and provide the community with a direct link to the design team. The consultants worked closely with them.

In addition, two public events were held to encourage input from residents and businesses along the corridor, and from the general public.

The input from the committee and the entire series of workshops has been considered in the final recommendations, and is made available to Council through this report.

Products

This Report, with accompanying drawings and appendices, includes the following products:

1. A Design Brief: summarizing the recommendations.
2. Plan Drawings: Appendix A and separate full size drawings illustrate the concept.
3. Cost Estimates: Appendix B provides cost estimates for the roadway, utility and parks improvements.
4. Outside Funding Opportunities: Appendix C lists key senior government and other funding programs that may apply.
5. Roundabout Discussion: Appendix D provides more detailed information on the performance of Roundabouts at roadway intersections.
6. Public Comments Received: Appendix E is a full record of all public input and comments received related to this project.
7. Slide Show: Appendix F provides a record of the summary slides provided to Council.
8. Visualizations: Appendix G compiles the 'before and after' visualizations created for the project.

In general, the products are intended to provide a clear vision and support a funding program for implementation of the project over the foreseeable future.

Design Elements

The study reviewed issues and options, for items such as:

Roadway Elements

- Number of traffic lanes
- Speed limit
- Driveway access
- Left turn provisions
- Amount of landscape median
- Roundabouts or traffic signals
- Bicycle lanes
- Bus stops
- Sidewalks
- Curbs
- Crosswalk spacing
- Boulevards
- Lighting

Utility Elements

- Upgraded Sewer Force Main
- Upgraded Water Main
- New Storm Sewers and Stormwater infiltration
- Undergrounding of Overhead Lines

Park Improvements

- Waterfront habitat
- Views of water and ships
- Seawalk
- Beach access points
- Connecting pathways
- Separation from traffic
- Parking
- Trees and planting
- Park lighting
- Public art and amenities
- Signage systems

Design Recommendations

Vision

Campbell River, as BC's newest City, is a 'gateway to the wild'. Its dramatic location at the north end of the Strait of Georgia make it the point where many tourists and residents leave the perceived 'settled' area of the South Island and South Coast, and enter the 'wild' area of the North Island and BC/Alaska coastline.

The South Island Highway and adjacent shoreline (the South Campbell River Waterfront) act as Campbell River's 'gateway to the wild' for wheeled and pedestrian traffic. Motorists arriving from the south are re-united with sweeping vistas of ocean for the first time since the Courtenay/Comox area. For local residents and tourists alike, the waterfront parks and seawalk provide access and visual connection to the foreshore, Discovery Passage and Discovery Islands. The view is filled with reminders of the 'gateway to the wild' – including fishing activity, recreational, industrial and cruise ship marine traffic, views to Mainland wilderness, and abundant eagles, seabirds and marine life.

The vision for the South Campbell River Waterfront is to celebrate its role as 'Gateway to the Wild', and as public lands in the area are redeveloped to accommodate utility and transportation improvements, to create a built environment that complements and is equal in attraction to the spectacular natural setting.

Transportation Improvements

Issues and Objectives

The key issue considered in developing plans for the South Island Highway is what the function of the road will be. Should it be a through route for traffic, or should it be a destination unto itself? Should traffic be given priority or should people be given priority?

Feedback from residents, businesspeople and other members of the community was almost unanimously in favour of the South Island Highway becoming a "people place" rather than a "traffic route." One resident described it well by saying that it would be a "go to" place rather than a "go through" road.

Based on this feedback, the following transportation objectives were established for the South Island Highway:

- Accommodate all modes of travel — pedestrians, cyclists, in-line skaters, skateboarders, persons in wheelchairs, automobiles, buses and delivery vehicles.
- Maximize road safety and personal security for all users, particularly pedestrians and cyclists.
- Accommodate traffic travelling to and from locations along the South Island Highway.

Vehicle Lanes and Capacity

The South Island Highway is currently a two-lane road — one travel lane in each direction. Left turn lanes are provided in only a very small number of locations at key intersections.

The proposed cross-section is also a two-lane road, but with the addition of left turn lanes/bays at driveways and intersections. Based on traffic forecasts from the City's *Master Transportation Plan*, design hour traffic volumes are 1,000 vehicles/hour southbound and 500 vehicles/hour northbound during the Year 2023 PM peak hour. If adequate left turn provisions were provided, these traffic volumes are well within the capacity of a two-lane road given appropriate intersection treatments.

Figure 3 illustrates the proposed road cross-section. Key features of this cross-section include:

- Travel lanes 3.3 m wide. This width is an adequate lane width to accommodate forecast traffic volumes, and is consistent with Transportation Association of Canada (TAC) guidelines (*Geometric Design Guide for Canadian Roads*). Typical travel lane widths in B.C. communities vary from 3.0 m to 3.6 m.
- Bicycle lanes 1.4 m wide plus a 0.3 m gutter, for a total width of 1.7 m to the curb face. This is 0.2 m more than the 1.5 m minimum dimension indicated by TAC guidelines.
- A center median island 4.0 m wide. The median island would be discontinued at low-volume residential driveways to provide short left turn bays, and at intersections and higher-volume commercial and multi-family residential driveways to provide longer left turn lanes.
- The total pavement width either side of the median is 5.0 m, which will provide sufficient width for emergency vehicles to pass stopped vehicles.

Image Credit: Lanarc Consultants Ltd.

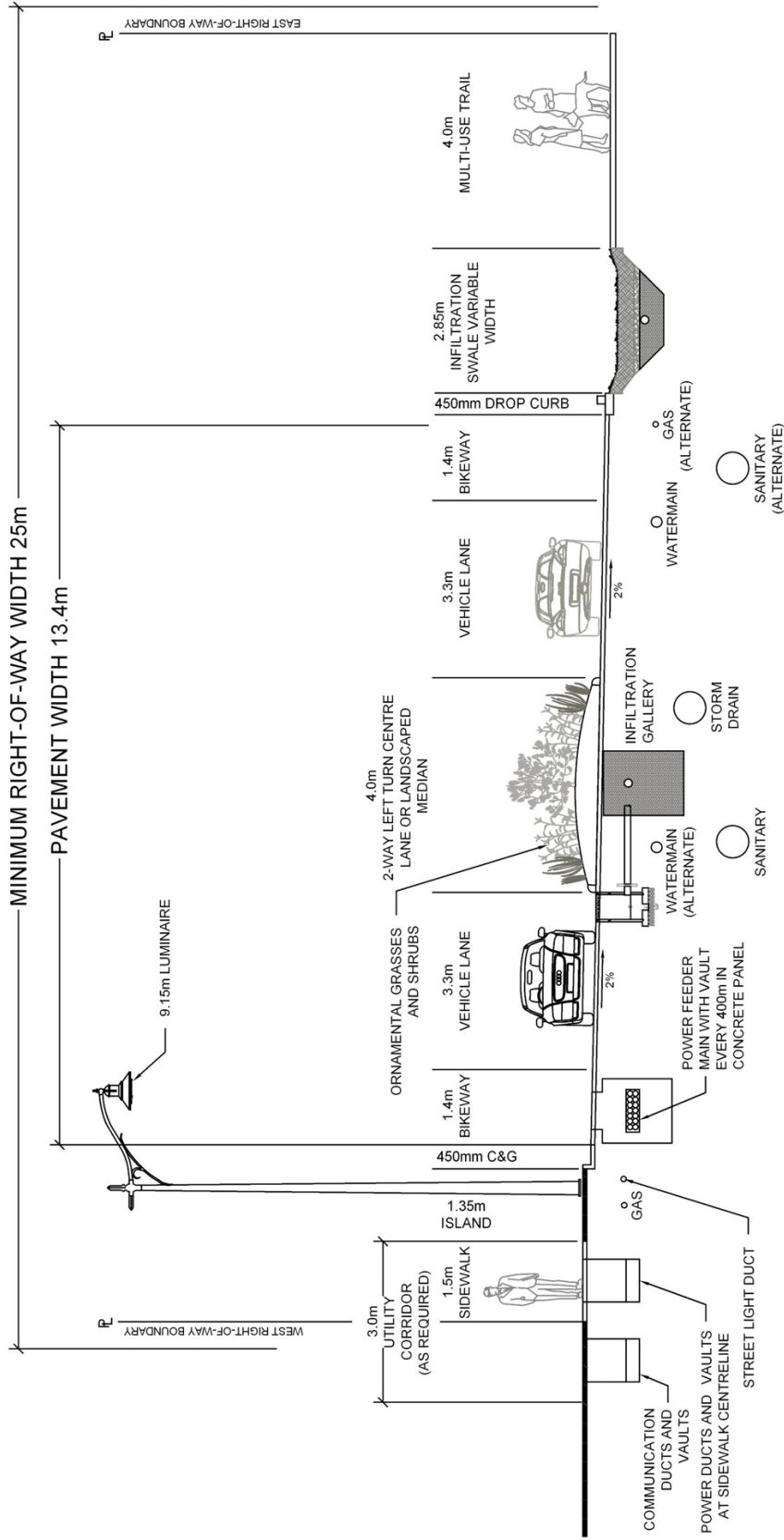


Figure 3: Proposed Section: South Island Highway in Campbell River .

Intersections

Image Credit: Richard Drdul



Figure 4 — Roundabout

The majority of intersections along the South Island Highway will remain unsignalized intersections with stop sign control on the side street. At major intersections with higher side street volumes, stop sign control will not provide adequate intersection capacity, and consequently alternatives must be considered. The preferred form of traffic control for these intersections is roundabouts.

As described in detail in Appendix A, safety is the primary reason why roundabouts are the preferred form of traffic control for major intersections. Roundabouts result in fewer crashes and less severe crashes than traffic signals or unsignalized intersections — crashes are 50% less, injury crashes are 75% less, and fatalities are 90% less. In addition to the significant safety benefits, roundabouts also reduce delays to traffic and pedestrians, provide increased intersection capacity, reduce traffic noise and vehicle emissions, and enhance the appearance of the road.

Roundabouts are proposed at two major intersections — Rockland Road and Hilchey Road — as an alternative to traffic signals. Analysis of forecast traffic conditions (based on forecasts from the City's *Master Transportation Plan*) indicates that roundabouts at these intersections would operate at acceptable levels of service, with maximum volume/capacity ratios of less than 0.80 and 0.70 respectively. A roundabout could also be implemented at the Jubilee Parkway intersection, where the maximum volume/capacity ratio would be 0.61.

Roundabouts can be implemented at these intersections at any time. Given that the Hilchey Road and Jubilee Parkway intersections are already signalized, it would be best to implement a roundabout at Rockland Road first. When the Hilchey Road intersection (and optionally Jubilee Parkway) is converted to a roundabout, the traffic signal system from the Hilchey Road intersection could be re-used at a new signalized intersection elsewhere in the City.

Roundabouts are also proposed at Rotary Park and at the Pinecrest Road right-of-way. Roundabouts in these locations would provide safety and speed reduction benefits, as well as provide U-turn opportunities for motorists on the South Island Highway.

The only location not suitable for a roundabout would be at Second Avenue, where the traffic volumes would be too high to be accommodated with a single-lane roundabout. Although a larger roundabout could be used, development adjacent to the intersection would likely preclude a roundabout option. Consequently, the appropriate long-term option for the Second Avenue intersection is traffic signals.

Speed Limit

Currently, the posted speed limit on the South Island Highway is 60 km/h. This speed limit reflects the previous function of the road as the primary highway connection to the South Island. In response to the objective of maximizing safety, it is proposed that the speed limit be reduced to 50 km/h — the same speed limit as on other urban roads in Campbell River.

Although this speed limit reduction could be implemented at any time, the most appropriate time to reduce the speed limit would be in conjunction with changes to the roadway.

Otherwise, if the speed limit is reduced without any changes to the character or dimensions of the roadway, it would likely have little effect on traffic speeds and might only create an enforcement problem.

Left Turns

An important design feature of the plans for the South Island Highway is the provision of left turn lanes and bays at intersections and driveways.

At side street intersections and major commercial and multi-family driveways with significant volumes of left-turning vehicles, full left turn lanes are required to avoid left-turning vehicles obstructing the single lane of through traffic.

At most driveways along the South Island Highway, long left turn lanes are not required as the numbers of left-turning vehicles are relatively low. These are typically driveways for single-family homes. At these driveways, left-turning vehicles will be accommodated in left turn bays created with gaps in the median island, as illustrated in Figure 5. The gaps are offset from the driveway so as to enable a vehicle turning into the driveway to stop in the center of the road without obstructing the single lane of through traffic, as illustrated in Figure 6.

Driveway Access Management

The plans for the South Island Highway maintain right turn access to/from all driveways, and left turn access to/from most driveways. Only in cases where there are two or more driveways to a single-family property would left turn access be limited to one driveway only. As properties are redeveloped, the City should work with property owners to consolidate and reduce the number of driveways. Not only will this improve safety, it will also mean that some gaps in the median can be eliminated, thereby increasing the amount of median and landscaping.

In some locations, single-family driveways are accessed via a one-way frontage road adjacent the South Island Highway. A

Image Credit: Richard Drdul



Figure 5 — Example left turn bay at gap in median.

Image Credit: Lanarc Consultants Ltd.



Figure 6: Plan of gap in median for left turns.

left turn bay provides for northbound access to each frontage road.

On-Street Bicycle Provisions

Currently, cyclists on the South Island Highway are accommodated on paved shoulders, which are in effect bicycle lanes without curbs. The South Island Highway is an important route for commuter cyclists as well as recreational cyclists, and consequently the plans for the South Island Highway maintain on-street bicycle facilities in the form of bicycle lanes in each direction.

Although cyclists can also use the Rotary Seawalk, it is important that cyclists continue to be accommodated on the road. For many cyclists — particularly commuter cyclists and experienced recreational cyclists — the road is a more attractive facility and the preferred place to ride. Cycling on the road is faster, and during times when the Seawalk is well-used, it is safer. A study in the U.S. found that cyclists riding on a pathway adjacent to a road are 2.6 times more likely to incur an injury requiring hospitalization than if they were riding on the road.

Bicycle lanes have been designed in accordance with Transportation Association of Canada (TAC) guidelines. Bicycle lanes are 1.4 m wide plus a 0.3 m gutter, for a total width of 1.7 m to the curb face. Although this exceeds TAC's minimum 1.5 m dimension, because cyclists do not ride in the gutter, it is necessary to ensure that cyclists have at least 1.4 m of clear roadway within the bicycle lane. Catchbasins and utility covers are located within the gutter or in the roadside — not in the bicycle lane. The only exception to this is potential manhole covers for widely-spaced BC Hydro manholes. If these fall within the bicycle lane, they should be placed flush, and surrounded with cast in place concrete to ensure an easy roll-over by bicycle traffic.

Rotary Seawalk

The Rotary Seawalk is an important feature of the South Island Highway corridor. The Seawalk is a multi-use pathway which connects Willow Point and Hidden Harbour, and also extends south of Willow Point to Maryland Road. The plans for the South Island Highway include improvements to the existing Seawalk, as well as extending the Seawalk to Jubilee Parkway.

The existing Seawalk is characterized by several significant design deficiencies, which have been addressed in the plans for the South Island Highway:

- **Width.** Although the Seawalk varies in width, in many locations the existing width is approximately 2.5 to 3.0 m.

Photo Credit: Lanarc Consultants Ltd.



Figure 7: Existing Rotary Seawalk in Campbell River .

This is a narrow width which increases the potential for conflicts between pathway users during times when the pathway is well-used. Consistent with Transportation Association of Canada (TAC) guidelines, recent practice in Campbell River (South Dogwood Multi-Use Pathway) and practice in other municipalities, the Seawalk will be improved by widening it to a width of 4.0 m.

- **Alignment.** The existing Seawalk meanders — sometimes arbitrarily — with the result that there are numerous sharp horizontal curves along the pathway. Sharp curves create the potential for conflicts as a result of cyclists and in-line skaters who are not able to negotiate the curves at higher speeds. The Seawalk will be re-aligned to incorporate larger horizontal radii which meet or exceed TAC guidelines of a minimum 33 m radius.
- **Clearance.** There are currently numerous objects immediately adjacent the Seawalk, where they are a hazard to pathway users. These include utility poles, rocks, benches and other objects more than 150 mm in height. The Seawalk will be realigned and objects relocated to maintain a minimum horizontal clearance of 0.6 m, consistent with TAC guidelines.
- **Sight distances** are obstructed by walls and other objects adjacent the pathway, such as at Rotary Beach Park and Hidden Harbour. Obstructed sight distances can cause conflicts between pathway users who do not see each other far enough in advance to avoid each other. Options to address these sight distance issues include realignment of the Seawalk, removal or modification of the obstruction, and warning signs.

Image Credit: Richard Drdul

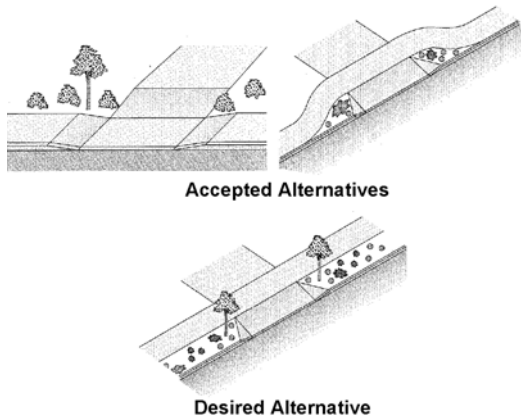


Figure 8 — Driveway configurations.

Image Credit: Richard Drdul



Figure 9 — Tactile treatment at curb drop .

Sidewalks

A continuous sidewalk will be provided on the west (upland) side of the South Island Highway. The sidewalk will be 1.5 m wide, and will be separated from the road by a 1.35 m boulevard, assuming no tree planting in this boulevard.

Persons with disabilities and persons with strollers and other wheeled devices will be accommodated with curb drops at all intersections. Driveways will be configured so that the crossfall on the sidewalk does not exceed 2%, to avoid creating problems for persons in wheelchairs and persons with wheeled devices, as illustrated in Figure 6. To accommodate persons with visual impairments, curb drops and driveways will be identified with ridges in the sidewalk parallel with the direction of travel of pedestrians, as illustrated in Figure 7.

Crosswalks

Pedestrian safety will be enhanced with marked crosswalks located at major intersections and several “mid-block” along the South Island Highway. These mid-block locations are where there is or where there is expected to be a significant number of pedestrians crossing the road, and are generally located at parks, parking lots and other key destinations.

Appropriate treatments for crosswalks on the South Island Highway will be determined by City staff on a location-specific basis. It is anticipated that as numbers of pedestrians increase, crosswalks will be enhanced incrementally with various treatments. These include:

- **Median islands.** Most crosswalks along the South Island Highway will incorporate median islands, which increase pedestrian safety by reducing the exposure of pedestrians to traffic, and by providing a refuge area in the center of the road where pedestrians can stop and wait to cross the remainder of the road.
- **Flashing lights** can be used at crosswalks with higher numbers of pedestrians, to alert motorists to the presence of pedestrians in the crosswalk. Flashing lights are located at roadside and/or overhead, as illustrated in Figure 8. The flashing lights are activated by pedestrians when they begin crossing the road, either by pushbuttons or by automatic detection.
- **Raised crosswalks** should not be used along the South Island Highway, to avoid creating congestion during peak periods of traffic.

It is important to note that no additional crosswalk treatments are required at roundabouts, where marked crosswalks are the most appropriate treatment due to the slow speeds of traffic at roundabouts.

Connecting Stairs at Upland Ridge

Pedestrian connections will be pursued between the South Island Highway and the upland ridge in three locations along public rights-of-way:

- Pinecrest Road right-of-way
- Merecroft Road right-of-way
- Right-of-way at 844 South Island Highway

Because of the steep terrain in these locations, the pedestrian connections will be stairs, with landings at regular intervals to provide an opportunity for people to rest while climbing the stairs.

Provision for adequate privacy and security of adjacent private properties should be part of the detail design and operations planning prior to these existing public right of ways being improved.

Image Credit: Richard Drdul



Figure 10 — Flashing lights at crosswalk, Nanaimo .

Image Credit: Richard Drdul



Figure 11 — Reduced-width pull-out, Gainesville FL

Transit Facilities

The South Island Highway is used by three transit routes providing service as far south as Oyster Point. Existing bus stops along the South Island Highway will be upgraded to incorporate the following features:

- **Designated pull-outs.** Where sufficient right-of-way is available, pull-outs will be 3.0 m wide, which will permit buses to pull off the road without obstructing the bicycle lane. Where there is not sufficient right-of-way, pull-outs will be 1.3 m wide, which means that buses will fully obstruct the bicycle lane. Although not the preferred pull-out configuration, this is an acceptable interim condition until such time as redevelopment permits the pull-out to be widened to 3.0 m. Figure 9 provides an example of a reduced-width pull-out where buses obstruct the bicycle lane.
- **Hard surface.** To accommodate persons with disabilities and to avoid discomfort for all passengers, hard surfaces will be provided where passengers board and alight from buses.
- **Amenities,** such as shelters, seating, illumination and passenger information.

The locations of some bus stops will be adjusted to improve pedestrian access and safety. Generally, bus stops are located on the far sides of intersections, close to crosswalks.

Parking

Currently there is a considerable amount of “informal” parking available along the east (water) side of the South Island Highway, on the shoulder of the road. Plans for the South Island Highway will eliminate much of this parking, and consequently the plans include replacement off-street parking in several locations:

- Small off-street parking lots within public right-of-ways on the west (upland) side of the road. These include the Pinecrest Road right-of-way and existing parking on the Mercroft Road right-of-way.
- A larger off-street lot on land owned by the City on the northwest corner of the Rockland Road intersection.
- Off-street parking lots within park areas on the east (water) side of the road. These include McCallum Park, the Ken Forde boat ramp, and north of Simms Creek.
- Angle parking along the east side of the road or in off-street parking lots in several locations. Angle parking on the water side will be configured as ‘drive-in’ parking, so that passengers face the view, and can enjoy it even in poor weather. Some parking on the upland side may be configured as “back-in” parking to also allow passenger access to the water view, and also to reduce the safety problems associated with conventional angle parking. As illustrated in Figures 12 and 13, back-in angle parking enables a motorist in a parking space to see approaching vehicles and cyclists before pulling out onto roadway. Back-in angle parking is used in many cities in Canada and the U.S.

Image Credit: Richard Drdul

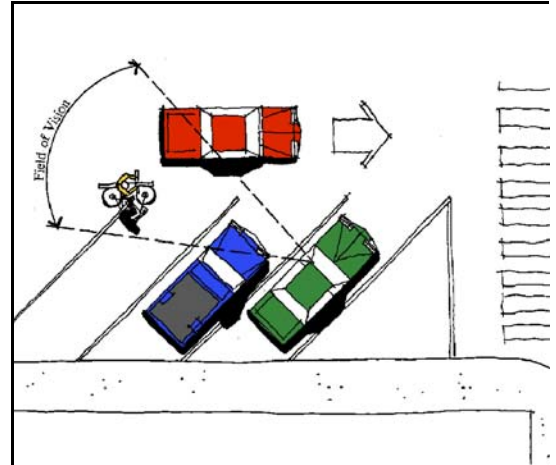


Figure 12 — Back-in angle parking

Image Credit: Richard Drdul



Figure 13— Back-in angle parking, Salt Lake City UT

Utilities and Lighting Improvements

Issues & Objectives

The project area is serviced with municipally supplied water and sanitary sewer. These were installed around 1970 and in many areas are too small in size for existing and proposed developments in the corridor or have reached the end of their service life.

Along the project corridor, storm drainage is collected and removed through ditches that parallel the roadway and discharge to the ocean through intersecting culverts. This system is a legacy of the highway when originally constructed and managed by the Provincial Government through The Ministry of Transportation. The roadway is also intersected in a number of places with pipes carrying storm drainage from the urbanized upland areas to the west. All these drainage pipes discharge to the ocean with out any provision for the removal of deleterious materials contained within the water.

There are also overhead power, telephone and cablevision distribution systems. These are generally located on the west side of the existing roadway on poles. For parts of the project length an existing natural gas system is located immediately adjacent to the west property line.

The construction of the new roadway and streetscape will necessitate the reconstruction of most of these utilities. They will each require a corridor for their placement that will not interfere with other underground utilities as well the surface works. Consideration has to be given for the locations of the utility access points that will not interfere with the safe passage of traffic. This all has to fit within a corridor with a width of 20-25 meters.

Undergrounding of Overhead Lines

The undergrounding of the overhead power, telephone and cablevision lines will require the construction of a complex system of duct banks, concrete vaults and concrete and fiberglass reinforced plastic service boxes. For the power service there is required to be space set aside on adjoining property corners for transformer pads.

Photo Credit: Lanarc Consultants Ltd.



Figure 14: Visualization of Undergrounding of Overhead Power Lines .

The project corridor has also to carry the high voltage transmission power conductors that support the lower voltage distribution system. A tentative location for the high voltage transmission ducts is under the west bicycle lane. This facility would have concrete vaults spaced about every 400 m. To

make these passable to cycling traffic, the vault lid (manhole cover) should be placed in a panel of cast in place concrete the width of the bicycle lane. It may be desirable, as an option, to locate this duct bank under or beside the local power distribution system.

A separate line of power duct banks is required for power distribution. These must be separated by a minimum of 900mm from the street lighting duct. For this reason it is proposed that power distribution duct banks and pull boxes be centered in the sidewalk alignment on the west side of the right of way.

Between the power utility and the property uses is located the telephone and cablevision service. Their space requirements are less stringent than that for the power service but they require 1.0-1.5 meters width. Where adequate width in the existing right of way is not provided, a utility easement of 1.5 to 3 meters should be negotiated with property owners to the west of the existing road right of way. Tel/Cable Utility location in this easement should allow for replacement of existing hedges, fencing or other privacy treatments. Utilities in this area should also ensure that their surface boxes are set appropriately with respect to landscape grades and feathering in this roadside zone. Disturbed landscape in this area will require replacement.

All the duct systems will have spare conduits installed with them to provide for future service requirements and for replacement of damaged conduits.

Priority is given to the location of the power and communication utilities due to their size, complexity, lack of flexibility for location and cost. The cost for this group of utilities is by far the most expensive of all the utilities.

South of the Willow Creek Bridge the telephone communication utility is currently installed underground along the west side of the project corridor. No local distribution service is installed.

Transformer Locations and Pull Box Locations

Transformer Pads are typically located at a 1.5 meter offset from a property line on the street side. For the large transformers that service a multifamily or apartment complex their space requirements are a 4m by 4m square. These can be on public or on private property but contained within a utility right of way. There may be some opportunities that arise during the detail design phase to put these on in utility rights of way on private property.

Pull boxes or vaults need to be provided for both telephone and power utilities at about 300 meter intervals. These can be

located in a paved area but they do require access on occasion. Preferred locations are in a boulevard or in sidewalks but not in driveways. Conduits are laid between the pull boxes and from the pull boxes to service boxes and to transformer pads

The service boxes for the three power and communication utilities are usually clustered at adjoining property lines.

Power/Communications Services on Private Property

All of the existing homes and most of the multifamily homes fronting the roadway receive power and communication services through overhead services from the existing pole line in the right of way. The connection to the building is usually to a mast located on the side of the building. The conversion process for the single-family home can be through the reconstruction of the meter entrance to the building or simply by extending the service ducts up the side of the building to the mast and reconnecting the conductors. The route for the underground conductors across the property is often through landscaped areas and driveways that will require restoration. Each connection is unique and it is recommended that during the design process for the service conversion an experienced licensed electrician is retained to provide advice for this work. Connections to multifamily units will require extensive reworking of the service entrance due to the large number of conductors. Commercial establishments will need higher voltage power service connections that may require the use of more expensive and larger transformers than what are required for residential use.

Sanitary Utility Upgrade

The sanitary sewage collection system south of the Willow Creek Bridge is undersized to carry the proposed flow from the anticipated growth of the city and from the Area D of the Regional District of Comox Strathcona should it choose to discharge to the City of Campbell River sewer system. All service connections should be transferred to the new sewer main and the old sewer main abandoned.

The sanitary sewage collection system north of Hilchey Road is also undersized up to Lift Station No. 7 located at 1550 S. Island Highway. From this point north the gravity system according to McElhanney Consulting Services Ltd. is adequate in size but Lift Station No. 7 and the forcemain is severely inadequate in capacity. The sewer forcemain and the lift station will be replaced as soon as funding is obtained. This will most likely happen before the reconstruction of the project corridor.

It is recommended that the vertical and horizontal alignment of the forcemain be reviewed with respect to the requirements of the proposed utilities particularly where the forcemain is crossed with water and storm drainage utility mains and services.

The alignment of the existing sanitary sewer system parallels the west property line at about a 3-5 meter offset. The alignment for the replacement sewers should be parallel to the existing roadway but east of the current alignment to permit the future utilization of the western part of the roadway alignment for power and communication utilities and services. The forcemain should be located in the eastern side of the roadway cross-section to reduce the number of conflicts with the service connections.

Water Utility Upgrade

The existing water distribution system in the project corridor is at the end of its service lifetime and will require replacement. The existing watermain is generally located 2-3 meters off the west property line and will interfere with the location of future power and communication mains and services. It is recommended that the replacement water main is located at the east side of the proposed roadway unless this location is occupied by the sewer forcemain. It is desirable that the watermain is located 3 meters horizontally from and 0.45 meters vertically above any sewer or drain main. The relationship between water and sewer alignments should be reviewed at the time of detail design.

The water services to many of the adjacent properties will require upgrading in size to serve the domestic and sprinkling demands of any lands that could be redeveloped in the future.

Gas Upgrade

Terasen Gas is the utility that supplies natural gas to the properties in the project corridor. The gas line is located at an offset of about 1 meter from the west property line. Gas is not currently available south of the Willow Creek Bridge between the bridge and Barlow Road. Two options should be considered at the time of service extensions or highway detail design:

Option 1) gas is located or relocated to the east side of the project corridor to provide space for the more expensive and less flexible power and communication service to be located on the west side.

Option 2) As an alternate to the east side location, the detail design should consider the feasibility of locating the gas main in the boulevard between the west side curb and sidewalk. This location may be suitable since no trees are proposed for this grass strip, and if proper setbacks from hydro utilities can be maintained.

Drainage Utility Upgrade

Photo Credit: Lanarc Consultants Ltd.



Figure 15: Infiltration Swale (deeper than proposed at Campbell River), Maple Ridge, BC .

The project corridor is currently serviced for the collection and removal of storm drainage with ditches and culverts. Cross culverts carry the flow from the west side of the roadway for discharge to the ocean. In addition there are storm drainage pipes crossing the roadway carrying the flow from the urbanized area to the west. These culvert systems, in many cases, are constructed of galvanized metal and are at the end of their service life. In addition there is no treatment of the storm water to remove sediments and deleterious materials - such as oils and grease generated from vehicle use - prior to discharge to the ocean. Discharge of storm water from the private lands fronting the highway on the west side is also directly to the ditch and thereby untreated to the sea.

The replacement storm drainage system should address all these issues. It is proposed the roadway drainage system is upgraded to one that takes advantage of the ability of the underlying soils to accept storm water through the use of infiltration swales. In addition it is proposed that all development within the project corridor on private lands be required to submit a storm water management plan that integrates on site drainage disposal solutions with treatment of runoff from impervious surfaces. It is also recommended that storm water prior to discharge to the natural environment be managed for the removal of coarse sediments and oil and grease.

The design of the drainage system is severely constrained by the depth by which it can be installed unless the drainage discharge pipes are installed below the intertidal area to discharge below the low tide level. Installation of these outfalls will involve the disruption of the marine environment and will be subject to an approval under the Canadian Environmental Assessment Act.

It is recommended that prior to the installation of any underground utility service in the project corridor that the design be reviewed to ensure that it can be crossed with the storm drainage pipes to enable the discharge of stormwater at upper beach levels.

Highway Lighting Concept

Two options for lighting of the roadway were considered:

1. Medium height lighting in a staggered spacing on both sides of the highway; or
2. Higher lighting in a single row on the upland (west) side of the highway, except at intersections, where lighting on both sides would be required.

Public preference was strongly stated for the second option, with the primary reason being concern about excessive lighting that would interfere with the twilight view of the ocean, passing ships, and the natural setting.

The highway lighting concept is based on this public preference. Detailed lighting designs should investigate the performance and economics of either tall (10m height) lighting, or lower (5-6m height) decorative lighting. The lower the height, the greater the number of light fixtures for the same lighting performance. Budget figures at this time allow for the more expensive low and decorative lighting scheme. The majority of light fixtures would be placed on the west side of the highway, in the boulevard. Additional lighting would occur at all sides of intersections.

To meet public expectations, it is important that the lighting fixture chosen is of the reduced glare (sharp cut-off) type.

The public was also wary of excess lighting of the Seawalk. Therefore the parks concept allows for only localized low-level lighting along the Seawalk, restricted to areas that do not have light spill from the highway.

Park & Environmental Improvements

Issues & Objectives

Photo Credit: Lanarc Consultants Ltd.



Figure 16: View to the water – the most valuable asset of the South Island Highway .

Photo Credit: Lanarc Consultants Ltd.



Figure 17: Will visual clutter expand until it obscures the view?

The South Island Highway project is not just a road project – it is also a waterfront design project. The key to success is the effective integration of roadway and park – both in design and function.

Of paramount importance to both local residents and travellers is the opportunity for views to the water. The design of the roadway and parks must always consider how they influence the view. That is not to say that all vertical elements should be removed to create an unobstructed panoramic view of the sea – it is the mix of framed views and open views that give the waterfront its interest and character.

Visual clutter is an issue that is occurring along this waterfront. The popularity of the area is leading to a plethora of signs, furniture, art and memorials. While all of these are well-intentioned, if left unorganized, these ad-hoc additions may overwhelm the park and natural values that are so important to this corridor. The waterfront is not the place for all amenities in Campbell River – it is the place for only the best.

Waterfront improvements should have a consistent and well-designed visual identity. If a waterfront signage and site furniture ‘system’ is put in place, the resulting unified appearance will reduce clutter, and allow a limited number of ‘showpiece’ public artworks and amenities to add, not detract, from the view.

The waterfront design must find balance among competing uses for space – vehicles, parking, bicyclists and other wheeled uses, pedestrians, picnicking, informal games, public art, utilities, stormwater treatment. This is precious land, and the best design solution will organize uses so that conflicts are minimized, and a general feeling of spaciousness remains.

What people come to this waterfront for is a ‘feeling of space’.

To maximize public enjoyment of the waterfront, the City should expeditiously convert purchased buildings to parkland.

The Campbell River waterfront improvements should create a design character on two themes – ‘Marine’ and ‘Gateway to the Wild’, as described in the Vision section at the beginning of this report.

Habitat values along the foreshore are also high, and the waterfront design should respect existing habitat such as eagle nest and roost trees and shoreline shrub / dunegrass thickets and woody debris. The design should also enhance or replace these amenities where they are lost, or as they are over time.

Not all habitat values are on the surface. The design should also incorporate stormwater quality and quantity treatment measures to reduce erosion and pollution in receiving waters.

As Campbell River beautifies, it also must consider the practicalities and cost of maintaining its public parks and landscapes. The South Island Waterfront should be a high priority for reasonable levels of maintenance. Existing complaints of inadequate frequency of emptying litter receptacles should be addressed. The design should also include maintenance-saving features.

As for any public space, designs must strive for public safety and vandalism resistance. Provision of passive surveillance of public areas, curbing against vehicle intrusion into parks, and choice for fixtures for resistance to weather and abuse are important.

The South Island Highway Waterfront project is over 6.5 kilometers in length. Capital and maintenance costs are significant. So too are benefits. It will be necessary to phase the project to meet funding realities. At the same time, it is important to take a life-cycle cost view in funding the project. The results of this project will establish the quality and character of Campbell River’s ‘front yard’ for the next 100 years.

The sections that follow describe the park and street landscape elements of the Design Concept, starting from the upland (west) side of the South Island Highway, and moving east towards the sea.

Image Credit: Lanarc Consultants Ltd.

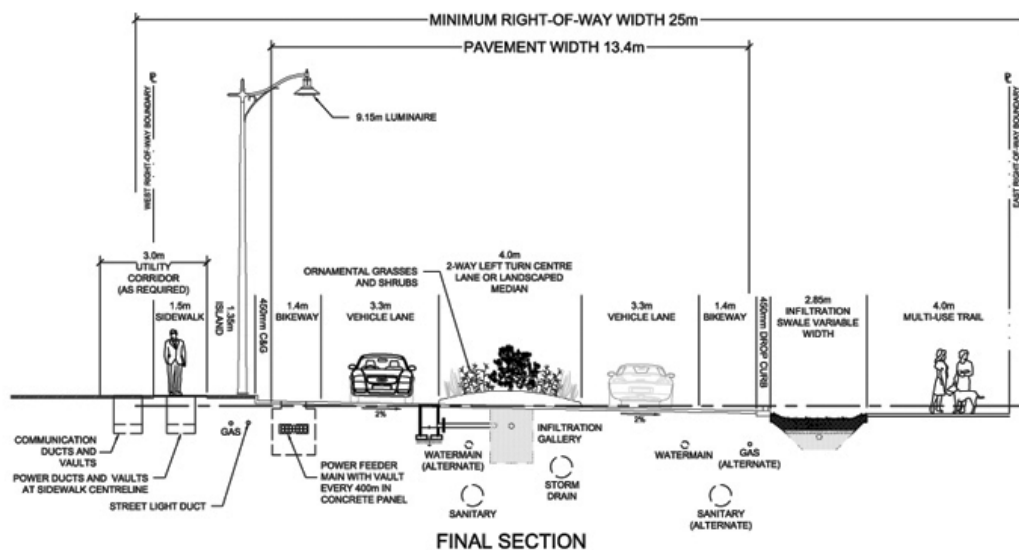


Figure 18: Proposed Section: South Island Highway in Campbell River .

West Boulevard and Roadside

The west side of the improved roadway will have a 1.35 m wide grass boulevard between upright curb and sidewalk.

In accordance with input from the public, this boulevard is designed without street trees. This design avoids impacting existing views, and also allows the inclusion of underground utilities under the grass boulevard.

It is recommended that a minimum distance of 0.5 m is provided between the west side of sidewalk and the property line, to take up grades and provide clearance at obstructions.

A 1.5 m utility easement is also recommended west of the property line for telephone and cable (communication) ducts. Design of these utilities and this easement should allow for the replacement of fence, hedge, or other landscape privacy treatment that is impacted by construction.

The landscape areas on this west side should be separated from the roadway by upright curb. Catch basins in gutter should also be provided to catch runoff from driveways west of the street.

Highway Median Landscape

Landscape medians should be provided for as much of the length of the corridor as can be accomplished while allowing for left turn slots. The median islands should be protected with upright curb. A 5% slope to the center of the median would provide a gentle mounded effect.

Shrub and groundcover planting should be provided for short, isolated islands where access by mowers is not convenient. Grass surface should be installed for longer islands (probably by sodding), with limited shrub and groundcover planting as affordable.

The single pitch of the highway towards the seaside may create a need for catch basins above long medians. These catch basins could outfall to infiltration trench under the median, so that drainage from associated vehicular areas is treated for water quality.

Infiltration Swale

To meet fisheries and environmental concerns, it is necessary for the runoff from the improved highway to be treated for water quality before it enters receiving waters.

To meet the water quality treatment target, an infiltration swale is proposed between driveways, located on the east side of the pavement.

As shown in Figure 19, an infiltration swale is a shallow planted depression that collects runoff and allows it to soak into sandy loam soils. The surface is a gentle dish shape – not at all like a steep sloped ditch, and is finished in mown grass or shrub/groundcover planting. This planting should not exceed 450mm height for sight distance at driveways and to maintain the water view. Beneath the planting are layers of absorbent sandy loam soil, a sand layer over filter cloth, a drain rock reservoir, and an overflow perforated drain. This design provides excellent water quality treatment by filtering the runoff through vegetation and soils. The drain rock reservoir stores water underground, giving it time to soak in to the native soils below. This design with a perforated subdrain also provides a landscape surface that is normally dry, except during severe rain events. Traffic lanes and bicycle lanes have a single pitch towards the infiltration swale, rather than a center crown. This single pitch may also reduce the need for grading at the west property line.

Barrier curb is provided between the pavement and the infiltration swale. However, this barrier curb will be interrupted with drop curb inlets at regular spacing (about every 3-4m), so that runoff can flow into the swale. Sideslopes at these entry points should be sodded for erosion control.

The overflow drain is connected to the storm drain system. Catch basins upstream from driveways, and a major flow path are also provided, as in traditional stormwater drainage design. To increase infiltration area and effectiveness, the reservoir and perforated drain can extend under driveways.

Seawalk and Secondary Walks

As construction proceeds, the existing Rotary Seawalk will be displaced, in many cases, by utility crossings or road widening. As the Rotary Seawalk is replaced, it should be widened where necessary to 4m, and realigned to the design concept shown on Plans 1 through 6. The alignment of the final Seawalk is gently curvilinear where-ever possible. In tight spots it is immediately east of the infiltration swale. Where possible, the seawalk curves, gently, into the parks.

The Seawalk should have a 0.5m or greater offset from property line, to provide clearance from fences, hedges or other obstructions.

Plans 1 through 6 also show a route for a 1.5m wide secondary pathway loop for pedestrian access to passive park areas and foreshore. This minor path system should be designed for pedestrians only, not bicyclists or other wheeled vehicles. It should be soft or permeable paving surface.

Photo Credit: Lanarc Consultants Ltd.

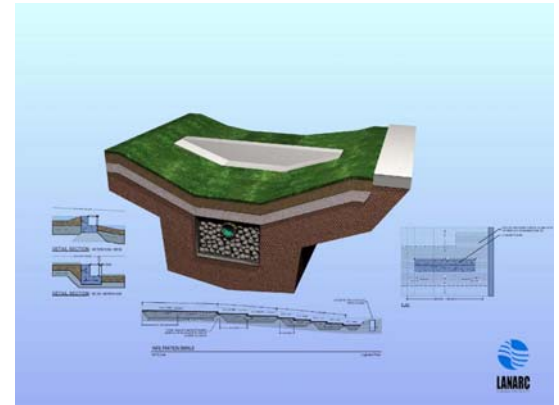


Figure 19: Proposed infiltration swale

Roadside Barriers, Curbs and Berms

Areas of existing parks that are not physically separated from vehicles are often driven upon. There is need to separate the proposed park improvements from vehicle encroachment. Barrier curb is anticipated between the bicycle lane and infiltration swale, with curb drops to allow drainage to enter swale.

Image Credit: Lanarc Consultants Ltd.

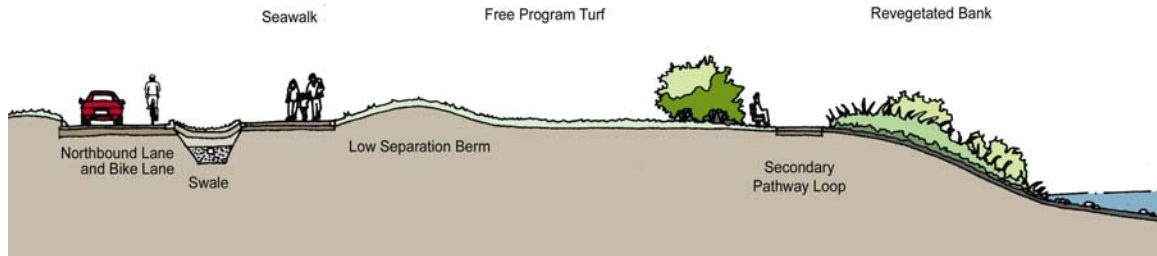


Figure 20: Typical Park Section

Also recommend is a low (0.5m) separation berm or hedge planting to separate roadway and park uses. This could be located either between the infiltration swale and the Seawalk, or between the Seawalk and parks, depending on alignment of the seawalk. The intent of this is to muffle traffic noise and views of roadway pavement, while still allowing panoramic views from motor vehicles to the sea.

Where space does not allow the separation berm or hedge, a low post and rail barrier could be installed. The amount of this barrier should be minimized, and it should be founded in a linear paved strip to minimize landscape maintenance trimming. The use of no-post barriers along this corridor should be discontinued.

Park/Road Interface Design

Litter and sand debris will occur along the roadside. It is recommended that the interface of the roadway and park be designed and maintained to a 'manicured' level, so that the area presents a neat and tidy appearance to passing residents and tourists.

Park / Foreshore Interface

In contrast to the manicured roadside, the park/foreshore interface should be as natural as possible, while still allowing access to sea views.

Much of the existing foreshore is vegetated with a combination of shrub rose, snowberry, and dunegrass, with isolated patches of sitka spruce and douglas fir trees. In the upper intertidal zone, erosion control and habitat is provided by a

combination of large woody debris, native cobble, and placed riprap. Wherever possible, this native vegetation and shoreline should be retained. Limited maintenance activity will still be required to remove litter, control invasive plants like broom and Himalayan blackberry, trim shrubbery for height, and repair localized erosion.

A habitat restoration program is recommended to restore a seaside vegetated zone where gaps exist, or where new disturbance is unavoidable.

Tree Retention and Replacement, Eagle Trees

The South Island Highway study area stretches along 6.5 km of shoreline. Although it is a developed urban area, it is unique in that it still supports both extensive native vegetation and trees, as well as abundant nesting and foraging eagles and other wildlife.

To keep the local eagle and other bird population stable, it is critical to maintain both nest and roost trees, and to replace them over time.

Policies are recommended to retain all existing eagle nest and roost trees for as long as they do not become a hazard, and to maintain a program of allowing natural revegetation or planting of replacement native coniferous trees (sitka spruce, douglas fir) so that there is continuity in provision of habitat trees in the corridor.

Beach Access Points

Beach access at present is informal – and varies between boat ramps and concrete infill on rock riprap.

Plans 1 through 6 identify and show locations for three types of beach access:

- Major Beach Access / Ramp: which should be designed with both steps and ramp to allow all users access to the upper foreshore. These are recommended at Hidden Harbour Park, Rotary Beach Park, McCallum Park Boat Launch, Ken Forde Boat Ramp, and fronting Barlow Road
- Minor Beach Access: to provide rustic step access to the upper foreshore. These are recommended at 12 locations, generally at parks or points of interest along the foreshore.
- Kayak Launch: to provide reasonable access for kayakers. Three locations are recommended: Hidden Harbour Park, McCallum Park Boat Launch, and Ken Forde Boat Ramp.

Park Lighting Concept

Respondents to the public process have had a variety of opinions about lighting along the Seawalk. Those who use the facility for winter running had indicated an interest in lighting. Others that look across the seawalk to the sea view have expressed strong conviction that the parks should not be over-lit.

It is recommended that park lighting be restricted to 'spill' lighting from the street lighting system, except in cases where the street lighting does not reach the walk due to distance or barriers to light. In these exceptional cases, a seawalk lighting system should be installed that is low glare, low level, and extremely vandal resistant.

Public Washrooms

New or improved public washrooms are encouraged, at the following locations:

- Rotary Beach Park
- McCallum Park Boat Launch
- Simms Creek area (near Pump Station)
- Ken Forde Boat Ramp

These locations are chosen to be distributed over the 6.5 km length, and to serve both pedestrians and those landing off small boats.

The washrooms are envisioned as fully serviced flush facilities.

Pump Stations and Other Surface Utilities

Pump Station No. 7 will be rebuilt as a part of the upgrading of the sewer force main. The utility should be sited and its building enclosure designed architecturally, with careful attention to aesthetics in this high profile location.

Similarly, other surface utilities like vents and utility access boxes should be designed in concert with detailed parks and landscape site and grading plans. The final product should ensure that surface utilities are located in ways that are functional but unobtrusive. Surface utilities that cross pathway edges, or that create grading 'humps and hollows' are not acceptable in this high profile waterfront location.

Signage and Public Art Program

Signage and public art along the Campbell River Waterfront is starting to proliferate as the use and popularity of the area and the Seawalk increase.

This proliferation is a positive 'sign' of the value that Campbell River places on its waterfront. However, left unbridled, the signage and art will move over the line from 'interest' to 'clutter'.

While each sign piece should be a careful and beautiful piece of design – a work of art with unique qualities - there also should be a common visual 'design theme' and 'signage system' that limits the number and variety of signage on the waterfront.

This section provides guidelines for signage along the waterfront. If all new signs meet these guidelines as existing signs are replaced, in due course there will be a more unified and managed signage system.

General Signage Character Guidelines

1. 'gateway to the wild' design references.
2. within the theme the signage should be exceptionally sophisticated in design – each sign should be a work of graphic art. Selected signs should be 'sculpture'. Selected signs should be integrated with landscape grading and planting.
3. earth colours – muted browns, greens, warm greys, taupe, driftwood, beach cobble
4. natural appearance – wood grain, stone, materials that reflect setting (e.g. glass/lexan).
5. textured finish – 'rough' – e.g. rough sawn wood, natural driftwood, natural stone, sandblasted or exposed aggregate concrete.
6. scale as small as legible for the purpose.
7. bright colour as small scale accent only.
8. no backlit signs – front lighting only when warranted.
9. as vandal resistant as possible. Low cost replacement and change.
10. as few signs as possible. Wherever possible, sign messages should be combined onto one carefully designed and integrated panel.

Photo Credit: Lanarc Consultants Ltd.



Figure 21: Signage clutter is beginning to appear on Campbell River's waterfront.

Table 1
Specific Signage Character Guidelines

Sign Type	Existing	Proposed Guidelines
Main Entrance Sign Campbell River Sign	Dark bronze aluminum, angular shape	When replaced due to wear, consider a design character that matches 'Gateway to Wilderness'
Primary Gateway pavilion North and South Trailhead landmark for vehicles and pedestrians	Not existing	Heavy Timber Entrance gateway – included trail map, regulations and user tips signage.
Secondary Gateway Car-focused orientation signs	Not existing	Adjacent to car/RV pullout. Combined with one of the Sea walk-focus signage groups. Near each end of the seashore.
Tertiary Gateway Sea walk-focused orientation signs for pedestrians	Varies	At major pedestrian and upland trail connections.
Heritage or Nature Signage <i>Interpretative Panels</i>		Limited number, key locations. Consistent graphic theme and mounting, except for 'sculptural' pieces. Include interpretation of user tips.

Sign Type	Existing	Proposed Guidelines
Directional signs <i>Walkway Orientation</i>		Timber post with integrated lettering and arrows
Public art permanent		Juried competition to populate a limited number of key locations.
Public art temporary		One or two locations where seasonal temporary art is displayed.
Information and Events Kiosk <i>Also Trail Map kiosks</i>		Bulletin and/or Trail Map kiosks at max three locations.
Park Identification Signs <i>Facility Dedication marker</i>	Varies	For all named Parks, dedicated boat ramps and major beach access. Limited number, main entrances only or at facility. Integrate with interpretive signage or facility where-ever possible.
Banner pole arms <i>Street light- mounted on Upland Side</i>		Seasonal and festive flare.
Site Furniture or Art Dedication		Plaque on site furniture or art
Private memorials		As adjacent properties are assembled, relocated to a permanent off-waterfront location.
Roadway safety signage		Highways standard on telespar posts
Commercial Signage <i>Future Development</i>		Signage for future developments should conform to the design concept of the waterfront 'gateway to the wild' theme. Design proposals should be approved by the relevant authority or community Design Panel

Photo Credit: Lanarc Consultants Ltd.



Figure 22: Proposed permanent public art collection.

Public Art Program

The existing wood cut art along the waterfront is an asset to Campbell River, and is in keeping with the 'gateway to the wild' theme. However, as the woodcut collection continues over time, the number of pieces produced will overwhelm the waterfront space and setting. To avoid this risk, the following public art program is recommended:

- public art of this waterfront corridor should be subject to a juried art competition (likely annual). Art pieces produced would be judged by a respected panel. Recognition of quality may be made in several categories.
- One winning piece would be chosen each year to form part of the 'permanent' collection for the waterfront. Each year, this permanent piece would be placed and honoured in a permanent location at the park.
- Other pieces would be displayed as 'temporary' in designated locations along the waterfront. These pieces would be removed from the waterfront at the end of the season, making room for a new competition.

Using this approach, a total of 25 permanent pieces may be established over a 25 year period. Given that these are wood pieces that will decay, we envision a 'replacement' program continuing after 25 years.

To maintain interest, there is merit in considering a 'theme' for the public art competition in each year. Themes should be generated locally, but ideas include:

- Cultural traditions of First Nations.
- Historical and Modern Salmon Fisheries (the Tye Club est. 1924), Cultural Fish Tales. (71 lb. Salmon caught by Texan Walter Shutts).
- Historical and Modern Timber practices.
- Historical Visit of Captain Vancouver and his botanist Archibald Menzies
- Historical Namesake Dr. Samuel Campbell, the surgeon on the HMS Plumper.
- Geographical position near the 50th Parallel (e.g. same latitude as Prague, Czech Republic).
- Legend of Big Rock. A boastful Grizzly Bear turned to stone after not heeding the great spirits advice.
- Climatic Works describing the Coastal Rainforest.

- Environmental Works describing coastal ecology and processes.
- Environmental Works describing local wildlife and the edge condition.

Site Furniture Systems

The existing waterfront shows an evolution in standards for site furniture like benches, picnic tables, and litter receptacles.

A program is recommended to standardize the type of site furniture used for this corridor. To do this in an economical way, we propose to formalize the use of the following in all future park and roadside installations:

- Benches: coloured concrete bench and support, as currently used in the waterfront parks, with provision for memorial plaque.
- Picnic Tables: coloured concrete table and seating, as currently used in the waterfront parks, with provisions for memorial plaque.
- Litter receptacles: exposed aggregate finish litter receptacles with low profile metal lid, with logo to meet current Campbell River standard.

All site furniture should be placed on a pad of paving so as to provide simple mowing around the furniture.

It is recommended that advertising on benches and bus shelters, and other private advertising in the waterfront parks, be avoided or phased out to reduce visual clutter.

View Management

Respondents to the public process placed the highest possible value on the sea and island views offered by this corridor.

Design of the corridor improvements should respect these values, by:

- Generally, keeping new non-native plant materials and hedges in the corridor below a 0.45m height.
- Being very judicious in tree planting, with a general intent of tree planting to replace existing trees or break up large expanses of pavement or space.

Having said that, it is not the intent that expansive tree clearing be undertaken to open up new views. Rather, the recommendation is that the existing balance remain between open views, framed vistas, and stands of trees.

Landscape Maintenance

Several public respondents expressed concern that the landscape improvements will not be properly maintained by the municipality. To address this concern, we recommend:

- The grass boulevard on the west side of the roadway should be maintained by adjacent land owners, as should the narrow strips immediately beside property lines.
- Grass areas should be designed to minimize the need for edge trimming. Mow edge strips should be provided between vertical obstructions and lawn.
- Lawn slopes should be designed to allow easy mowing.
- Small, isolated areas of lawn should be avoided. Where mowing access is difficult, low shrub or groundcover should be provided rather than lawn.
- Shrub/groundcover between parks and the foreshore should be naturalized, with maintenance limited to removal of litter and invasives.
- Manicured shrub and flower areas should be utilized judiciously, and only in high profile locations such as at park entrances, major signs or landmarks, or isolated small median areas.

Implementation Program

The South Island Highway – Phase 2 project is a major, long-term undertaking. With a study area length of approximately 6.5 km, the project costs are significant.

Without significant senior government funding, the full implementation of the plan may take 30 years or more. Required utility upgrades and senior government co-funding may also drive a faster timeline for key phases.

In the meantime, the plan is needed to guide frontage works at private redevelopment in the corridor.

Project Phases and Priorities

Alternative Phasing Approaches

Two approaches were considered:

Phasing Option A: One area at a time is opened up and completed, including both underground and surface works, both in highway and parks. For example, a first phase might be the area near Rockland Road, from Simms Creek to Big Rock.

Phasing Option B: One item is completed for the length of the study area. For example, all powerlines are undergrounded, or all sewer forcemain work is completed.

Typical Phasing Boundaries

In general, a limited number of larger phases is more economical for construction. However, phases must be within the financial capability of both funding agencies and contractors.

In general, phases of approximately 1 Km in length are envisioned as the smallest practical phasing for these public works projects.

Logical Phasing Priorities

Phasing priorities will change as circumstances change. However, there are situations at time of writing that provide a logical basis for phasing priorities:

1. A high priority for City investment is the sewer forcemain – in particular from the Simms Creek area north to Hidden Harbour. A new pump station is proposed, and public washrooms are proposed in tandem. The proposed sewer alignment would follow the paved shoulder of the existing roadway. This is likely to be installed in advance of the other road improvements, but it would be preferable to complete

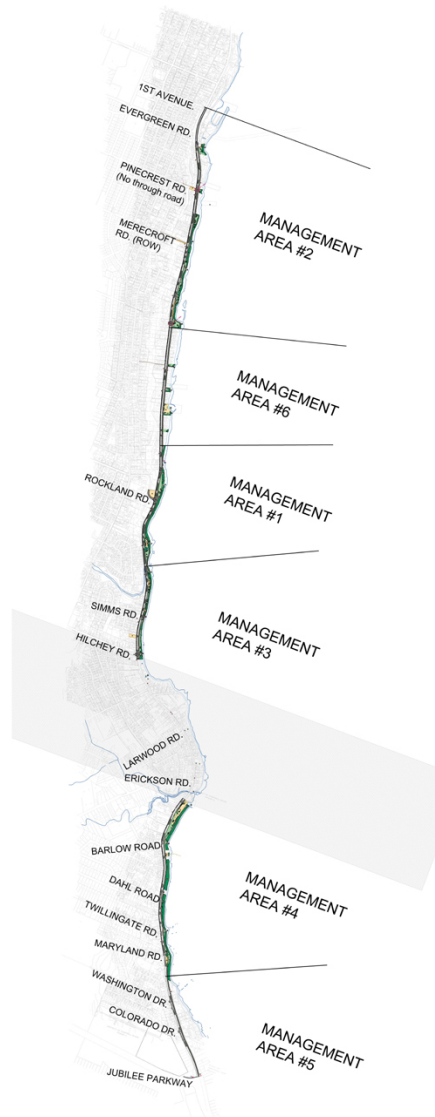


Figure 23: Proposed Management Areas.

both the sewer and the road improvements in one phase, or separated by limited time. Funding for the sewer forcemain is not included in estimates for this project.

2. Investment in redevelopment is accelerating, in particular in the higher density areas from Simms Creek north to Hidden Harbour.
3. In the same area from Simms Creek north to Hidden Harbour, there are sections of waterfront homes that are subject to the Campbell River Waterfront Acquisition Bylaw, which is gathering DCC funding for purchase on a willing seller basis. Since a major cost of the proposed improvements is the undergrounding of overhead lines, and the early completion of this undergrounding would involve servicing these homes, and then later tearing them down for open space, there is a logic to leaving this area until late in the phasing.
4. Rockland Road is the next logical priority for intersection improvements.
5. Single family areas south of Simms Creek are more stable as far as land use and building, with slightly less concern about turning movements off the road. However, interest in roadway improvements and especially undergrounding of overhead lines appears strong in these areas as well.

We therefore suggest the following ‘Management Areas’ – areas that are logical phasing boundaries. We also list a tentative phasing order, that may change as circumstances change. The following Management Areas are shown on Figure 23:

Management Area (Phase)1: Rockland Road Area (Street Address 1680 to 1154 South Island Highway (including Big Rock and Ellis Park)

Management Area (Phase) 2: Rotary Park to 1st Ave

Management Area (Phase) 3: Street Address 1680 South Island Highway to Hilchey Road

Management Area (Phase) 4: Ken Forde Park to 3490 South Island Highway

Management Area (Phase) 5: 3490 South Island Highway to Jubilee Parkway

Management Area (Phase) 6: Rotary Park to 1154 South Island Highway (including Daybreak and McCallum Park)

Project Cost Estimates

Notes on Highway Estimating Constraints

The unit prices used for cost estimating at time of writing were derived from average costs for projects in other municipalities and then adjusted to reflect local contractor prices. The estimate was prepared from the concept design and could change somewhat at the final design phase. The impacts of traffic management in particular are difficult to predict.

Notes on Utility Cost Estimating Constraints

The utility cost estimates are affected by a number of factors that can cause the actual costs to be different than those contained in these estimates. The detail design work for the utilities is not part of this assignment and the costs are based on a reasonable assumption the pipe sizes, depths and location are comparable to that chosen for the highway upgrade constructed in 2005 through Willow Point. Market forces for the cost of material, labour and equipment at the time of construction will also be a factor in the final cost for the project.

The costs given for streetlights are for a decorative style of light. The costs to supply and install these are about 40% higher than for the standard davit style of light.

The cost of relocating and reconstructing the non city owned utilities such as gas, power, telephone and cablevision are also based on the cost estimates given by the respective utility companies for the 2005 Willow Point construction project adjusted for the amount of civil work estimated separately. No adjustment was made for the provision of credits sometime given by the utility companies for upgrading of their physical plant or for beautification purposes.

The power, communication and cablevision cost estimates consist of three components. These are the civil works (vaults, conduits and service boxes), the conductors that are placed by the respective utility company, and the connection to each home or building unit. Each of these components is affected by a number of factors that can change the costs estimated as part of this assignment. The costs should be reviewed again at the time when the work is scheduled for construction.

Roadway Upgrade Estimates

It was assumed for this estimate that excavation of the existing roadway to a depth of 0.3 meters would be required and new gravels placed. If the existing roadbase is acceptable to a geotechnical engineer new gravels may not be necessary. Also the amount for pavement removal could offset the gravel

cost if it was milled and recycled. Recently construction prices have been rising sharply for items such as asphalt, concrete and labour due to supply and demand and will likely continue to rise. Asphalt prices in particular are dependant on the price of oil which has recently risen sharply.

Land or Easement Requirement Allowance

The typical cross section for the works triggers a right of way requirement of 25m minimum, for the public access components of the street. It is recommended that the existing highway right of way be widened where necessary to at least 25m as opportunities arise. In general, increases in right of way width should be to the west side of the existing. A 25m right of way already exists for the majority of the highway alignment. Local right of way widening should be pursued as a part of land use change along this corridor. No allowance for land acquisition costs are made in the capital estimates provided.

For the purpose of accommodating the undergrounding of overhead utility lines, and for feathering of grades, a utility and grading easement of approximately 1.5m width over and above the 25m ROW width should be gained on the west side of the highway right of way. Existing landscape on this easement may be disturbed during construction, and restitution of the landscape will be necessary.

Using experience in the Willow Point section of the highway improvements as a precedent, it is likely that the required utility easement can be gained at a low cost – the estimates allow for negotiation and registration costs.

Notes on Park Upgrade Estimates

The project estimates allow for a substantial rebuild of the existing parks system. Much of this parks systems will be disturbed by the road widening, or by associated utilities and stormwater works, as well as by parking and construction staging.

Planting

The West Boulevard, center median island and East boulevard swale have been budgeted to include a sod surface application. Additional shrub planting would occur at the direction of the City of Campbell River Parks department should additional maintenance funds become available over the life of the project.

Sodded areas are limited to roadside situations defined by the West edge of the proposed 4m Multi-use trail. Areas East of the extent of trail surfacing extending out to the present natural boundary would be re-vegetated. Proposed re-vegetation is

limited to native coastal species as approved by the Department of Fisheries and Oceans. Existing native species are to be retained wherever possible during corridor improvement implementation. Existing trees are to be retained. No additional tree planting is budgeted.

Park Furnishings and Lighting

Benches and picnic tables have been allowed for within the current project budget, and proposed locations are shown on the concept plans. Washroom buildings are also proposed and budgeted at the locations shown on the concept plan.

Park Lighting is intended to occur as low-level pedestrian oriented fixtures to occur at select locations. A budget allowance has been made for a typical light spacing of 25m on center along the walkway where light spill from the roadway lighting is not present.

Waterfront Accesses

The estimates allow for two types of proposed access improvements. Major beach access points would be large-scale formal features to include accessible ramps and landing to provide experience matching for those less able. Minor beach access points would be developed as simple identified preferred routes of travel through re-established native vegetation.

Signage

As shown on the concept plans, signage installations are budgeted for.

Project Cost Summary

Management Area 1	
Capital Costs	\$ 6,626,164
Design and Contingencies	<u>\$ 2,087,242</u>
TOTAL	\$ 9,044,714
Management Area 2	
Capital Costs	\$ 9,126,833
Design and Contingencies	<u>\$ 3,331,294</u>
TOTAL	\$12,458,127
Management Area 3	
Capital Costs	\$ 5,221,189
Design and Contingencies	<u>\$ 1,905,734</u>
TOTAL	\$ 7,126,923
Management Area 4	
Capital Costs	\$ 9,629,109
Design and Contingencies	<u>\$ 3,514,624</u>
TOTAL	\$13,143,734
Management Area 5	
Capital Costs	\$ 3,354,173
Design and Contingencies	<u>\$ 1,224,273</u>
TOTAL	\$ 4,578,445
MA6	
Capital Costs	\$ 5,805,800
Design and Contingencies	\$ 2,119,117
TOTAL	<u>\$ 7,924,916</u>
PROJECT TOTAL	\$54,276,859

More detailed cost estimates are provided in Appendix B

Issues that Affect Financing and Phasing

Application and approval of funding from Federal and/or Provincial programs will have the most impact on this project. Rising costs due to inflation, land values, labour and material costs could greatly increase the cost of this project if it is phased over an extended timeframe. Also decisions made by council regarding allocation of funds would affect the project's timeframe.

We are recommending an overall project budget of \$60M.

Project Timeline Options

Options Considered

Four Options have been put forward for public review:

- Timeline Option A: 30 year project (one phase every five years)
- Timeline Option B: 18 year project (one phase every three years)
- Timeline Option C: 12 year project (one phase every two years).
- Timeline Option D: The South Island Highway Improvement Project should not be a DCR priority for the foreseeable future.

Respondents Stated Wishes

The great majority of respondents to the public process were in favor of Option C – with the objective of getting the project done as soon as practical.

Adaptive Management Approach

However, given the need for lead time for the City to raise its funding portion, and also the needs of businesses and residents along the corridor to recover between construction operations, we are recommending the pursuit of a variant of Option B – on phase every three years. We envision that the City funding for the project would be spread over 20 years.

In reality, however, the timeline will be driven by the availability of funding, both locally and by outside partners. The project timeline will be determined as the funding evolves.

Project Funding Strategy

Introduction to Funding Strategy

There are four key components to the Funding Strategy:

1. Senior Government and Agency Grants: an increasing number of infrastructure and environmental programs are targeting funds at this type of project. It is a key to this project that at least two-thirds of the funding comes from these outside programs.
2. Development Cost Charges: proposed improvements in this project to road capacity, sanitary and water utilities and parks will benefit development in a significant part of Campbell River. Development Cost Charge systems should be reviewed to ensure that attributable costs are apportioned to development.
3. Neighbouring Properties: undergrounding of overhead lines is a key objective of the project, and this benefits neighbouring properties disproportionately to the overall community benefit. It is important that neighbouring properties provide both land for utility undergrounding, as well as cover costs of connections on private land.
4. General Revenue: Campbell River will need to raise the balance of the project costs from general revenue. In addition, the City will need to provide for on-going operation and maintenance costs.

The City of Campbell River has not, as yet, allocated funds for this project. The City has an ongoing capital program for road improvements of approximately \$2M per year, with projects committed over the next 5 years.

A key tenet in this funding strategy is that the City of Campbell River should set aside reserve funds for its portion, allowing the reserve funds and development cost charge revenue to build to finance the City's portion of the project.

However, there is a weakness to this 'save to build' strategy. Senior government programs may come forward with offers of funding in advance of the Campbell River portion being saved. In these cases, the City would have to either rely on tax base to fund its portion, or borrow its portion to allow the project to proceed, with payback from the tax base over time.

Presently Campbell River is approaching its debt ceiling, due to high capital costs in recent years associated with sewage system upgrades. Application can be made by Council to the Provincial Government to increase Campbell River's borrowing power.

If the City wishes to proceed more quickly with these improvements, it can consider increases to property taxes, as well as the current growth in the tax base. Current property tax rates are relatively low by comparison to other municipalities, despite a concern that taxes are high from respondents to the public process. A program could be implemented to educate residents as to property tax rates in other municipalities and what can be achieved by increased taxes.

Potential Senior Government Funding

It is likely that this project will be driven in large part by offers of 2/3 outside funding. Such funding is not always available, and it is important for Campbell River's longterm well-being and competitiveness to take advantage of these programs when they are active.

At the same time, it is unlikely that this project can be feasible for Campbell River unless the 2/3 outside funding is made available.

Other Outside Funding (e.g. BC Hydro / Tel)

BC Hydro and Telus Grants are candidates for the Willow Point section currently under construction within this project area. Since such granting is limited across the Province, that is one more reason to 'pace' the South Island Highway Implementation – so that utility grantors may look more favorably on this project over time.

Sources of Local Funding Component e.g. \$1M/ year

If outside funding were approved and the project were funded over 20 years with a phase being constructed every 3 years approximately \$1M per year would be the remaining 1/3 the City would need.

Subject to finances at the time, a conceptual approach to this funding is:

- Reserve Funds \$700K / year
- Development Cost Charges: \$150K / year average (these are to be reviewed this fall, and may have part of these costs added).
- Neighbourhood Property Owner or Specified Area Funding e.g. for on-site hydro/tel/cable or equivalent – equivalent to \$150K / year. This funding could be established gradually through multi-year specified area charges, up until construction.

The Reserve Funds could come from the yearly roadworks budget of \$2M per year. These funds have been allocated for the next five years and would be available for this project at

that time. Allocations could be made sooner if priorities of Council change.

The 'New Deal for Cities' may also provide a new source of funds for the City. At time of writing, the New Deal was proposed to provide a per-capita direct grant to the City for Community Works, as well as pooled funding for special projects and for innovation. The South Island Highway project should be a candidate for all three of these funding pools, especially given the green infrastructure components.

The City could consider short-term borrowing (3-5 years) to 'average out' funding requirements between large and small phases. Funds to pay off the short term loan would have to be budgeted for in the coming years.

The impact of the project on a typical residential taxpayer is difficult to predict, given the number of variables at play. For instance, if the annual 'reserve fund' allocation is made as a part of the on-going \$2M for year that is dedicated to road improvements, or out of New Deal grants, then the increase in taxes to support the project construction is nil.

Taxpayer impact would be more easily calculated when a specific financing proposal for a specific project or phase is in place.

Short Term Implementation Actions

It is important for the City of Campbell River to take advantage of upcoming senior government funding program. Short term actions that will allow the City to respond to opportunities are:

1. Proceeding to detail design of early phases – e.g. Management Areas No. 1, No. 2 and No. 3 – to increase chances of senior government funding success.
2. Early allocation of a significant portion of New Deal for Cities funding to this project, and related applications to the New Deal for Cities Special Project and Innovation Funds.
3. Integration of the relevant aspects of this project into upcoming review of Development Cost Charges.
4. Establishment of a Specified Area to allow gradual collection of the local landowner portion of costs associated with undergrounding of overhead utility lines.

Potential Funding Programs

Appendix C provides a brief introduction to outside funding programs as of the time of writing.

Alternatives Considered

Many alternatives were considered as the project moved through issue analysis and development. For example, eight different prospective cross sections were considered for the roadway improvements, ranging from 5 lane cross sections to several variants on 3 lane arrangements.

Two options were studied in depth.

The alternatives had several qualities in common:

- 4m wide seawalk on east side
- 1.5m sidewalk on west side
- Thru vehicle lane each direction
- Centre two-way left turn lane with landscape islands (extent varies)
- Boulevard condition varies
- Lighting varies
- Both fit within a +/-24m right of wayAs well as highway configurations, the two options included variations on treatment of parks and trails systems.

Image Credit: Lanarc Consultants Ltd.



Figure 24: Visualization of Options

Option A

The focus of Option A was to provide as much green space as possible along the new roadway.

Option A: (see Figure 25)

- features long medians, impairs left turn access to some single family driveways that have lane or alternate access.
- provides roundabouts at 4 locations, allowing U turns to access driveways, and for tourists.
- includes stormwater infiltration swales both sides.
- Includes low glare lighting upland side only and at crosswalks and key intersections.

Image Credit: Lanarc Consultants Ltd.

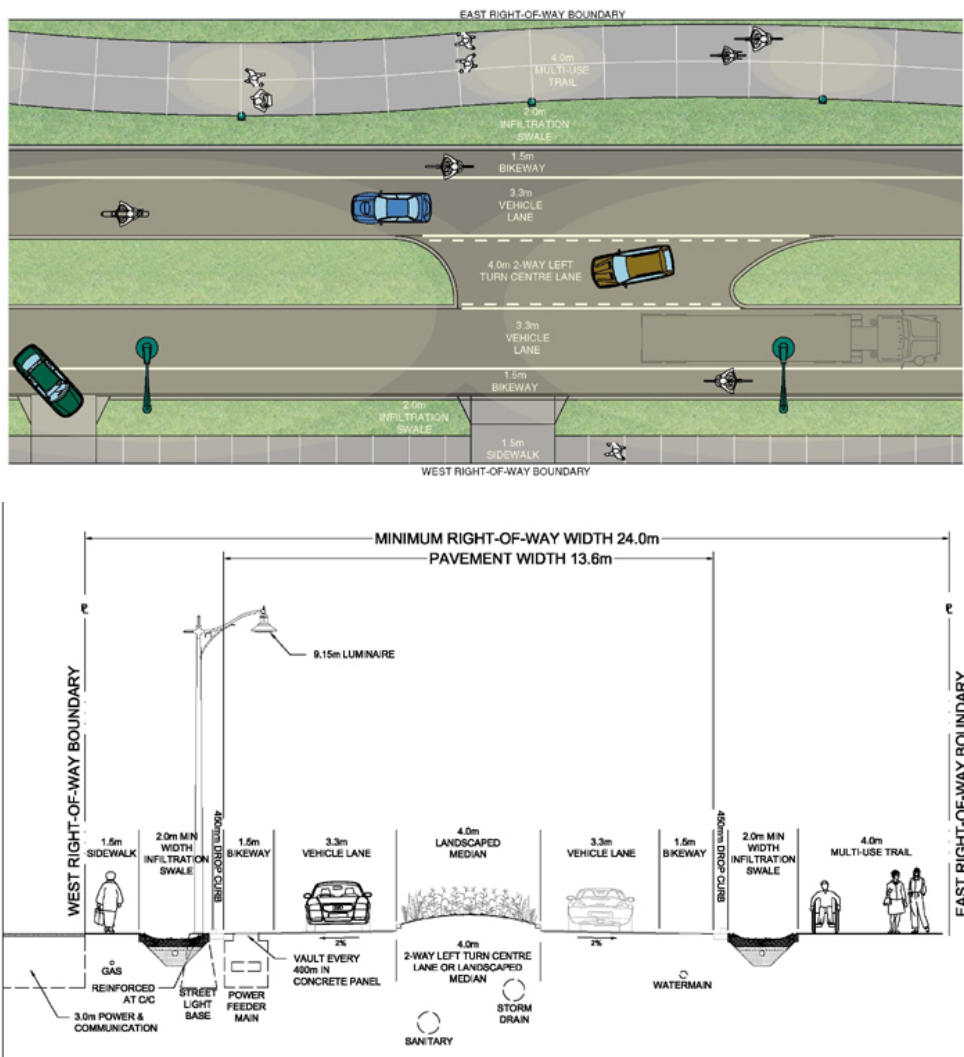


Figure 25: Option A Typical Plan and Section

Option B

The focus of Option B is to provide unimpeded access to one driveway per residential parcel.

Option B: (see Figure 26)

- reduces green median – increases two way left turn lane
- provides no roundabouts, but standard intersections instead
- includes stormwater infiltration swales on east side, and a 1.35m grass boulevard west side.
- Recommends lighting from both sides of the highway.

Image Credit: Lanarc Consultants Ltd.

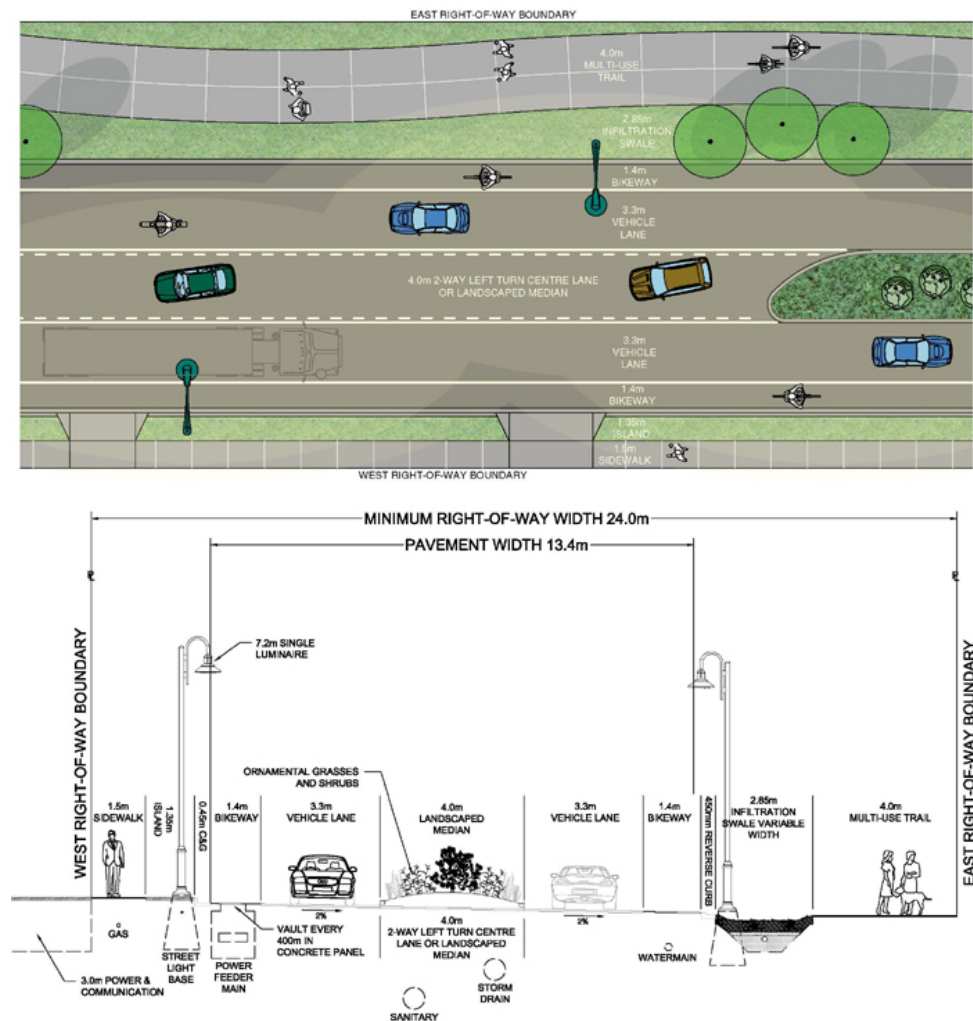


Figure 26: Option B Typical Plan and Section

Public Process and Comparison of Options

The two options were taken through a committee and public process of reviews.

The public appears to support an option that blends components from both Option A and B. In general, solutions that optimize both turning mobility and green space provision are favored.

The Design Recommendations in this report attempt to find a balance between green space and road space.

The Design Recommendations were taken in draft form before a second committee and public review process. The great majority of respondents were in favour of the draft recommendations. Where public opinion was split, the design team has attempted to refine the recommendations in response to the public concern.

Readers of this report are encouraged to review the detailed public input received.

Appendix E includes the public input received, and this will be forwarded for the attention of Council.

Conclusion

The South Island Highway (19A) Concept Plan establishes a vision for public lands along Campbell River's Waterfront. The plan creates improvements for:

- Traffic, pedestrian and cyclist safety;
- Driveway access and left turns;
- Parks and Seawalk users;
- Transit users;
- Tourist enjoyment, orientation, economics;
- Aesthetics and views from both adjacent residents and along the route;
- Water quality and the foreshore environment.

The realization of this plan will be a significant challenge to the people of Campbell River. However, the benefits of implementing the plan will exceed the challenges.

The plan will create a waterfront corridor where the quality of the constructed improvements is on par with the spectacular natural setting.