

# Report

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Date	August 29, 2018	File: SPP00048
To	Council	
From	Chris Hutton, Community Planning Coordinator	Endorsed:
Subject	Canada Avenue Complete Street from Evans Street to Sherman Road – Friendship Trail	

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## Purpose

The purpose of this report is to seek endorsement to defer North Cowichan's construction of the Canada Avenue Southbound Bike Lane and the Canada Avenue Friendship Trail (northbound to Sherman Road) and direct to staff to partner with the City of Duncan to produce a complete street design on Canada Avenue from Evans Street to the terminus at the Sherman Road roundabout for a shared cost of \$500,000 for design in 2019.

## Project Background and Assessment

At its September 20, 2017 meeting, Council requested a report on building cycling infrastructure connecting Sherman Road to the City of Duncan before completing the remaining portion of the Friendship Trail that currently ends at Philip St.

### *Project Assessment:*

Staff reviewed numerous options and found that there are a number opportunities and constraints that guide the design of a multi-modal trail connection in the Sherman to Philip project area. Further opportunities and constraints were identified in assessing opportunities for connection to the City of Duncan.

The following constraints were identified:

- Two bridges over Holmes (Bings) Creek are too narrow to allow the safe addition of walkway on the Friendship Trail side. Poor foundation conditions and a 2017 bridge assessment study recommending replacement within 5 years lead to a conclusion that the bridges should be addressed at the same time as trail / cycling improvements.
- An area along the east side of Canada Avenue has experienced significant settling after a road widening and incorporation of a bus stop in the late 2000's.
- In the 210 m between Sherman Road and Philip Street, 51 m (24%) of the west side of Canada Avenue is driveway.
- Between Sherman Road and Evans Street (1.4 km), 241 m (17%) of the west side of Canada Avenue is driveway.
- There are 7 public roads that intersect with the west side of Canada Avenue.

The following opportunities were also identified:

- To accommodate cyclists and pedestrians, the Friendship Trail should be at least 4.0 m wide. This is the case between James Street and Beverly Street, so cycling, walking, landscaping, and lighting could be located off Canada Avenue along this section, on the east side.

- There is considerable road dedication area on the west side of Canada Avenue for road widening between Philip and Sherman.
- There is only one driveway (5 m wide) to access municipal infrastructure on the east side of Canada Avenue.
- There are only 2 public roads that intersect the east side of Canada Avenue. These are Beverly Street and James Street.
- There is sufficient paved width on Canada Avenue in the City of Duncan Boundary to allow for cycling infrastructure where needed (~110 m north from the Evans Street Crosswalk).

## Discussion

"Complete streets" is a transportation design approach where streets are planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for users of all ages and abilities, regardless of their mode of transportation. Complete Streets allow for safe travel by those walking, cycling, driving automobiles, riding public transportation, using mobility aids, or delivering goods.

Staff is proposing a multi-year initiative to develop a complete street along a larger project area to address completion of the Friendship Trail and facilitate future connections in the active transportation network. The project area would be expanded to include the entire width of the Canada Avenue road dedication - as well as encroachments onto the adjacent railway - between the roundabout at Sherman Road and the intersection at Evans Street. A concept drawing can be found in ATTACHMENT 1.

Design outcomes would consist of:

1. Widening of Canada Avenue within the North Cowichan Boundary and replacement and widening of the Holmes Creek bridges;
2. An on-road protected bikeway and sidewalk replacement;
3. Transit considerations;
4. Installation of a crossing of James Street and other crossing improvements;
5. Placemaking potential along Canada Avenue; and
6. Use of the existing user controlled crosswalk at Evans Street.

These design outcomes are discussed below:

*Widening of Canada Avenue within the North Cowichan Boundary and replacement of the Holmes Creek crossings:*

Between Philip Street and Sherman Road, the paved surface of Canada Avenue is currently an average of 8 m wide from curb to curb, but the road dedication is 15 m wide. A typical section to allow for sidewalks, bikeway, and bi-directional drive lanes would be about 14 m wide. Wider sections would be required for the left turn queue onto Philip. At the Berkeley St pumphouse, Canada Avenue widens out considerably and no widening is required.

The roadway at the Holmes Creek crossings is about 8 m wide, with a 1.5 m wide sidewalk on the west side. The crossings do not allow for extension of the friendship trail on the east side. Per the Municipality's 2017 Bridge and Culvert Inspections report, these bridges are indicated as having five years estimated life remaining. Council could seek to widen the bridges at the time that they are replaced to the trail and cycling plans.

*Urban alignment of Beverly Street:*

The right turn from westbound Beverly Street to northbound Canada Avenue is currently a "free right": a dedicated lane that orients driver focus to northbound traffic only. This is identified as a high risk for conflict for southbound cyclists in a bikeway. In order to address this, the free right lane should be replaced with a signalized right-turn-lane, squared to Canada Avenue.

*On-road protected bikeway:*

The Bike Network Implementation Guide calls for a protected bikeway along this section of Canada Avenue. The benefits, typical applications, and design guidelines from the Guide are provided in ATTACHMENT 2. A bikeway is favored on Canada Avenue because of the following factors:

- A safe space for cyclists, more attractive to a wide range of abilities and ages.
- There are high volumes of vehicle traffic on Canada Avenue.
- It is a street where there are very few conflicts on one side of the street (east);
- Access to the wider network is greater on the east side, given the major connections to Beverly Street and James Street.

*Transit Consideration:*

There are five bus stops along the project area. Improving access to transit and movement of other road users will be explored to ensure safety and accessibility for all users. This could include consideration of bus pull-outs, to improve vehicle movement along Canada Avenue.

*Installation of a crossing of James Street and other crossing improvements:*

There is currently no crosswalk across James Street at Canada Avenue. The Friendship Trail is diverted towards the railway tracks, forcing cyclists and pedestrians to cross three lanes of motorized traffic illegally at the train tracks. This is identified as a high risk. The corner where a crosswalk should be is fenced. Addressing this crossing will require addressing safety distancing issues at the railway crossing.

A number of existing crosswalks that connect across Canada Avenue will be reviewed to ensure safe and convenient movement for all road users. This will include:

- Development of a crossing from James Street to James Street Alley, per the Duncan Active Transportation Plan
- A review of crosswalks in the 1<sup>st</sup> and 2<sup>nd</sup> street areas; and
- Consideration of a mid-block crossing access to the Cairnsmore Parkette and stairs.

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*Placemaking potential along Canada Avenue:*

The need for lighting, street furniture, landscaping, control of invasive species and improvement to the public realm should be assessed and planned.

*Use of the existing user controlled crosswalk at Evans Street:*

A user activated crosswalk is currently located at Evans Street to cross Canada Avenue and this is also the northern extent of the bike lanes that continue to Trunk Road. A control for southbound cyclists in the bikeway would give them the ability to cross to the southbound bike lane, and continue to Trunk Road.

**Network Policy Analysis:**

This policy background addresses transportation policies that support this project. As a inter jurisdictional project, policies from both the Municipality of North Cowichan and City of Duncan are reviewed.

*MNC Bike Network Implementation Guide:*

The Five-Year Active Transportation Infrastructure Capital Plan identified ten capital bike network projects to be completed between 2017-2021. These projects have been selected based on their ability to close important gaps and address hazards in the network. They are seen as projects that fit within the Guide's aim to catalyze an increase in cycling participation rates. There are three Five-Year Bike Network projects that connect to this project:

Project 4: Friendship Trail Extension: Philip Street to Alington Road

This project is envisioned as Modal 2 (On-Road Protected) and is contained in the subject area of this project.

Project 7: Sherman Road Bike Collector: TransCanada Trail to Canada Avenue

This project is envisioned as Modal 3 (Bike Lanes) with protected sections.

Project 10: Sherman Road & Canada Avenue Roundabout Improvements

This project aims to ensure that all road users can safely and conveniently move through the roundabout to access the Friendship Trail north of Alington Road (towards Cowichan Commons) and west on Sherman Road.

Other longer term projects identified in the Guide served by this improvement include:

Beverly Street – Modal 3 Bike Lanes:

Beverly Street now has bike lanes from Lakes Road to the Trans-Canada Highway. The completion of the bike lanes from the Highway to Canada Avenue will complete this important arterial road.

James Street – Modal 2 On-Road Protected Bikeway:

As the centre of the University Village Local Area Plan and an institutional node (Island Savings Center, Library, CAC, and Cowichan Secondary, VIU access), a bikeway along James Street will provide equal access to the facilities that are built for everyone. The James Street Bikeway would also connect across the highway to east Duncan and beyond via a possible extension of this bikeway on York Road.

*City of Duncan Active Transportation Plan:*

The City of Duncan Active Transportation Plan includes cycling and pedestrian improvements and places each improvement on one of three tiers of priority for action.

The following cycling improvements are served by the proposed Canada Avenue improvements:

- Canada Avenue – Tier 1 – Bike Lane (Contained in the project area), proposed to be replaced as bikeway.
- James Street Alley – Tier 2 – Shared Lane Marking/Bike Boulevard
- Evans Street – Tier 2 – Shared Lane Marking/Bike Boulevard

The following pedestrian facility improvements are served by the proposed Canada Avenue improvements:

- Canada Avenue and James Street Pedestrian Crossing – Tier 1 – Enhanced Intersection

**Project Management:***Project Timeline:*

If supported by both MNC Council and City of Duncan Council, staff proposes the following timeline:

Pre Phase – Fall, 2018:	Councils include Canada Avenue Complete Street Design in 2019 budget and endorse Phase I of the plan and cost-share the design budget of \$500,000.
Phase I – 2019:	Working in partnership with City of Duncan, staff would hire planning and engineering services to generate a design and secure all approvals needed to seek grant and budget funding for 2020 construction.
Phase III – Summer, 2020:	Construction.

*Engagement and Consultation:*

Staff has reached out to discuss this project with Cowichan Tribes staff, who have indicated a desire to be kept informed. The Cowichan Tribes Transportation and Mobility Plan does not indicate this as a major problem area; however access to the Cowichan Commons area is noted a number of times in the Mobility Plan as a place that is difficult for members to access by non-motorized transport and which is desirable.

North Cowichan Staff has met with City of Duncan staff and discussed the project. City of Duncan staff was supportive of taking a report similar to this one to City of Duncan Council to share the cost of design, grant applications, and construction of the project, should both Councils approve this proposal.

*Budget:*

Staff has prepared a Class 'D' estimate for the design and construction of the overall project, as well as a separate design budget, shown in ATTACHMENT 3. The design budget includes geotechnical investigation, environmental assessment/permitting, archaeological assessment and permitting, structural and civil design, and a 25% contingency. The estimated total cost of design is \$500,000.00.

Staff is proposing that the cost of design be shared between the Municipality of North Cowichan and the City of Duncan. Further spending will be required in subsequent phases, once design and budget are finalized.

**Options**

The following options are available to Council regarding this plan:

- 1) (Recommended) That Council endorse the Canada Avenue Complete Streets Initiative and consider funding for design in 2019.
- 2) Council not endorse the Canada Avenue Complete Streets Initiative. If Council chooses to not endorse this initiative it is recommended to direct staff to consider lesser alternatives such as modal 3 cycling lanes on each side of the roadway.

*Financial:*

A budget and rationale is presented in the budget subsection of the project management section above. As part of the recommended option, staff proposes to defer construction of the Canada Avenue Southbound Bike Lane and the Canada Avenue Friendship Trail from the 2018 Roads, Cycling and Sidewalk Program and to consider allocating those funds to the Canada Avenue Complete Streets Design in the 2019 Budget.

*Personnel:*

Planning and engineering resources from both the Municipality and the City of Duncan would work together through this process. The Development Services Department would manage Phases I and II of the project. Engineering would transitionally take over management during the construction phase.

*Environmental:*

An Environmental Assessment and Protection Plan was prepared in 2016 for the original project area between Sherman Road and Philip Street. This report indicates that in order to complete the 2 m wide Friendship Trail, some mitigation to protect riparian areas will need to be undertaken. This report will be updated if the project advances.

*Social:*

This project addresses numerous gaps in our transportation network for cyclists and pedestrians between Evans Street and Alington Road. By filling these gaps, we provide movement for residents who do not have access to motorized transport, and give the option to those who would choose to ride or walk if they could. In so doing, this project would have a positive social impact.

*Communication:*

Consultation with the cycling community would take place as part of the design phase. The engagement and consultation section recommends that affected property owners will be consulted once a design has been determined.

If approved, a communication strategy would be developed that includes website updates and social media posts for the wider community, as well as signage on the site and media notifications at later construction phases.

**Recommendation**

That North Cowichan Council direct staff to defer construction of the Canada Avenue Southbound Bike Lane and the Canada Avenue Friendship Trail from the 2018 Roads, Cycling and Sidewalk Program;

Further that the Joint Council direct staff from the City of Duncan and Municipality of North Cowichan to support the Canada Avenue Complete Streets Initiative and partner to develop a complete street design on Canada Avenue from Evans Street to its terminus at the Sherman Road roundabout.

Further that the Councils direct staff to bring forward a proposal to allocate a total of \$500,000 for the design of the Canada Avenue Complete Streets Initiative in the 2019 budgets.

Further that staff report back to the joint Councils with a design and budget prior to proceeding with grant applications.

*Attachment(s):*

1. Canada Avenue Complete Street Concept
2. Modal 2 Section of Bike Network Implementation Guide
3. Budget for Phase I of Canada Avenue Complete Streets Initiative
4. Budget Breakout Map by Areas





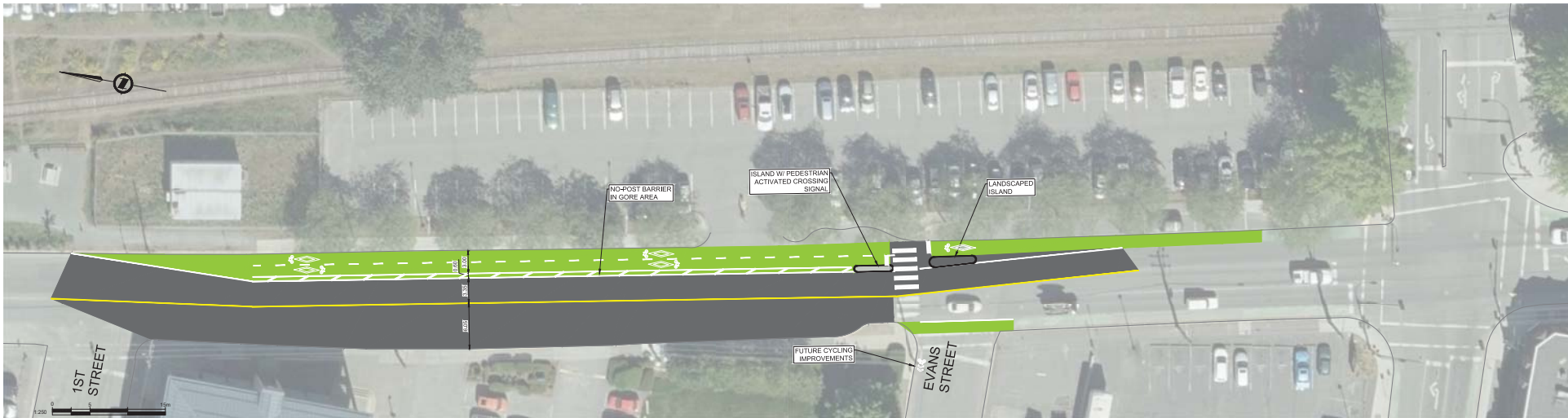
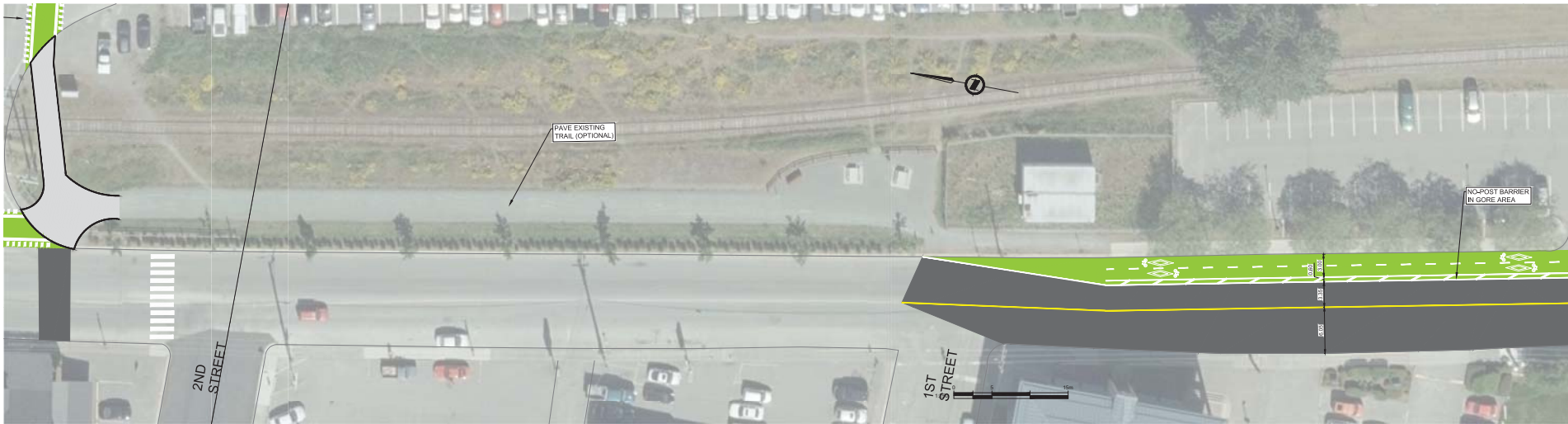




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	FENCE	FENCE	ASPHALT CURB	ASPHALT CURB	HYDRANT ASSEMBLY	HYDRANT ASSEMBLY	SANITARY CLEANOUT	SANITARY CLEANOUT	WATER METER	WATER METER	WATER REDUCER	WATER REDUCER	STORM MANHOLE	STORM MANHOLE	STORM CLEANOUT	STORM CLEANOUT	STORM SERVICE	STORM SERVICE	STORM LAWN DRAIN
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FENCE	FENCE	ASPHALT CURB	ASPHALT CURB	HYDRANT ASSEMBLY	HYDRANT ASSEMBLY	SANITARY CLEANOUT	SANITARY CLEANOUT	UTILITY POLE	UTILITY POLE
ROAD MARKING	ROAD MARKING	CURB AND GUTTER	CURB AND GUTTER	WATER METER	WATER METER	SANITARY SERVICE	SANITARY SERVICE	GUY WIRE ANCHOR	GUY WIRE ANCHOR
HYDRO ELEC	HYDRO ELEC	SANITARY SEWER	SANITARY SEWER	WATER REDUCER	WATER REDUCER	STORM MANHOLE	STORM MANHOLE	POLE MOUNT LUMINAIRE	POLE MOUNT LUMINAIRE
CABLE TV	CABLE TV	SANITARY FORCE MAIN	SANITARY FORCE MAIN	WATER AIR VALVE	WATER AIR VALVE	STORM CLEANOUT	STORM CLEANOUT	DAINT MOUNT LUMINAIRE	DAINT MOUNT LUMINAIRE
TELEPHONE	TELEPHONE	STORM DRAIN	STORM DRAIN	WATER SERVICE	WATER SERVICE	STORM SERVICE	STORM SERVICE	SURVEY MONUMENT/CONTROL	SURVEY MONUMENT/CONTROL
GAS	GAS	WATER MAIN	WATER MAIN	WATER FLUSH	WATER FLUSH	STORM LAWN DRAIN	STORM LAWN DRAIN		

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# Bike Network Implementation Plan

## Design Guidelines – Modal 2 On-Road Protected Trail

### Modal 2 – On-Road Protected Trail

Protected trails (also known as protected bike lanes or cycle tracks) are physically separated cycle tracks that allow bicycle movement in both directions on one side of a street.

Protected trails may be configured as a protected cycle track—at street level with a parking lane or other barrier between the cycle track and the motor vehicle travel lane—and/or as a raised cycle track to provide vertical separation from the adjacent motor vehicle lane.

#### *On-Road Protected Trail Benefits:*

- More attractive to a wide range of bicyclists at all levels and ages.
- Low implementation cost when making use of existing pavement and drainage and using parking lane or other barrier for protection from traffic.
- Dedicates and protects space for bicyclists by improving perceived comfort and safety. Eliminates risk and fear of collisions with over-taking vehicles.
- Reduces risk of ‘dooring’ compared to a bike lane, and eliminates the risk of a doored bicyclist being run over by a motor vehicle.

#### *Typical Applications:*

- On streets with few conflicts such as driveways or cross-streets on one side of the street.
- On streets where there is not enough room for a one-way cycle track on both sides of the street.
- On streets where more destinations are on one side thereby reducing the need to cross the street.
- On streets with extra right-of-way on one side.
- To connect with another bicycle facility, such as a second cycle track on one side of the street.
- Along streets on which bike lanes would cause many bicyclists to feel stress because of factors such as multiple lanes, high traffic volumes, high speed traffic, high incidence of double parking, and high parking turnover.
- On streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments.
- Along streets with high bicycle volumes.
- Along streets with high motor vehicle volumes and/or speeds.
- Special consideration should be given at transit stops to manage bicycle and pedestrian interactions.

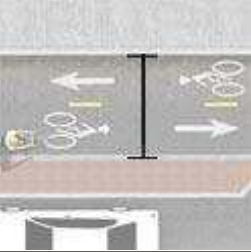
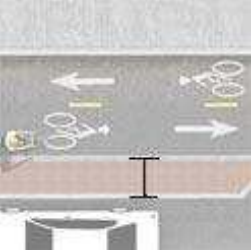


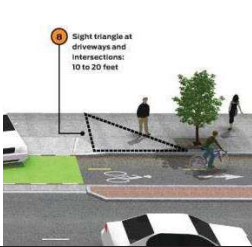
# Bike Network Implementation Plan

## Design Guidelines – Modal 2 On-Road Protected Trail

### Design Features:

Design features for On-Road Trail are aimed at providing safe space within the protected area and ensuring that the form of protection is adequate to provide a safe riding environment and perception thereof.





### Minimum Dimensions Design:

	Travelled Path:		
		<i>Where available:</i>	3.6 m
		<i>Constrained:</i>	3.0 m
	Protection Feature		
		<i>Raised curb</i>	1.0 m
		<i>Painted Buffer with planters, bollards, or signs</i>	1.0 m
		<i>Separation between planters, bollards, or signs (end to End)</i>	4.5 m
		Sight triangle distance from curb along driveway.	3.0 m
		Sight triangle distance from driveway along curb.	6.0 m


# Bike Network Implementation Plan

## Design Guidelines – Modal 2 On-Road Protected Trail

### *Painting & Signage:*

	A dashed yellow line should be used to separate two-way bicycle traffic and to help distinguish the cycle track from any adjacent pedestrian area.
	Bicycle lane word, symbol, and/or arrow markings shall be placed at the beginning of a cycle track and at periodic intervals along the facility to define the bike lane direction and designate that portion of the street for preferential use by bicyclists.
	Intersection traffic controls along the street (e.g., stop signs and traffic signals) shall also be installed and oriented toward bicyclists traveling in the contra-flow direction.
	Where needed, a “DO NOT ENTER” sign with “EXCEPT BIKES” plaque shall be posted along the facility to only permit use by bicycles.

### *Optional Bike Lane Features:*

	May be configured as a raised cycle track.
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**Canada Ave Complete Street - Class D (Preliminary) Budget****21-Feb-18**

<b>Non-Construction Costs</b>	<b>% of Total</b>	<b>Estimated Cost</b>
Geotechnical Investigation / Report / Monitoring	1.4%	\$ 75,000
Environmental Assessment / Permitting / Monitoring	0.6%	\$ 30,000
Archeological Assessment / Permitting (monitoring not included)	0.4%	\$ 20,000
Detailed Design - Structural, Civil	5.5%	\$ 300,000
Contract Administration	5.5%	\$ 300,000
Mobilization and Overhead	1.4%	\$ 75,000
<b>Section Total</b>	<b>13%</b>	<b>\$ 800,000</b>

<b>Bridge Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Estimated Cost</b>
North Bridge Construction (5m x 14m)	sq m	70	\$ 6,500	\$ 455,000
South Bridge Construction (5m x 14m)	sq m	70	\$ 6,500	\$ 455,000
<b>Section Total</b>				<b>\$ 910,000</b>

<b>Sherman to Berkeley Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Estimated Cost</b>
Preloading	LS	1	\$ 50,000	\$ 50,000
Earthworks -Widen Sherman to Philip	m	270	\$ 1,500	\$ 405,000
Roadworks - Removals 15.5m wide	m	375	\$ 580	\$ 217,500
Roadworks - Over-Ex 1.0m Deep by 15.5m wide	m	375	\$ 415	\$ 155,625
Roadworks - Sub Grade 1.0m Deep	m	375	\$ 810	\$ 303,750
Roadworks - Sub Base 0.3m Deep	m	375	\$ 290	\$ 108,750
Roadworks - Base 0.1m Deep	m	375	\$ 175	\$ 65,625
Roadworks - Sidewalk Both Sides	m	375	\$ 230	\$ 86,250
Roadworks - Curb Both Sides	m	375	\$ 245	\$ 91,875
Roadworks - Pave 11.5m wide by 75mm thick	m	375	\$ 355	\$ 133,125
Sewer Replacement	m	511	\$ 500	\$ 255,500
Storm Relocations	LS	1	\$ 30,000	\$ 30,000
Water Replacement	m	340	\$ 600	\$ 204,000
Riparian Area Enhancements	LS	1	\$ 40,000	\$ 40,000
Painting, thermoplast, eradication	LS	1	\$ 5,000	\$ 5,000
No-Post Barrier	m	315	\$ 140	\$ 44,100
Utility Pole Relocations	ea	5	\$ 8,500	\$ 42,500
<b>Section Total</b>				<b>\$ 2,238,600</b>

<b>Berkeley to Beverly Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Estimated Cost</b>
Painting, thermoplast, eradication	LS	1	\$ 10,000	\$ 10,000
No-Post Barrier	m	415	\$ 140	\$ 58,100
<b>Section Total</b>				<b>\$ 68,100</b>

<b>Beverly Intersection Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Rate</b>	<b>Estimated Cost</b>
Painting, thermoplast, eradication	LS	1	\$ 7,500	\$ 7,500
Traffic Light Relocation	LS	1	\$ 25,000	\$ 25,000
Rail Improvements	LS	1	\$ 40,000	\$ 40,000
Roadworks - Sidewalk RE&RE, Islands	LS	1	\$ 70,000	\$ 70,000

<b>Section Total</b>				<b>\$</b>	<b>142,500</b>
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<b>James Intersection Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>		<b>Unit Rate</b>	<b>Estimated Cost</b>
Painting, thermoplast, eradication	LS	1	\$	5,000	\$ 5,000
Roadworks - Curb returns and new path	LS	1	\$	30,000	\$ 30,000
<b>Section Total</b>				<b>\$</b>	<b>35,000</b>

<b>Friendship Trail Pave Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>		<b>Unit Rate</b>	<b>Estimated Cost</b>
Pathway Improvements (grade and pave)	m	450	\$	250	\$ 112,500
<b>Section Total</b>				<b>\$</b>	<b>112,500</b>

<b>First to Evan Construction Costs</b>	<b>Unit</b>	<b>Quantity</b>		<b>Unit Rate</b>	<b>Estimated Cost</b>
Painting, thermoplast, eradication	LS	1	\$	5,000	\$ 5,000
No-Post Barrier	m	85	\$	140	\$ 11,900
Roadworks - Islands	LS	1	\$	20,000	\$ 20,000
<b>Section Total</b>				<b>\$</b>	<b>36,900</b>

<b>Subtotal</b>				<b>\$</b>	<b>4,343,600</b>
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Contingency				25% \$	1,085,900
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<b>Total Anticipated Costs</b>				<b>\$</b>	<b>5,429,500</b>
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<b>Bike Lane Portion of Sherman to Berkeley Improvements</b>					
3.6m Wide Bike Lane incl barrier	m	375	\$	1,100.00	\$ 412,500.00
Bike Lane on bridges	sq m	36	\$	6,500.00	\$ 234,000.00
					<b>\$ 646,500</b>

# CANADA AVENUE COMPLETE STREET

FEBRUARY 1, 2018

BASED ON CLASS D ESTIMATE

