

PEDESTRIAN CROSSING STRATEGY

2020

August 2020



CITY OF
PRINCE GEORGE

Executive Summary

As outlined in the 2019/2020 City of Prince George Strategic Priorities, the City's goal is to facilitate healthy and active living, accessible and enjoyable for everyone regardless of age or ability. The City also wants to enhance and integrate safe and sustainable transportation options, and create community connectivity with infrastructure that encourages active transportation.

This report provides a prioritization strategy to implement pedestrian crossing upgrades as prescribed by the updated Pedestrian Crossing Control Guide 3rd Edition, published by the Transportation Association of Canada (TAC) in June 2018.

At this time, 202 crosswalks are being evaluated using the new Guide, while considering community feedback and land use. There are 169 existing marked crosswalks in Prince George, excluding traffic signals and Provincial crosswalks, and 33 requested new crosswalks.

Out of the 202 crosswalks being evaluated, 43 crossings are recommended for upgrade or installation, with 26 of these being existing crosswalks and 17 new crosswalks.

An annual budget of \$500,000 over ten years (\$5.0 million) would be required to support upgrades and installations of approximately 43 pedestrian crossing locations to conform to the updated Guide.



Figure 1: Overhead Flashing Beacon (OF) or Special Crosswalk – 15th Avenue at Jarvis Street

Revisions

REVISION	DATE	UPDATED BY	COMMENTS

Report Prepared by: 
Chris Vliegenthart, Transportation Supervisor
Infrastructure & Public Works


Report Reviewed by: 
Adam Homes, P.Eng.
Director, Infrastructure Services
Infrastructure & Public Works

Table of Contents

1.0 Introduction	5
2.0 Background	6
3.0 Prioritization	8
4.0 Pedestrian Crossing Types	9
5.0 Financial Considerations	11
6.0 Conclusion/Recommendation	12
APPENDIX A	13



Figure 2: Rainbow Crosswalk - 7th Avenue at Quebec Street

1.0 Introduction

As outlined in the 2019/2020 City of Prince George Strategic Priorities, it is the City's goal to facilitate healthy and active living, which is accessible and enjoyable for everyone regardless of their age or ability. The City also wants to enhance and integrate safe and sustainable transportation options, and create community connectivity with infrastructure that encourages active transportation.

This report is a strategy to implement pedestrian crossing upgrades as prescribed by the updated Pedestrian Crossing Control Guide 3rd Edition, published by the Transportation Association of Canada in June 2018 (TAC Guide). The main objective of the TAC Guide is to promote uniformity across the country. The TAC Guide is a support tool to assist in the decision-making process when:

1. Establishing the need for controlling traffic to enable pedestrians to cross the roadway safely.
2. Identifying the type of traffic control device that would be most suitable for the location's cross-section, vehicular exposure, and pedestrian demand.

Ensuring that the crosswalks in the City meet the standards of the new TAC Guide directly supports the City's 2019/2020 Strategic Priorities, the 2011 Active Transportation Plan, and Official Community Plan, all of which have had extensive engagement with the community in their development. It further supports the Provincial CleanBC, B.C. Community Road Safety Toolkit, and Vision Zero initiatives.

The Age-Friendly Action Plan, approved by Council in 2018, Action #8, prioritizes capital investment in high-volume pedestrian routes to enhance walkability. It works to support Action #5 to develop a Bus Stop Strategy to prioritize improvements to improve bus stops' comfort and connectivity to the pedestrian network.

Recent investments in our Active Transportation System have already demonstrated an increase in the usage of sustainable modes. Providing safer pedestrian crossing facilities and improving pedestrian accessibility will encourage active modes of transportation and reduce pedestrian collisions. This investment will help the City meet its myPG sustainability goals of creating a "Safe, Active, Healthy and Equitable Community."



Figure 3: Rapid Rectangular Flashing Beacon (RRFB) – 20th Avenue at Oak Street

2.0 Background

The changes to the TAC Guide has initiated the review of the City's pedestrian crossings to ensure they meet national standards. At this time, Transportation and Technical Services is evaluating 202 existing and potential future pedestrian crossing locations throughout the City and comparing those configurations to the updated 2018 TAC Guide, in alignment with public request, City planning and policy direction.

The Ministry of Transportation and Infrastructure (MoTI) manages Highway 97 and Highway 16, including the related pedestrian crossings. These provincial crosswalks are not included within the scope of this assessment. The City of Prince George works in conjunction with MoTI to provide feedback on improvement areas and be advised of MoTI's upcoming projects.

Previously, the City has used the 1994 Pedestrian Crossing Control Manual for British Columbia, and the 1998 TAC Pedestrian Crossing Control Manual. The main changes between the 1998 and 2018 TAC guidelines are the minimum *average hourly pedestrian volumes*, the minimum *daily vehicle volumes*, and the *regulatory speed limit* used to determine the recommended crossing type. In general, the 2018 TAC Guide puts less emphasis on the number of pedestrians using a crosswalk, and more importance on the crossing conditions pedestrians will need to navigate. The methodology of the TAC Guide focuses more on safe pedestrian movements and less on motor vehicle delays.

Of the 202 pedestrian crossings being evaluated under this strategy, 169 are existing marked crosswalks owned by the City. This evaluation excludes all traffic signals and provincially owned crosswalks. The other 33 pedestrian crossings are new crosswalks that have been requested by the public.

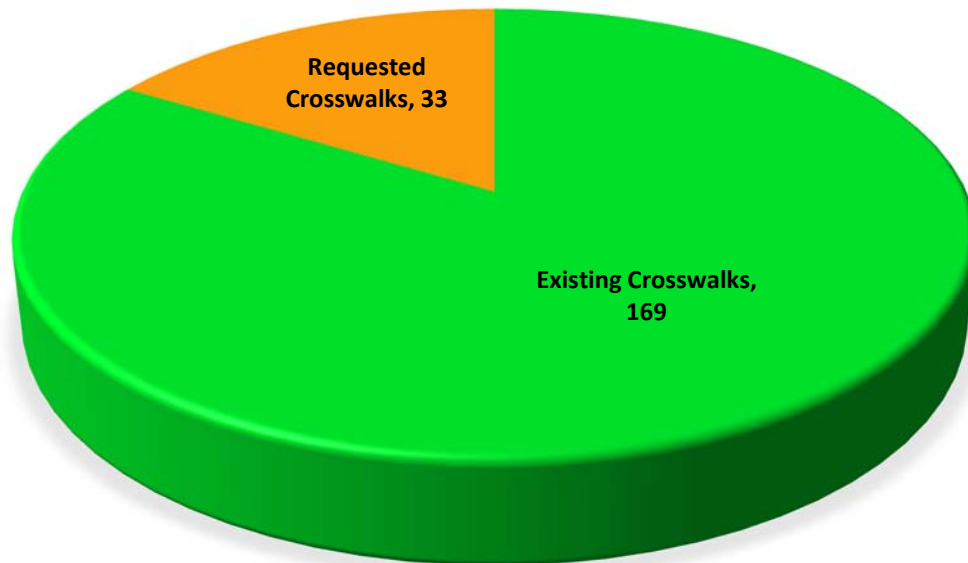


Figure 4: Existing and Requested Crosswalks

The evaluations have identified 43 pedestrian crossings with recommendations to upgrade or install crosswalks per the TAC Guide. Twenty-six of these locations are existing pedestrian crossings, and 17 are new crosswalks.

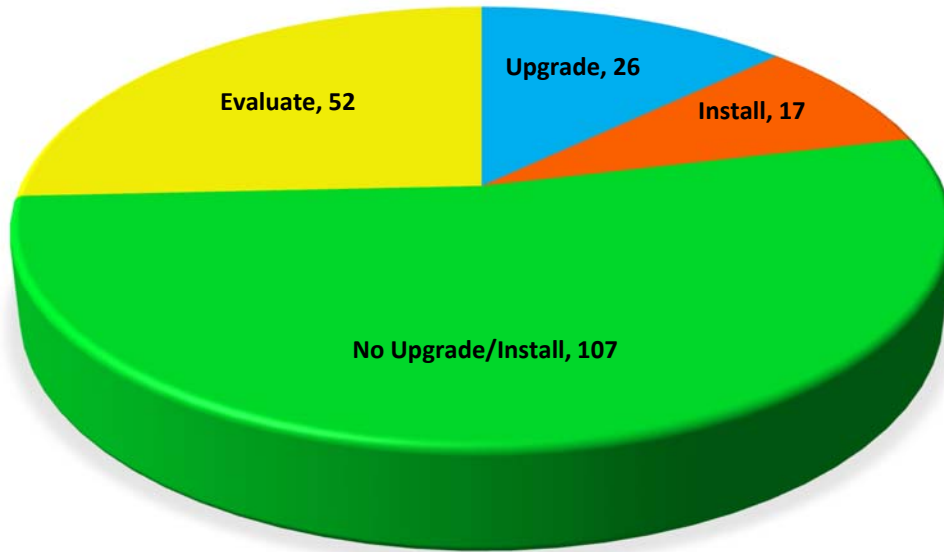


Figure 5: Pedestrian Crossing Evaluation Status

Fifty-two pedestrian crossings require additional data collection before they can be evaluated, of which 42 are existing crossings. Standard practice is to use vehicle and pedestrian volumes that are no more than five years old. Traffic counts are collected mid-week, and while schools are operating to ensure the traffic volumes represent a typical day. The City’s traffic count program is on a 4 to 5-year recurring cycle. The pandemic has caused significant traffic volumes reductions, resulting in traffic counts scheduled for Spring 2020 to be postponed until traffic volumes stabilize.

The City receives requests from the public for upgrades to existing crosswalks or new crosswalk installations. Staff consider many factors when completing crosswalk assessments, including public requests, collision history, land-use and pedestrian patterns.

There has been a steady increase in the number of crosswalk requests received. In 2019, the City received 54 requests for improved and new pedestrian crossings.

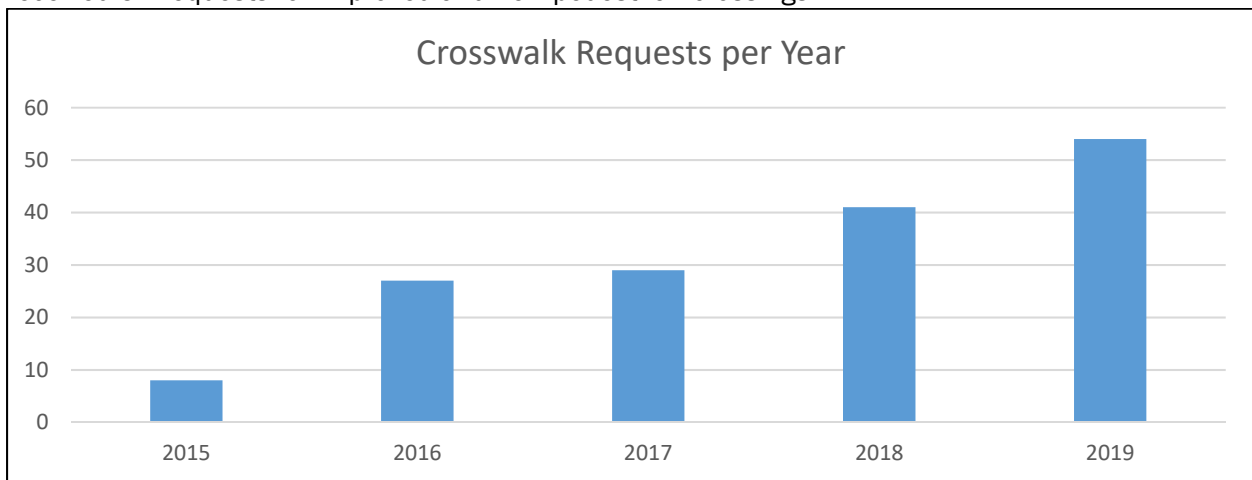


Figure 6: Crosswalk Service Requests per Year – Source: Cityworks

3.0 Prioritization

Staff conducted a review of Best Management Practices for prioritizing pedestrian crossings to be used in conjunction with the TAC Guide. Out of this review, twelve criteria were established to prioritize the upgrade and installation of existing and requested crosswalks throughout the City. A higher rating indicates higher priorities. The criteria used are described below.

The **Average Hourly Pedestrian Volume** and **Peak Hour Pedestrian Volume** are used to prioritize pedestrian crossings that show consistent use throughout the day, such as those found near shopping centres and locations with high demand at specific times such as schools. Pedestrian volumes are represented in Equivalent Adult Units (EAUs) per hour, where pedestrians with mobility issues and children are counted as 2 EAUs, and pedestrians 65 or older are counted as 1.5 EAUs.



Figure 7: Rapid Rectangular Flashing Beacon (RRFB)

The **Lane Configuration** of a roadway is used to prioritize pedestrian crossings that require pedestrians to cross multiple lanes traffic.

Pedestrian crossings on roadways with a higher **Traffic Volume**, or Average Annual Daily Traffic (AADT), are prioritized over crossings on low volume roadways. Higher vehicle volumes mean less crossing opportunities for pedestrians.

Crossings on roadways with a higher **Speed Limit** are prioritized. Speed has been identified as a critical risk factor in collisions, influencing both the risk of a collision and the severity of the resulting injuries. The risk of pedestrian fatality increases by approximately 40% when involved in a 60km/h collision versus a 50km/h collision.

Priority is given where a pedestrian crossing has a **Collision History** involving pedestrians.

Crosswalks on roadways with an approaching downhill **Road Grade** are prioritized. The steeper the roadway, the longer it takes a braking vehicle to come to a complete stop.

Service Requests, recorded in the City's Cityworks program, prioritize pedestrian crossings that have received public requests for new or upgraded crosswalks.

Priority is given to pedestrian crossings that are in proximity to **Network Connections** (intersections), **Transit Connections** (bus stops), and various **Land Use Connections** where a pedestrian crossing is in proximity to a commercial destination, community center, school, park, etc. The **Distance to the Nearest Crossing** is a factor used to prioritize pedestrian crossings where the next available alternative crossing is a significant distance.

Table 1 lists the 43 pedestrian crossings currently recommended for upgrade or installation. However, the City’s pedestrian crossing priority will continue to change over time as additional traffic studies are collected, network connections are constructed, and developments are completed. A map of the crosswalk locations has been provided in Appendix A.

Table 1 – Pedestrian Crossing Priority as of 2020

Location	Priority	Location	Priority
Ospika @ Davis	H ●	3rd Ave @ Winnipeg	M ●
Tyner @ Baker/Gannett	H ●	Foothills @ Ochakwin	M ●
Queensway @ Connaught	H ●	Tabor @ Hill/Carrier	M ●
5th Ave @ Stuart	H ●	13th Ave @ Edmonton	M ●
Ospika @ 1st Ave	H ●	3rd Ave @ Prince Rupert	M ●
15th Avenue @ Alward	H ●	Queensway @ Regents	M ●
5th Ave @ Watrous	H ●	Queensway @ 2nd Ave	M ●
15th Ave @ Irwin	H ●	5th Ave @ Hill	L ●
Ospika @ Exhibition Park	H ●	7th Ave @ Brunswick	L ●
5th Ave @ Alward	H ●	Westwood @ Pinewood	L ●
Massey @ Griffith	H ●	Westwood @ Athlone	L ●
15th Avenue @ Ewert	H ●	3rd Ave @ Edmonton	L ●
Domano @ Moriarty W	H ●	Tyner @ University Heights	L ●
Ospika @ Pinewood	H ●	Anderson @ Fisk	L ●
Patricia @ Library	M ●	Kelly Rd S @ Vellencher	L ●
Westwood @ Lorne	M ●	Spruce @ Strathcona	L ●
7th Ave @ Quebec	M ●	Tyner @ Parkside	L ●
Austin West @ Madill	M ●	22nd Ave @ Quinn	L ●
Dominion @ 6th Avenue	M ●	O'Grady @ Marleau	L ●
Queensway @ Hamilton	M ●	Gladstone @ Walkway near Guelph	L ●
Ospika @ Andres	M ●	Griffiths @ PGSS Parking Lot	L ●
Queensway @ 3rd Ave	M ●		

4.0 Pedestrian Crossing Types

Crossing control treatments provide safer places for pedestrians to cross and are a critical component of pedestrian safety. The TAC Guide addresses the use of five pedestrian crossing control systems, each comprising various elements that promote pedestrians' safer accommodation.

Table 2 illustrates examples of each of these systems. Each of these systems includes recommended and optional components. Recommended components must be installed to ensure the effective operation of the system. Desirable elements have the potential to improve the overall system performance but are not essential.

Table 2 – Pedestrian Crossing Types

<p>Ground Mounted (GM)</p> <p>Passive side mounted pedestrian signage, and pavement markings</p> <p>Cost estimate \$5,000</p>	
<p>Ground Mounted + (GM+)</p> <p>Passive side mounted pedestrian signage, and pavement markings, with passive enhancements.</p> <p>Example illustrates a curb extension enhancement (Bulb-outs)</p> <p>Cost estimate \$25,000</p>	
<p>Rapid Rectangular Flashing Beacon (RRFB)</p> <p>Pedestrian activated, side mounted signage with rapid flashing beacons, and pavement markings</p> <p>Cost estimate \$50,000</p>	
<p>Overhead Flashing Beacon (OF) or Special Crosswalk</p> <p>Pedestrian activated, overhead, backlit signage with alternating flashing beacons, down lighting, and pavement markings</p> <p>Cost estimate \$200,000</p>	
<p>Pedestrian Signal (TS)</p> <p>Pedestrian activated traffic signal with Flashing Green Light providing a Red Light stop condition when activated, and pavement markings</p> <p>Cost estimate \$300,000</p>	

5.0 Financial Considerations

A budget of approximately \$5,000,000 (2020 dollars) would be needed to complete the 43 identified pedestrian crossings, requiring an annual budget of \$500,000 (2020 dollars) per year for a ten-year program. If Council approves a new Pedestrian Crossing Program, individual pedestrian crossing projects would be adjusted annually as required to fit within the approved Budget. This adjustment means a mixture of high, medium and low priority pedestrian crossings would be completed each year.

Grant funding may be available for specific projects. The City frequently applies for funding through the Insurance Corporation of BC (ICBC) Road Improvement Program. Grant funding may also be available under the Ministry of Transportation & Infrastructure's new B.C. Active Transportation Infrastructure Grant Program.

The costs associated with operation and maintenance are estimated at 1.7% of the capital cost per crosswalk. The O&M cost for the 43 identified crosswalks averages out to approximately \$1,500 per crosswalk per year and includes the O&M costs of an existing crosswalk.

5.01 Option 1 – 10 Year Program

Complete 43 pedestrian crossing upgrades and installations over ten years. During 2021, the program would commence with survey, design and analysis for the initial locations.

Description of Costs	2021	2022	2023	2024	2024
Design	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Construction	\$450,000	\$450,000	\$450,000	\$450,000	\$450,000
Total Capital	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
O&M	\$0	\$7,500	\$15,000	\$22,500	\$30,000
Total Spend By Year	\$500,000	\$507,500	\$515,000	\$522,500	\$530,000

5.02 Option 2 – 15 Year Program

Complete 43 pedestrian crossing upgrades and installations over fifteen years. During 2021, the program would commence with survey, design and analysis for the initial locations.

Description of Costs	2021	2022	2023	2024	2024
Design	\$33,500	\$33,500	\$33,500	\$33,500	\$33,500
Construction	\$335,000	\$335,000	\$335,000	\$335,000	\$335,000
Total Capital	\$368,500	\$368,500	\$368,500	\$368,500	\$368,500
O&M	\$0	\$4,500	\$9,000	\$13,500	\$18,000
Total Spend By Year	\$368,500	\$373,500	\$377,500	\$382,000	\$386,500

5.03 Option 3 – 35+ Year Program

The third option is to maintain the current Pedestrian and Traffic Safety program of \$150,000 per year for 35+ years for all design and construction costs.

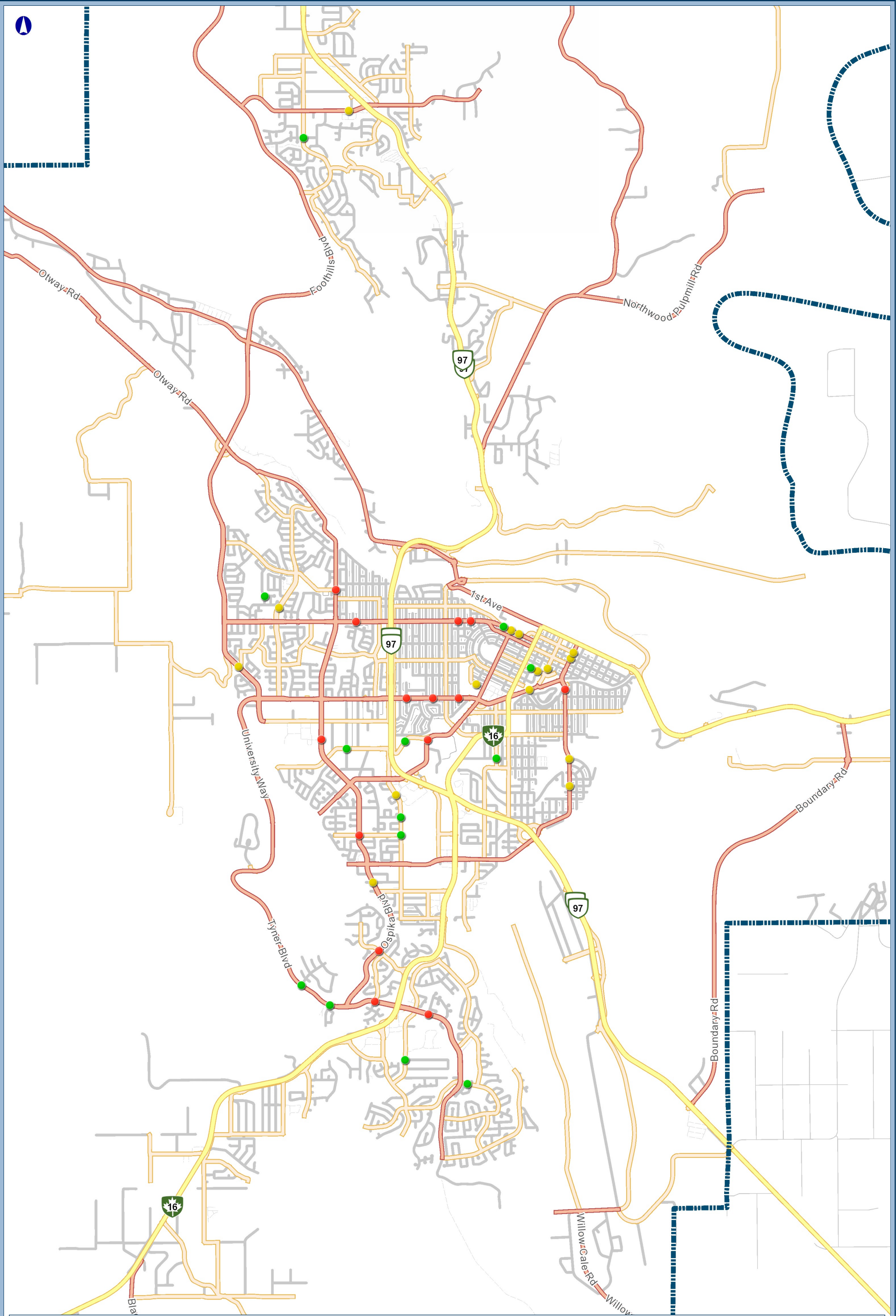
6.0 Conclusion/Recommendation

Staff will submit a capital budget request for Council's consideration during the 2021-2025 Operating and Capital Financial Plan. An annual capital budget of \$500,000/year for \$5,000,000 over ten years would complete approximately 43 pedestrian crosswalk upgrades/installations. An incremental request for operating and maintenance funding is required for the year 2022 and beyond. Operating and maintenance costs are estimated at approximately \$1,500 per crosswalk.



Figure 8: Pedestrian Signal (TS) - Dominion Street at the Civic Centre

APPENDIX A



1: 50000

Appendix A - Pedestrian Crossing Priority

This map illustrates the pedestrian crossings currently recommended for upgrade or installation. The pedestrian crossing priority will continue to change over time as additional traffic studies are collected, network connections are constructed, and developments are completed.

7/16/2020 7:33

