Appendix 1

City of Saskatoon

22nd Street West and Confederation Drive Intersection Improvements

Functional Design Report

July 3, 2024

Executive Summary

Safety and operational issues exist on 22nd Street West between Diefenbaker Drive and Confederation Drive in the eastbound direction. This location has long-standing concerns with the operation of vehicles attempting to maneuver from Fairmont Drive across the three traffic lanes to turn left from 22nd Street West eastbound to Confederation Drive northbound. To address these issues and capitalize on an opportunity to align with the planned future state of the roadway, the following improvements are recommended:

- Construct an eastbound slotted left-turn lane and an exclusive eastbound right-turn lane at the intersection of 22nd Street West and Confederation Drive.
- Construct a new right-out access to 22nd Street West from Fairlight Crescent and convert the existing access at Fairmont Drive to a right-in access from 22nd Street West.
- Relocate the existing overhead guide sign and roadside safety system located between Confederation Drive and Fairmont Drive farther west.
- Construct a third eastbound travel lane with curb and gutter between Diefenbaker Drive and Confederation Drive.
- Realign the pedestrian crosswalk, adjust pedestrian accessible ramps, and correct drainage deficiencies on the southwest corner of the intersection at 22nd Street West and Confederation Drive.
- Install a shared-use pathway on the south side of 22nd Street West between Diefenbaker Drive and Confederation Drive.

These improvements were presented to the public at an open house drop-in event on May 30, 2024. Feedback on the proposed improvements was generally positive and resulted in changes to the recommendations for Fairmont Drive.

A high-level cost estimate for each of the recommended improvements is shown below:

Improvement	Cost Estimate
Construct an eastbound slotted left-turn lane	$ 800,000
Construct an eastbound right-turn lane	$ 390,000
Convert Fairmont Drive access to a right-in configuration from 22nd Street West	$ 150,000
Construct new right-out access from Fairlight Crescent to 22nd Street West	$ 70,000
Relocate overhead guide sign and roadside safety system	$ 595,000
Install curb, gutter, and a third eastbound through lane	$ 345,000
Correct pedestrian accessible ramps and drainage deficiencies	$ 15,000
Install shared-use pathway on the south side of 22nd Street West	$ 250,000
Total	**$ 2,615,000**

It is recommended that the functional plan for these improvements be approved, and the project proceed to the detailed design and construction phases when funding is available.

Contents

1. INTRODUCTION

1.1 Background

Safety and operational issues exist on 22nd Street West between Diefenbaker Drive and Confederation Drive in the eastbound direction. This location has long-standing concerns with the operation of vehicles attempting to maneuver from Fairmont Drive across the three traffic lanes to turn left from 22nd Street West eastbound to Confederation Drive northbound. This movement is shown in Figure 1-1.

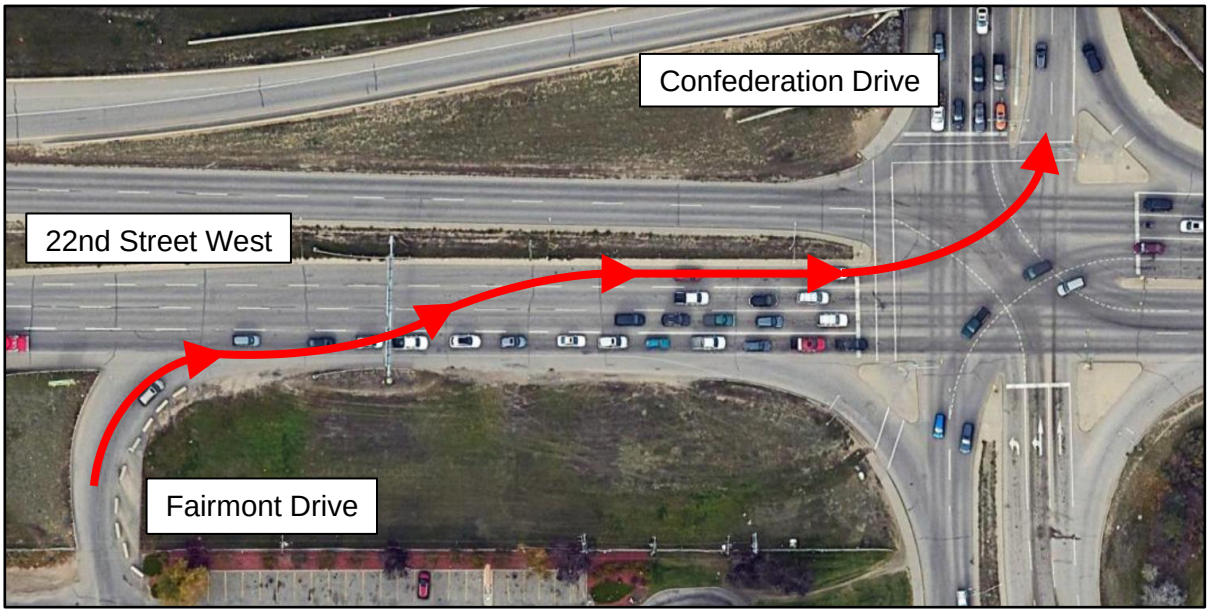


Figure 1-1: Weaving Movement from Fairmont Drive to Confederation Drive

Several measures have been installed along 22nd Street West in an attempt to prevent this movement. These include concrete barriers, low-profile barrier, and Tuff Curb with delineator posts. Each of the measures has been removed due to ongoing concerns and operational issues. For example, Figure 1-2 shows a tractor-trailer mounted on the low-profile barrier that was installed from 2014 to 2016.

Figure 1-2: An eastbound tractor-trailer got hung-up on the low-profile barriers – conditions at the time were early morning (dark) and rain. Photo credit: Global Saskatoon, August 17, 2016

This segment of 22nd Street West between Diefenbaker Drive and Confederation Drive was also included in the scope of the 2022 Circle Drive West Functional Planning Study.

At its Regular Business Meeting held on November 21, 2022, City Council received the Circle Drive West Functional Planning Study Final Report and resolved, in part,

> "That the Recommended Plan of the Circle Drive West Functional Planning Study be added to the Saskatoon Transportation Master Plan (STMP) Infrastructure List for future prioritization."

The study recommended geometric changes to the corridor to address these concerns and identified an eastbound slotted left-turn lane at the 22nd Street West and Confederation Drive intersection as a short-term improvement that should be implemented prior to the construction of the recommended Circle Drive and 22nd Street West interchange.

At its Special Meeting held on October 10, 2023, the Standing Policy Committee on Transportation received the Saskatoon Transportation Master Plan – 2023 Prioritized Infrastructure List. The 22nd Street West and Confederation Drive Upgrades project is ranked as number 26 on the prioritized list.

1.2 Study Area

This study primarily focuses on 22nd Street West between Diefenbaker Drive and Confederation Drive.

When considering the operational impacts of the proposed improvements, the following signalized intersections were also included in the analysis:

1. 22nd Street West and Diefenbaker Drive
2. Fairlight Drive and Diefenbaker Drive
3. Fairlight Drive and Fairmont Drive

Each of the primary and secondary study intersections are identified in Figure 1-3.

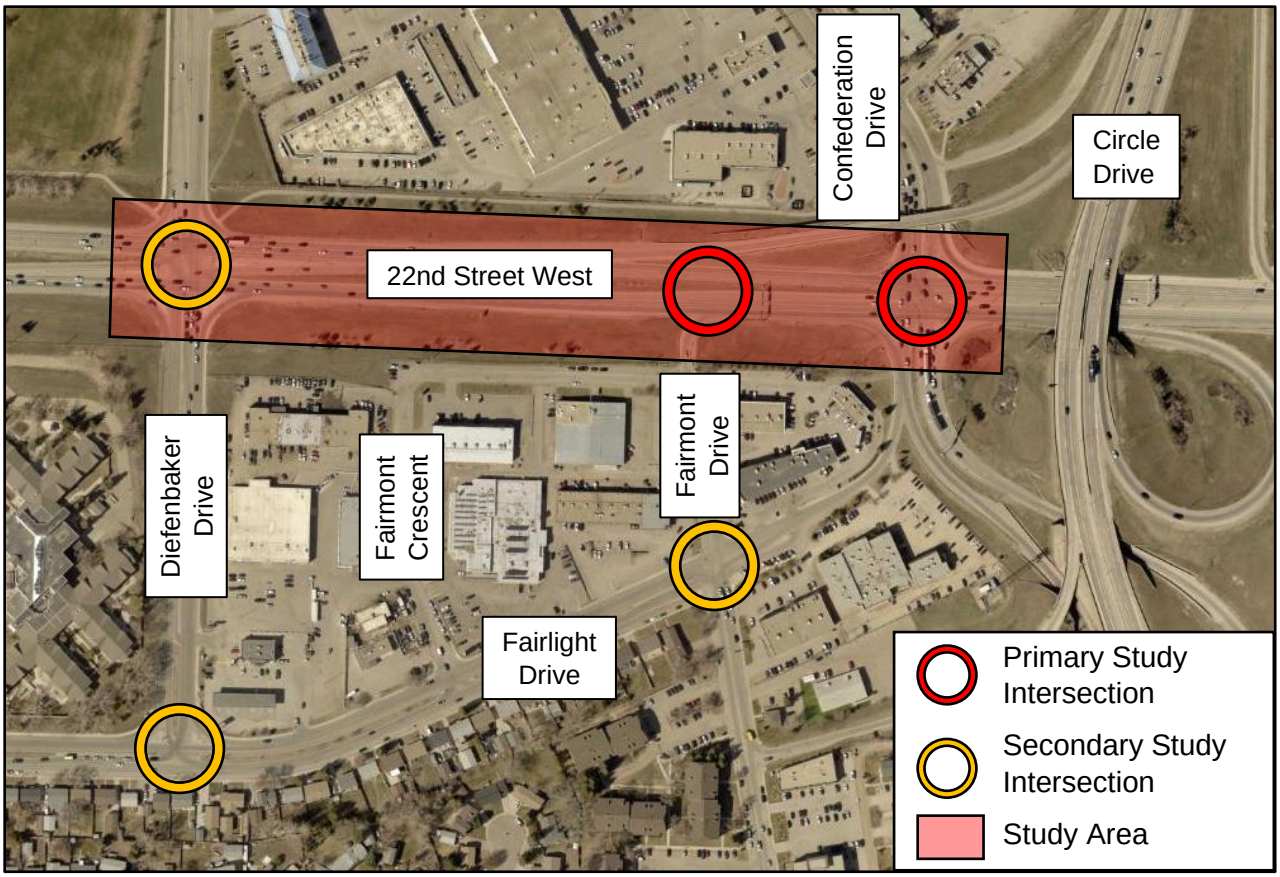


Figure 1-3: Study Area

1.3 Study Objectives

The objective of this study is to create a functional plan for 22nd Street West eastbound to address safety and operational concerns at the Fairmont Drive and Confederation Drive intersections. To achieve this goal, the following tasks were completed:

- Review any relevant reports, in-service safety audits, and functional planning studies.
- Assess traffic operations at all study intersections using the current conditions.
- Review and analyze the most recent five years of available collision data from Saskatchewan Government Insurance (SGI) for the primary study intersections.
- Create a draft traffic plan based on the recommendations of previous reports, traffic operations assessment, and collision history review.
- Conduct public engagement to gather feedback on the draft traffic plan.
- Finalize the recommended traffic plan based on feedback gathered.
- Generate a high-level estimate for the construction costs of the recommended improvements.

2. EXISTING CONDITIONS

2.1 Road Network

22nd Street West is of one the major east-west roadways connecting the west side of Saskatoon with the central business district. It is the primary route to many communities west of Saskatoon through its connections with Highway 14 and Highway 7. 22nd Street West between Confederation Drive and Diefenbaker Drive is classified as an expressway, has a posted speed limit of 60 km/h, and has an Average Annual Daily Traffic (AADT) of 26,600 vehicles per day.

2.1.1 22nd Street West and Confederation Drive / Fairlight Drive

The 22nd Street West and Confederation Drive intersection is signalized with crosswalks on the west and north approaches. There is a shared-use pathway on the north side of 22nd Street West. Sidewalk is present on both sides of Confederation Drive, on the north side of 22nd Street West east of the intersection, and on the west side of the Circle Drive on/off-ramps south of the intersection.

In the eastbound direction, there are three through lanes, a channelized right-turn lane and a left-turn lane. Queuing on 22nd Street West eastbound frequently backs up from past the Fairmont Drive access. There are typically larger queues in the curb lane due to its alignment with the Circle Drive North on-ramp located 100 metres east of the intersection. While there is no dedicated right-turn lane, drivers frequently use the shoulder to bypass the queue and make a right-turn onto the Circle Drive on-ramp.

Figure 2-1: Damage to the eastbound shoulder due to vehicles bypassing the vehicle queue

In the westbound direction, there are two through lanes, a right-turn lane, and two left-turn lanes. To accommodate the two left-turn lanes, both the eastbound and westbound left-turn movements are programmed with protected-prohibited signal phases.

Figure 2-2: Westbound protected-prohibited left-turn phase

In the southbound direction, there is a shared through/right-turn lane, one through lane, and two left-turn lanes.

In the northbound direction, traffic approaches the intersection via a Circle Drive northbound off-ramp. The single lane leaving Circle Drive splits into a right-turn lane, a through lane, a through/left-turn lane, and a second left-turn lane. The northbound and southbound movements have split phasing due to the high volume of left-turn movements.

2.1.2 22nd Street West and Fairmont Drive

Fairmont Drive intersects 22nd Street West as a single lane right-out only access with yield-control. The movement tends to operate as a zipper merge when congested. While signage is in place prohibiting the Fairmont Drive – Confederation Drive weaving movement, there is currently no physical barriers preventing drivers from performing this maneuver.

A guard rail on the west side and concrete jersey barriers on the east side have been installed on the short section of Fairmont Drive between 22nd Street West and Fairlight Crescent.

Figure 2-3: Signage at the Fairmont Drive and 22nd Street West intersection

2.1.3 22nd Street West and Diefenbaker Drive

The intersection of 22nd Street West and Diefenbaker Drive is a signalized intersection with crosswalks on all approaches. The northbound direction has one left-turn lane, two through lanes and one channelized right-turn lane, while the southbound direction has one left-turn lane, two through lanes and one shared through/right-turn lane with channelization for the right-turn movement. The eastbound direction has one slotted left-turn lane, a through lane, and a shared through/right lane with a channelized right-turn island. The westbound direction has one slotted left-turn lane, two through lanes, and a shared through/right lane with channelization for the right-turn movement.

There is a shared-use pathway on the north side of 22nd Street. Both the east and west sides of Diefenbaker Drive have sidewalk installed, but there is no sidewalk or shared-use path on the south side of 22nd Street West.

2.1.4 Fairlight Drive and Diefenbaker Drive

Fairlight Drive and Diefenbaker Drive is a signalized T-intersection. Diefenbaker Drive has one left-turn lane and two channelized right-turn lanes. One right-turn lane is continuous and one is yield-controlled. Fairlight Drive has one left-turn bay and two through lanes in the eastbound direction, whereas the westbound direction has two through-lanes and one channelized right-turn lane. The north and east legs have crosswalks.

Two driveways provide access to the commercial property located in the northeast quadrant, one on Fairlight Drive and one on Diefenbaker Drive. The south side of Fairlight Drive has residential frontage with driveways. On-street parking is permitted on the south side of Fairlight Drive.

2.1.5 Fairlight Drive and Fairlight Crescent

Fairlight Drive and Fairlight Crescent is a stop-controlled T-intersection. Fairlight Crescent has one shared left/through/right lane and has the stop condition. There is one commercial driveway access in the northwest quadrant approximately 10 metres north on Fairlight Crescent.

Fairlight Drive has three westbound through lanes and two eastbound through lanes. Fairlight Drive has residential frontage with driveways on the south side. On-street parking is permitted on the south side of Fairlight Drive.

2.1.6 Fairlight Drive and Fairmont Drive

Fairlight Drive and Fairmont Drive is a signalized intersection with crosswalks at all approaches. Fairlight Drive has one left-turn lane, one through lanes and one channelized right-turn lane in the eastbound direction. The through lane dead-ends 40 metres downstream of the intersection and provides access to a commercial area and health centre. There is one left-turn lane, two through lanes, and one through/right lane in the westbound direction. The northbound direction has one left-turn lane and one through/right-turn lane. The southbound direction has one shared left/though/right lane.

Commercial driveways placed close to the intersections and on-street angle parking in the southeast quadrant serve adjacent land uses.

The Circle Drive southbound exit ramp to Fairmont Drive intersects 100 metres to the south. In the northbound direction, overhead signage to 22nd Street West eastbound designates curb lane use.

2.2 Traffic Operations

22nd Street and Confederation Drive

To assess the existing traffic operations at the 22nd Street West and Confederation Drive intersection, estimates for the current turning movements volumes were generated by taking the most recent traffic count conducted in 2019 and projecting those volumes to the year 2024. A 2% annual growth factor was used to generate the 2024 estimates, which are shown in Figure 2-4 and Figure 2-5.

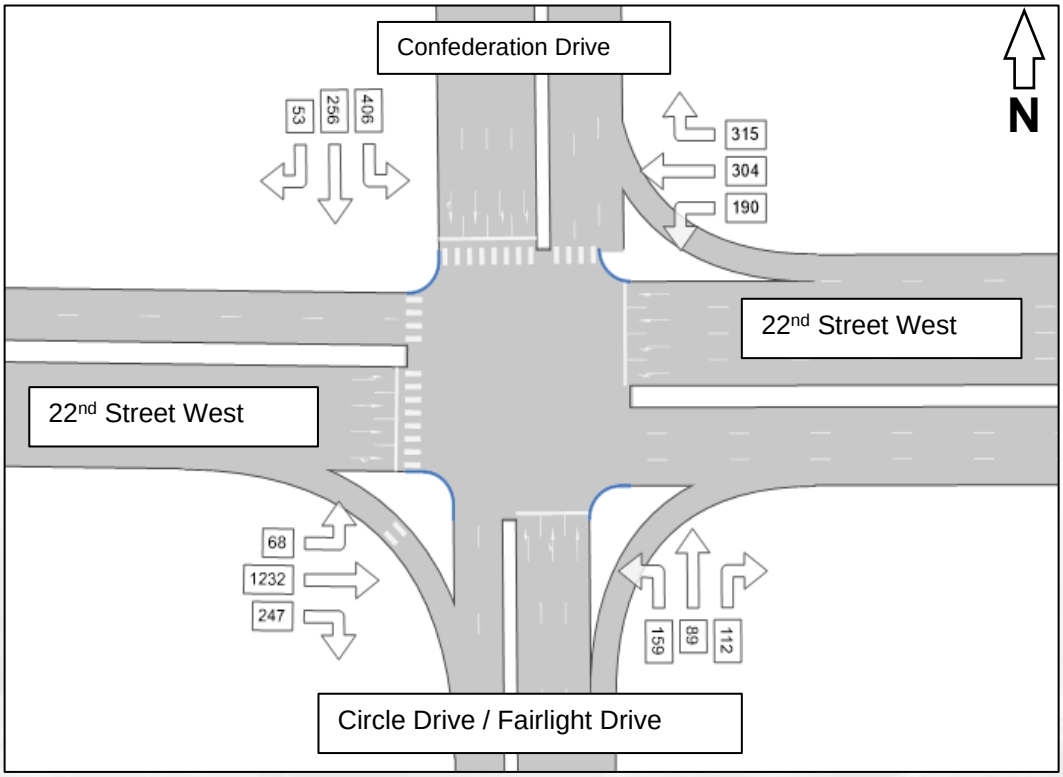


Figure 2-4: 22nd Street West and Confederation Drive 2024 AM Peak Hour Traffic Volume Estimates

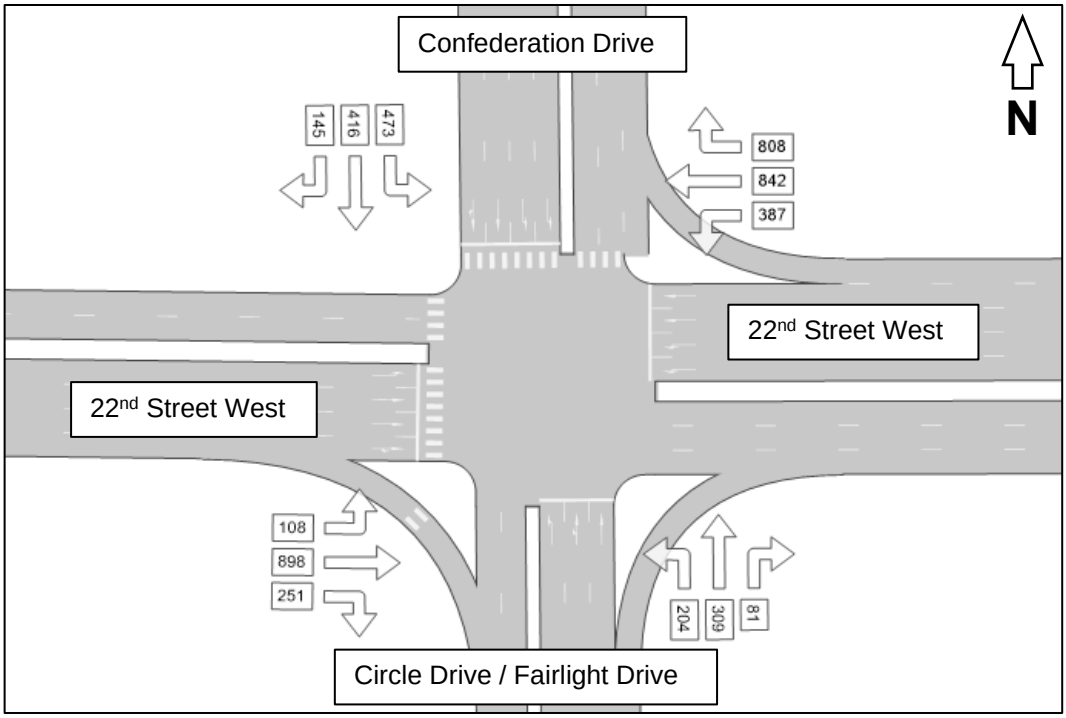


Figure 2-5: 22nd Street West and Confederation Drive 2024 PM Peak Hour Traffic Volume Estimates

These turning movement counts were used in combination with PTV Vistro traffic modelling software to produce a traffic analysis of the intersection during the AM and PM peak hours. Table 2-2 shows the operational performance for each approach of the intersection. Delay (seconds) and Highway Capacity Manual Level of Service (LOS), as well as volume/capacity ratio is presented. Complete summary reports are included in Appendix A.

The intersection of 22nd Street West and Confederation Drive operates at LOS D in the morning and afternoon peak hours. In both the morning and afternoon, the eastbound left turn is the worst performing movement with a LOS E and average delay of 62 seconds. Other than the free-flowing westbound right turn, the movements with the lowest delays are the eastbound and westbound through movements. Given the higher traffic volumes and expressway classification of 22nd Street West, it is appropriate that these two movements are given a higher priority at this intersection.

Table 2-1: Level-of-Service Definition for Signalized Intersections

Average Control Delay (sec/veh)	Level of Service	General Description
<= 10	A	Free Flow
>10 - 20	B	Stable Flow (slight delays)
>20 - 35	C	Stable Flow (acceptable delays)
>35 - 55	D	Approaching unstable flow (tolerable delay, occasional wait through more than one signal cycle before proceeding)
>55 - 80	E	Unstable flow (intolerable delay)
>80	F	Forced flow (jammed)

Table 2-2: 22nd Street West and Confederation Drive Intersection Performance

Intersection	Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
			LOS	Delay (s)	v/c ratio	Queue (m)	LOS	Delay (s)	v/c ratio	Queue (m)
22nd Street West and Confederation Drive	SB	LT	D	51	0.83	75	D	48	0.80	83
		Thru	D	48	0.60	60	E	60	0.92	109
		RT	D	48	0.60	57	E	61	0.92	102
	NB	LT	D	54	0.52	33	D	54	0.71	66
		Thru	D	55	0.52	33	D	53	0.70	67
		RT	E	55	0.56	35	E	57	0.77	70
	EB	LT	E	62	0.69	30	E	63	0.80	47
		Thru	C	27	0.63	121	D	38	0.69	115
		RT	C	28	0.63	121	D	42	0.69	115
	WB	LT	E	56	0.84	38	D	54	0.86	73
		Thru	B	18	0.18	33	C	38	0.64	114
		RT	A	-	-	-	A	-	-	-
	Intersection Summary		D	**36**	**0.50**	**-**	D	**46**	**0.59**	**-**

****How to read the table? The North American Traffic Engineering standard for measuring the performance of a signalized intersection is to measure the *average delay* in seconds a driver will experience in completing a maneuver. The software used to analyze the intersection calculates an average delay to each movement based on the traffic volumes, permitted movements and signal timing. This average delay corresponds to established Levels of Service (LOS). The LOS can range from A to F (the shorter the average delay the better the LOS, the longer the average delay the worse the LOS). Generally, the City prefers to avoid LOS E and F. However, a LOS E or F does not indicate the need for, or trigger, improvements. Other considerations include: the traffic volume performing the problematic movement with LOS E or F, intersection geometrics and signal operation, intersection spacing, road classification, availability of alternate routes, pedestrian movements, access management, type of adjacent land use, future development in the area and of course, cost.

22nd Street and Fairmont Drive

An assessment of the northbound right-turn movement at Fairmont Drive and 22nd Street West intersection was also completed. Using the same process as the Confederation Drive intersection, traffic volumes from the most recent traffic count conducted in 2014 were projected to 2024. The 2024 turning volume estimates for the northbound right turn are 245 vehicles in the AM peak hour and 239 vehicles in the PM peak hour.

Table 2-3: Level-of-Service Definition for Unsignalized Intersections

Average Control Delay (sec/veh)	Level of Service	General Description
<= 10	A	Free Flow
>10 - 15	B	Stable Flow (slight delays)
>15-25	C	Stable Flow (acceptable delays)
>25-35	D	Approaching unstable flow (tolerable delay, occasional wait through more than one signal cycle before proceeding)
>35-50	E	Unstable flow (intolerable delay)
>50	F	Forced flow (jammed)

Synchro traffic modelling software was used to assess the traffic operations for this yield-controlled access. Table 2-4 summarizes the performance of the movement. The intersection operates with the LOS C in the AM peak hour and LOS B in the PM peak hour. Complete summary reports are included in Appendix A.

Table 2-4: 22nd Street West and Fairmont Drive Intersection Performance

Intersection	Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
			LOS	Delay (s)	v/c ratio	Queue (m)	LOS	Delay (s)	v/c ratio	Queue (m)
22nd Street West and Fairmont Drive	NB	RT	C	18	0.49	21	B	15	0.41	15

2.3 Collision History

An analysis of the most recent five-year collision history available for the intersection was completed using records from the Saskatchewan Traffic Accident Information System managed by SGI. Collision data from 2018 – 2022 contains records of 183 collisions that occurred at the intersection of 22nd Street West and Confederation Drive. There were no recorded collisions at the intersection of 22nd Street West and Fairmont Drive; however, it is likely that collisions occurring between the two intersections may have been attributed to the 22nd Street West and Confederation Drive intersection. A summary of the collision data is shown in Appendix B.

Based on the records, there were no fatal or severe injury collisions, 41 minor injury collisions, and 142 property damage only collisions. In terms of vulnerable road users, there were two minor injury collisions involving pedestrians, one minor injury collision with a cyclist, and one property damage only collision with a cyclist.

As shown in Figure 2-6, the collision configurations were dominated by rear end collisions followed by side swipe collisions. Both rear ends and side swipes are typically collisions configurations that occur at a higher rate in areas where traffic is weaving across multiple travel lanes. While the data cannot determine the exact number of collisions that occurred due to weaving from the Fairmont Drive intersection, eastbound traffic accounted for a disproportionately high percentage of side swipe and rear end collisions. Eastbound traffic made up 37% of the total number of collisions while only accounting for 25% of the traffic volume.

This pattern of excess rear end and side swipe collisions also extends to a comparison of 22nd Street West and Confederation Drive against other similar intersections in the city. When looking at a typical 4-legged signalized intersection in Saskatoon, city-wide collision data shows that approximately 38% of collisions are caused by a rear end and 10% are side swipes between two vehicles going in the same direction. As shown in Figure 2-7, the intersection of 22nd Street West and Confederation Drive exceeds the average for those collision types with 15% side swipe – same direction and 58% rear ends. The intersection is below the City-wide average in every other type of configuration.

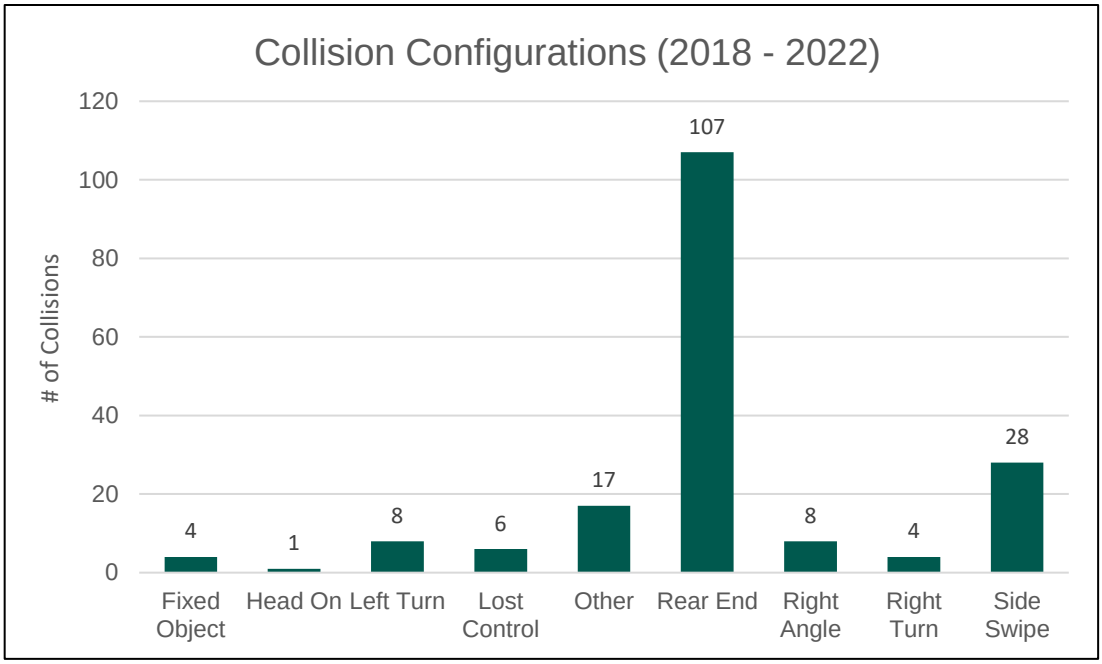


Figure 2-6: Collision Configurations at 22nd Street West and Confederation Drive (2018 - 2022)

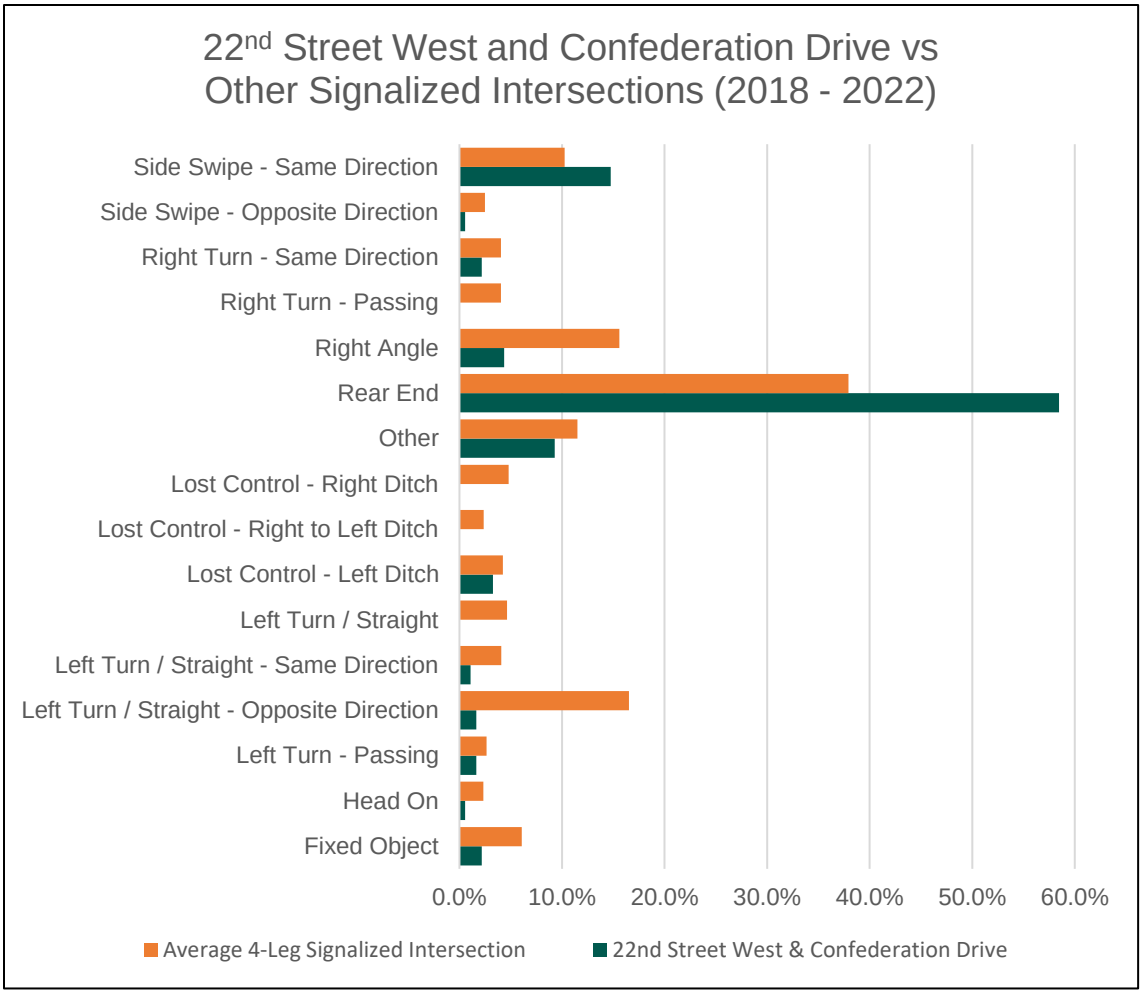


Figure 2-7: City-wide Collision Configuration Comparison

2.4 Field Observations

A field investigation confirmed that traffic weaving between Fairmont Drive to make a left turn at Confederation Drive is contributing to the higher incidence of rear end and side swipe collisions at the intersection.

During a one-hour period of observation during the AM peak hour on June 7, 2024, multiple instances of near misses and unsafe weaving maneuvers were noted. For example, Figure 2-8 shows a driver bypassing queued vehicles on Fairmont Drive to make an unsafe maneuver into the eastbound left turn lane at the Confederation Drive intersection.

Figure 2-8: Unsafe Maneuvers at Fairmont Drive

It was also noted that queuing on Fairmont Drive would frequently back up through the Fairmont Drive and Fairlight Crescent intersection. Vehicles turning onto 22nd Street West would also zipper merge onto the roadway once the queues from Confederation Drive had backed up past the Fairmont Drive access.

3. DRAFT TRAFFIC PLAN

3.1 Overview

Multiple studies including the 2022 Circle Drive West Functional Planning Study, a 2018 Intersection Improvement Report, and a 2016 In-Service Safety Review have assessed traffic safety and operations at the Confederation Drive and Fairmont Drive intersections on 22nd Street West. Based on the findings of the current analysis and the previous reporting, a draft traffic plan that addresses the identified deficiencies was developed. Table 3-1 identifies each of the safety and operational issues, deficiencies in current infrastructure, and opportunities to align the roadway with the planned future state.

Table 3-1: Challenges and Opportunities

#	Challenge / Opportunity
1	Fairmont Drive traffic can weave across three lanes to make an eastbound to northbound left turn at Confederation Drive.
2	Drivers frequently travel on the shoulder when making an eastbound right-turn to avoid the vehicle queue.
3	Yield traffic control and a low entry angle lead to faster entry speeds for traffic entering 22nd Street West from Fairmont Drive.
4	The overhead guide sign does not accommodate any additional widening for turning bays at its current location.
5	Opportunity to move towards the planned urban cross-section with the addition of curb and gutter on the south side of 22nd Street West.
6	Skewed pedestrian ramps and inadequate drainage infrastructure make pedestrian access to the crosswalks challenging.
7	Lack of infrastructure for people walking or cycling on the south side of 22nd Street West.

3.2 Proposed Improvements

The following improvements were recommended in the draft traffic plan. A plan showing the proposed improvements is included in Appendix C.

Proposed Improvement
Construct an eastbound slotted left-turn lane
Construct an eastbound right-turn lane
Realign Fairmont Drive and install stop signs
Relocate overhead guide sign and roadside safety system
Install curb, gutter, and a third eastbound through lane
Realign crosswalk, adjust pedestrian accessible ramps and correct drainage deficiencies
Install shared-use pathway on the south side of 22nd Street West

3.2.1 Eastbound Slotted Left-Turn Lane

To address the Fairmont Drive weaving movements, a slotted left-turn lane for eastbound traffic is recommended at the Confederation Drive intersection. The raised median separating the left-turn bay from the through lanes will create a physical barrier that will eliminate the weaving movements from Fairmont Drive. This recommendation also aligns with the Circle Drive West Functional Planning Study, which identified an eastbound slotted left-turn lane as a requirement for implementing the new Circle Drive and 22nd Street West interchange.

3.2.2 Eastbound Right-Turn Lane

The operational analysis indicates that there is significant queuing for the eastbound right-turn movement. Constructing an eastbound right-turn lane will improve storage capacity, reduce damage to the shoulder, and aligns with community feedback regarding this turning movement.

3.2.3 Realign Fairmont Drive and Install Stop Signs

If the eastbound slotted left-turn lane is able to physically eliminate the Fairmont Drive – Confederation Drive weaving movement, the remaining issue at Fairmont Drive is the high entry angle and yield control that leads to higher entry speeds for drivers turning onto 22nd Street West. Realigning Fairmont Drive to intersect 22nd Street West at a 90-degree angle, reducing the corner radius, and changing the existing yield signs to stop signs will encourage drivers to come to a complete stop, identify a safe gap in oncoming traffic, and enter 22nd Street West at an appropriate speed.

3.2.4 Relocate the Existing Overhead Guide Sign and Roadside Safety System

The current location of the overhead guide sign falls within the footprint of the proposed eastbound slotted left-turn lane. Relocating the guide sign approximately 160 metres to the west will eliminate this conflict and will provide drivers with additional time to identify and place themselves in the correct lane to access Circle Drive, Fairlight Drive, Confederation Drive, etc.

3.2.5 Install Curb, Gutter, and Three Through Lanes

In the eastbound direction, 22nd Street West currently has two travel lanes that widens into a third travel lane between Diefenbaker Drive and Fairmont Drive. Extending the third travel lane to Diefenbaker Drive and installing curb and gutter on the south side of the road will align with the future state recommended in the Circle Drive West Functional Planning Study.

3.2.6 Realign Crosswalk, Adjust Pedestrian Accessible Ramps and Correct Drainage Deficiencies

The pedestrian and drainage infrastructure in the southwest corner of the 22nd Street West and Confederation Drive intersection currently interfere with each other. There is a non-standard drainage channel that has forced the pedestrian crossing to be configured at a skewed angle. Aligning the crosswalk to the standard location and installing proper drainage infrastructure will reduce crossing times and improve drainage. The pedestrian accessible ramps will also be adjusted to meet current design standards.

3.2.7 Install a Shared-Use Pathway on the South Side of 22nd Street West

There is a gap in active transportation infrastructure on the south side of 22nd Street West between Confederation Drive and Diefenbaker Drive. Connecting these two intersections with a shared-use pathway will provide improved access to the commercial area, reduce the need for pedestrians to take long detours to access a safe facility, and make it easier for pedestrians to access safe crossing locations on 22nd Street West.

3.3 Traffic Operations

Most of the proposed improvements are designed to improve safety rather than traffic operations. While a slotted left-turn lane is a safer design than a typical left-turn lane due to the improved sight lines, they function very similarly from a traffic operations perspective.

The proposed eastbound right-turn lane will noticeably improve traffic operations. Traffic modeling shows that the queue for right-turn movements is expected to lower from 121 metres to 61 metres. Since there will be less queuing in the through lanes, there will also be a benefit to the average delays for through and right-turn movements. Average delays will be reduced from 28 seconds to 26 seconds for through movements and from 24 seconds to 22 seconds for right-turn movements. The full traffic operations analysis has been included in Appendix C.

3.4 Traffic Safety

One of the primary methods of evaluating potential safety improvements is through crash modification factors (CMFs). These factors are calculated through academic studies and are used to estimate the reduction in collisions that can be expected with the implementation of different safety improvements.

In situations where multiple improvements are being implemented simultaneously, combining CMFs may result in an over-estimation of the safety benefits. For example, adding a positive offset to a left-turn lane (i.e., slotted left turn) is expected to reduce left-turn collisions by 38%, while adding a protected left-turn signal phase is expected to reduce left-turn collisions by 24%. Combining both improvements does not result in a 52% reduction as there is a significant overlap in the type of collisions that are being prevented.

A summary of the available CMFs for the proposed improvements is shown in Table 3-2. The remaining improvements do not have recorded CMFs at this time.

Table 3-2: Crash Modification Factors of Proposed Improvements

Improvement	CMF	% Collision Reduction	Collision Type	Severity
Eastbound Slotted Left-Turn Lane	0.662	34%	All	All
Eastbound Right-Turn Lane	0.96	4%	All	All
Realign Fairmont Drive	0.7	30%	All	All

Each of these improvements addresses a different type of collision so there should be minimal overlap in the potential collisions that are being prevented. In this case, the CMFs can be combined multiplicatively to get an overall estimate of a 66% reduction in eastbound collisions. This is likely a high estimate but does indicate that there will be a significant safety benefit if the proposed improvements are implemented.

4. PUBLIC ENGAGEMENT

4.1 Engagement Activities

One round of public engagement was scheduled to gather community feedback on the proposed changes in the draft traffic plan.

A public open house drop-in session was hosted on May 30, 2024 at St. Marguerite School in Parkridge. To advertise the open house and the project in general, an Engage page was create on Saskatoon.ca/Improving22ndandConfed and a flyer was sent out to residents in the Parkridge, Fairhaven, and Confederation Suburban Centre neighbourhoods.

Feedback on the proposed changes was collected through the following methods:

1. In-person at the public open house,
2. Direct mail/email/phone communications to City of Saskatoon staff, and
3. An online survey.

4.2 Public Feedback

Eighteen residents attended the public open house and most were generally supportive of the draft traffic plan. Attendees confirmed the issue of Fairmont Drive traffic weaving across 22nd Street West to turn onto Confederation Drive. The majority were supportive of the proposed slotted left-turn lane that would create a physical barrier to prevent this movement.

One of the most frequent comments from residents was regarding the eastbound right-turn lane. Many residents raised the issue of long queues and people driving on the shoulder. There were multiple requests to extend the proposed right-turn lane past Fairmont Drive to further increase the storage capacity.

The most contentious change was the configuration of Fairmont Drive. Some residents wanted to close the Fairmont Drive access to 22nd Street West entirely while other residents were not supportive of any changes to the access. Through discussion with a group of attendees at the open house, a third option was discussed. This option would convert the existing Fairmont Drive access to a right-in access and a new right-out access would be created on Fairlight Crescent approximately 175 metres to the west.

The online public survey was another source of resident feedback. There was a total of 124 responses to the public survey. The survey showed that 46% of respondents supported the proposed changes, 34% were opposed, and 20% preferred other options or modifications to the draft plan.

Other comments received from the public include:

- Confirmation of the issues with ponding and drainage on the southwest corner of 22nd Street West and Confederation Drive.
- A request for a gate or gap in the fence that runs along the north side Fairlight Crescent to provide access to the commercial area from the proposed shared-use pathway.
- Reports of frequent jaywalking across 22nd Street West due to a lack of pedestrian access.

- Concerns with access in and out of the adjacent communities if any changes are made to the Fairmont Drive access.
- A request for protected left turns during every phase at the 22nd Street and Diefenbaker Drive intersection.
- Questions around snow clearing on the proposed pathway.

A complete What-We-Learned report summarizing the engagement feedback and copies of the engagement materials from the public open house have been included in Appendix D.

5. FAIRMONT DRIVE ACCESS

Based on the feedback received through the public engagement process, the plans for the realignment of Fairmont Drive were updated. The revised plan reconfigures Fairmont Drive as a right-in access for traffic turning from 22nd Street West onto Fairmont Drive. It also proposes a new right-out access approximately 175 m west of Fairmont Drive that will allow turning movements onto 22nd Street West from Fairlight Crescent.

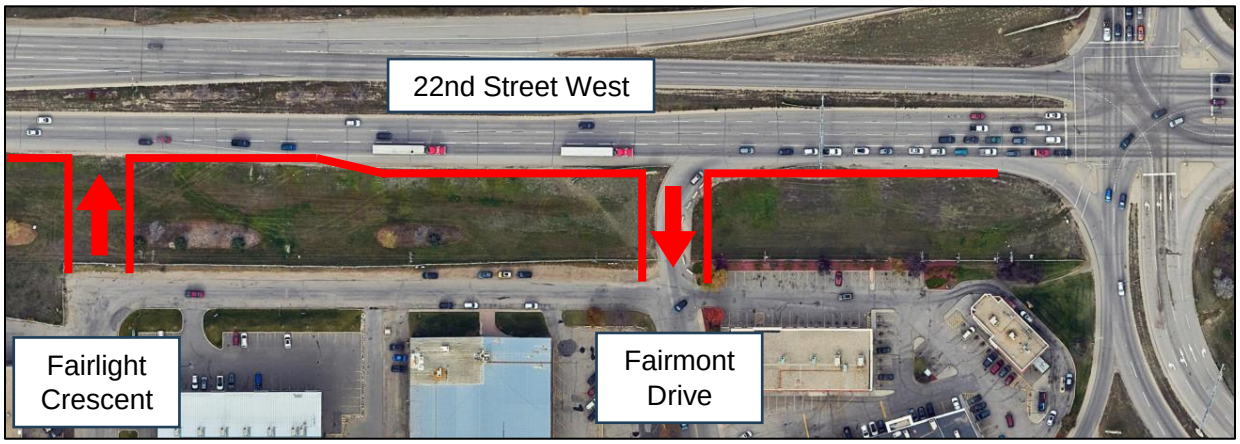


Figure 5-1: Updated Fairmont Drive Access Configuration

This configuration aligns with the planned accesses to 22nd Street West that were outlined in the Circle Drive West Functional planning study. Aligning with the Circle Drive West recommendations at this time will eliminate the need to reconfigure the roadway again in the future. Reconfiguring Fairmont Drive as a right-in access from 22nd Street West also allows for an extended right-turn lane at the Confederation Drive intersection that extends past Fairmont Drive. Traffic entering the right turn bay will be able to turn at either Fairmont Drive or Circle Drive on-ramp without conflicting with other movements.

These changes will improve traffic operations at the Confederation Drive intersection, as the additional storage capacity provided by the right-turn lane will reducing queuing and allow for a better separation of the right-turn and through movements. On the other hand, moving the access onto 22nd Street to Fairlight Crescent will reroute some of the existing traffic and may impact operations at other nearby intersections.

To quantify these impacts, PTV Vistro software was used to model the potential changes in traffic patterns and how they will impact traffic operations at the study intersections. A summary of the significant changes in traffic operations is shown below. The full summary reports are included in Appendix E.

- Confederation Drive eastbound through and right-turn movements improve from LOS D to LOS C in the PM peak hour. The AM peak hour maintains a LOS of C but does show improvements in average delay per vehicle.
- Delay reductions for eastbound left turns at the Fairlight Drive and Diefenbaker Drive intersection due to traffic rerouting to the new right-out access.

- LOS for northbound left turns at the Fairlight Drive and Fairmont Drive intersection deteriorates from LOS B to C in the AM peak hour and LOS E to F in the PM peak hour. This was caused by traffic rerouting to the new right-out access. These impacts may be mitigated by adjustments to the signal timing at this intersection.

From a safety perspective moving the right-out access further to the west gives drivers more time to turn onto 22nd Street and get into their desired lane to access their desired downstream connections.

6. RECOMMENDED TRAFFIC PLAN

6.1 Overview

Based on the feedback received through the public engagement activities, the recommended traffic plan includes all the proposed changes from the draft traffic plan with the exception of the revisions to the Fairmont Drive access. Rather than realigning it as proposed, it is recommended to create a right-out access at Fairlight Crescent and right-in access at Fairmont Drive. This change to Fairmont Drive reduces the risk of weaving type collisions on 22nd Street West, improves traffic operations at multiple intersections, creates a new access into the commercial area south of 22nd Street West, and was supported by some of the residents at the public open house. This configuration also aligns with the recommended plans in the Circle Drive West Functional Planning Study.

The recommended plan, including the changes outlined for the Fairmont Drive configuration, is shown in Appendix F.

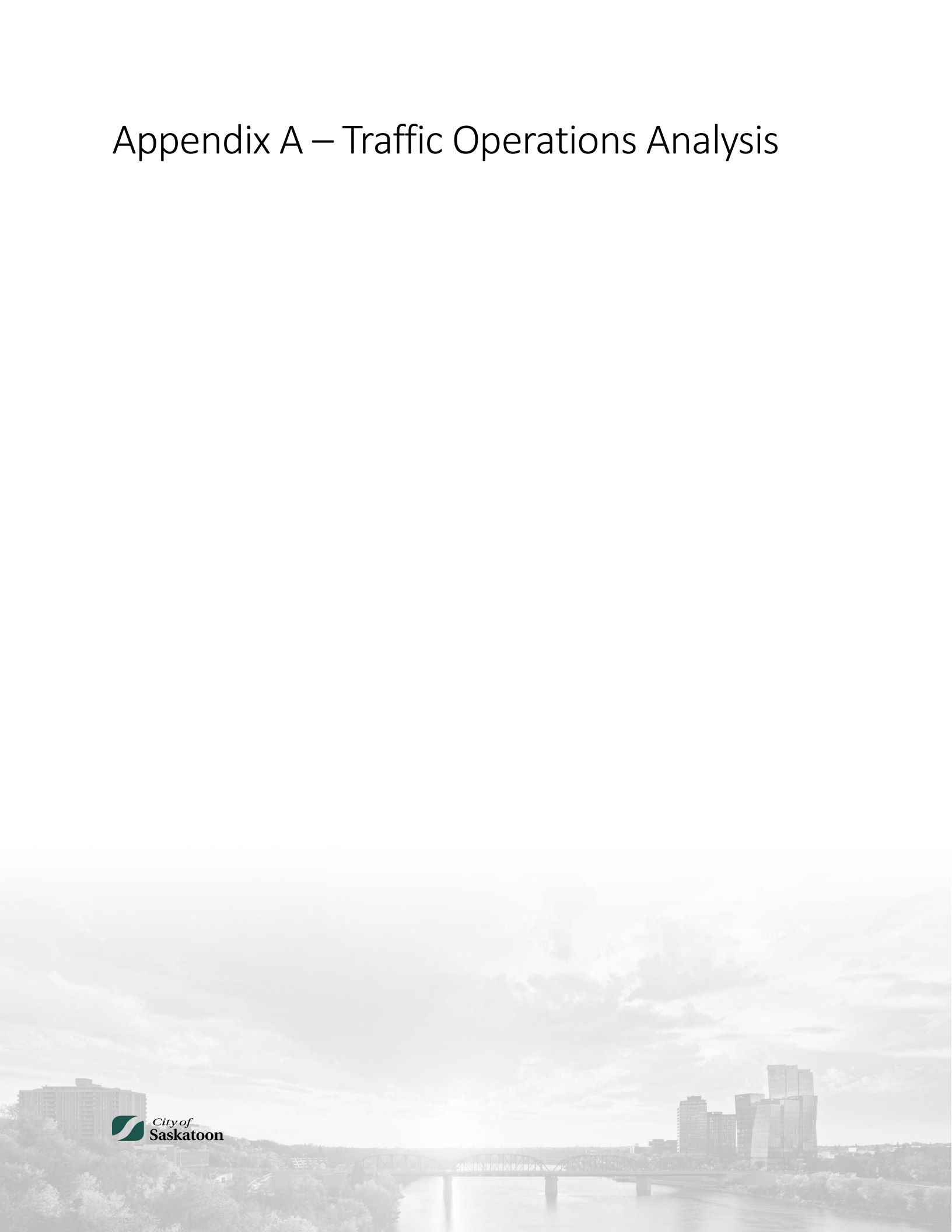
6.2 Cost Estimate

Table 6-1 summarizes the high-level cost estimates for each of the improvements included in the recommended plan. These estimates include costs for internal project management and a 15% contingency.

Table 6-1: Recommended Plan Cost Estimate

Improvement	Cost Estimate
Construct an eastbound slotted left-turn lane	$ 800,000
Construct an eastbound right-turn lane	$ 390,000
Convert Fairmont Drive access to right-in configuration from 22nd Street West	$ 150,000
Construct new right-out access from Fairlight Crescent to 22nd Street West	$ 70,000
Relocate overhead guide sign and roadside safety system	$ 595,000
Install curb, gutter, and a third eastbound through lane	$ 345,000
Correct pedestrian accessible ramps and drainage deficiencies	$ 15,000
Install shared-use pathway on the south side of 22nd Street West	$ 250,000
Total	**$ 2,615,000**

Appendix A – Traffic Operations Analysis



Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	36.4
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.502

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	1	0	0	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	100.00	30.48	30.48	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	22	28	102	64	13	17	308	62	48	76	79
Total Analysis Volume [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	21	39	0	21	39	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	7.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	10	10	10	16	16	16	6	51	51	8	53
g / C, Green / Cycle	0.09	0.09	0.09	0.14	0.14	0.14	0.05	0.45	0.45	0.07	0.47
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.05	0.12	0.08	0.09	0.04	0.28	0.28	0.05	0.09
s, saturation flow rate [veh/h]	1781	1786	1702	3459	1870	1760	1781	3560	1715	3459	3560
c, Capacity [veh/h]	157	158	150	491	265	250	98	1588	765	258	1658
d1, Uniform Delay [s]	49.68	49.67	49.85	47.55	45.86	45.88	52.93	24.31	24.31	51.64	17.79
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	4.59	5.59	3.74	2.18	2.34	8.91	1.91	3.96	4.15	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.52	0.56	0.83	0.60	0.60	0.69	0.63	0.63	0.74	0.18
d, Delay for Lane Group [s/veh]	54.30	54.26	55.43	51.29	48.04	48.21	61.84	26.22	28.27	55.79	18.03
Lane Group LOS	D	D	E	D	D	D	E	C	C	E	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.43	2.43	2.52	5.84	4.38	4.15	2.15	10.54	10.59	2.80	2.38
50th-Percentile Queue Length [m/ln]	18.54	18.55	19.21	44.51	33.35	31.62	16.39	80.34	80.73	21.34	18.11
95th-Percentile Queue Length [veh/ln]	4.38	4.38	4.54	9.81	7.81	7.47	3.87	15.87	15.93	5.04	4.28
95th-Percentile Queue Length [m/ln]	33.37	33.40	34.58	74.72	59.50	56.91	29.51	120.92	121.40	38.41	32.60

Movement, Approach, & Intersection Results

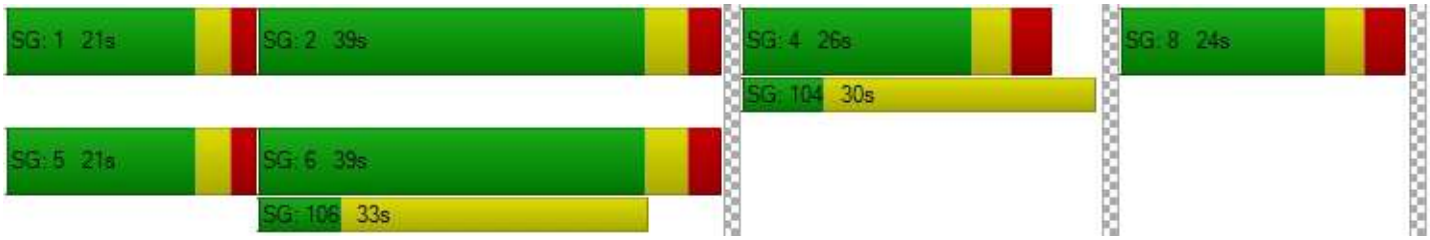
d_M, Delay for Movement [s/veh]	54.28	55.37	0.00	51.29	48.10	48.21	61.84	26.61	28.27	55.79	18.03	0.00
Movement LOS	D	E		D	D	D	E	C	C	E	B	
d_A, Approach Delay [s/veh]	54.67			49.92			28.42			32.55		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	36.39											
Intersection LOS	D											
Intersection V/C	0.502											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.803	3.023	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	575	575
d_b, Bicycle Delay [s]	40.93	39.25	28.92	28.92
I_b,int, Bicycle LOS Score for Intersection	1.764	2.149	2.410	1.967
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.591

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	1	0	0	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	100.00	30.48	30.48	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	77	20	118	104	36	27	225	63	97	211	202
Total Analysis Volume [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	94.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	20	38	0	22	40	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	7.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	15	15	15	19	19	19	9	36	36	15	42
g / C, Green / Cycle	0.13	0.13	0.13	0.17	0.17	0.17	0.08	0.32	0.32	0.13	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.10	0.14	0.16	0.16	0.06	0.22	0.22	0.11	0.24
s, saturation flow rate [veh/h]	1781	1850	1702	3459	1870	1707	1781	3560	1669	3459	3560
c, Capacity [veh/h]	237	246	226	589	318	290	136	1129	529	452	1322
d1, Uniform Delay [s]	47.28	47.24	47.71	45.47	46.55	46.55	51.78	34.07	34.09	48.51	29.50
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.66	6.24	9.48	2.68	13.13	14.33	10.79	3.57	7.62	5.04	2.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.70	0.77	0.80	0.92	0.92	0.80	0.69	0.69	0.86	0.64
d, Delay for Lane Group [s/veh]	53.94	53.48	57.19	48.15	59.68	60.88	62.57	37.64	41.71	53.55	31.88
Lane Group LOS	D	D	E	D	E	E	E	D	D	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.96	5.08	5.34	6.63	9.30	8.59	3.43	9.92	9.92	5.68	9.79
50th-Percentile Queue Length [m/ln]	37.81	38.73	40.68	50.51	70.84	65.42	26.17	75.60	75.57	43.25	74.59
95th-Percentile Queue Length [veh/ln]	8.62	8.78	9.13	10.85	14.30	13.39	6.18	15.09	15.08	9.58	14.92
95th-Percentile Queue Length [m/ln]	65.65	66.91	69.55	82.68	108.94	102.04	47.11	114.97	114.93	73.02	113.69

Movement, Approach, & Intersection Results

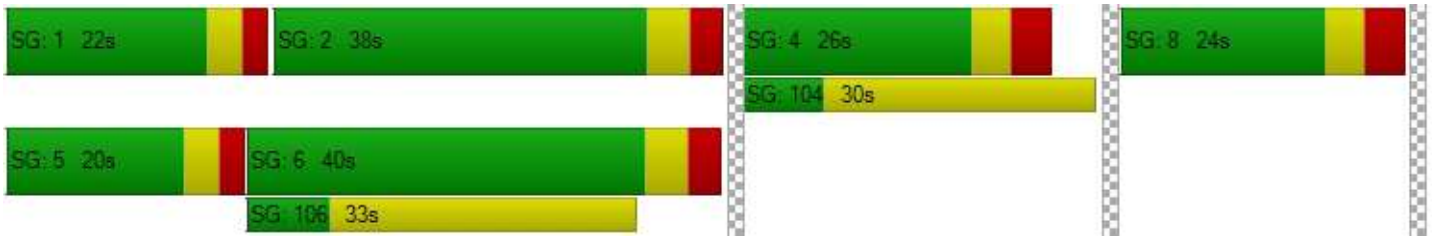
d_M, Delay for Movement [s/veh]	53.86	55.57	0.00	48.15	60.03	60.88	62.57	38.17	41.71	53.55	31.88	0.00
Movement LOS	D	E		D	E	E	E	D	D	D	C	
d_A, Approach Delay [s/veh]	54.89			54.72			40.97			38.70		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.57											
Intersection LOS	D											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.933	3.127	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	558	593
d_b, Bicycle Delay [s]	40.93	39.25	29.64	28.21
I_b,int, Bicycle LOS Score for Intersection	1.983	2.413	2.251	2.574
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1303	0	0	0	0	245
Future Volume (Veh/h)	1303	0	0	0	0	245
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1416	0	0	0	0	266
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1416		1416	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1416		1416	472
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	51
cM capacity (veh/h)			477		128	538

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	472	472	472	266
Volume Left	0	0	0	0
Volume Right	0	0	0	266
cSH	1700	1700	1700	538
Volume to Capacity	0.28	0.28	0.28	0.49
Queue Length 95th (m)	0.0	0.0	0.0	20.6
Control Delay (s)	0.0	0.0	0.0	18.0
Lane LOS				C
Approach Delay (s)	0.0			18.0
Approach LOS				C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1019	0	0	0	0	239
Future Volume (Veh/h)	1019	0	0	0	0	239
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1108	0	0	0	0	260
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			1108		1108	369
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1108		1108	369
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	59
cM capacity (veh/h)			626		204	628

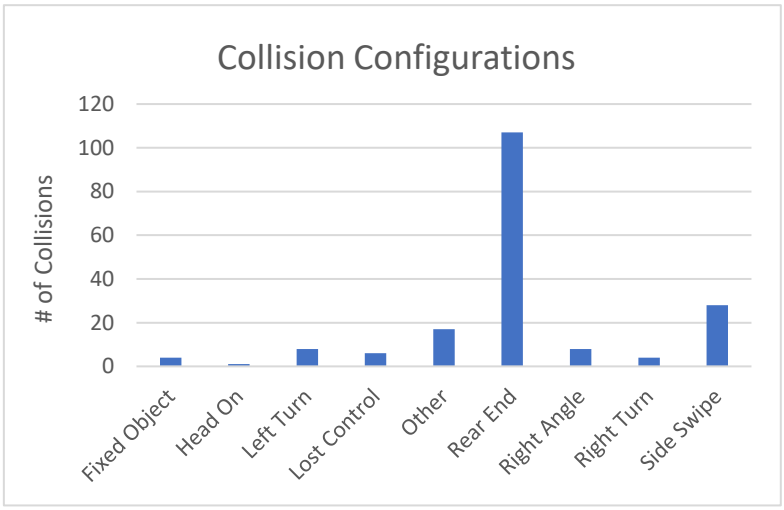
Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	369	369	369	260
Volume Left	0	0	0	0
Volume Right	0	0	0	260
cSH	1700	1700	1700	628
Volume to Capacity	0.22	0.22	0.22	0.41
Queue Length 95th (m)	0.0	0.0	0.0	15.4
Control Delay (s)	0.0	0.0	0.0	14.7
Lane LOS				B
Approach Delay (s)	0.0			14.7
Approach LOS				B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

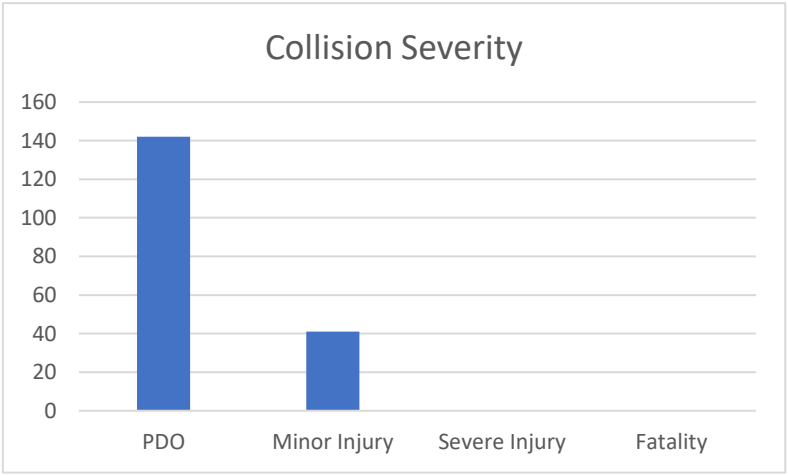
Appendix B – SGI Collision Data Summary

22nd Street West and Confederation Drive Collision Analysis

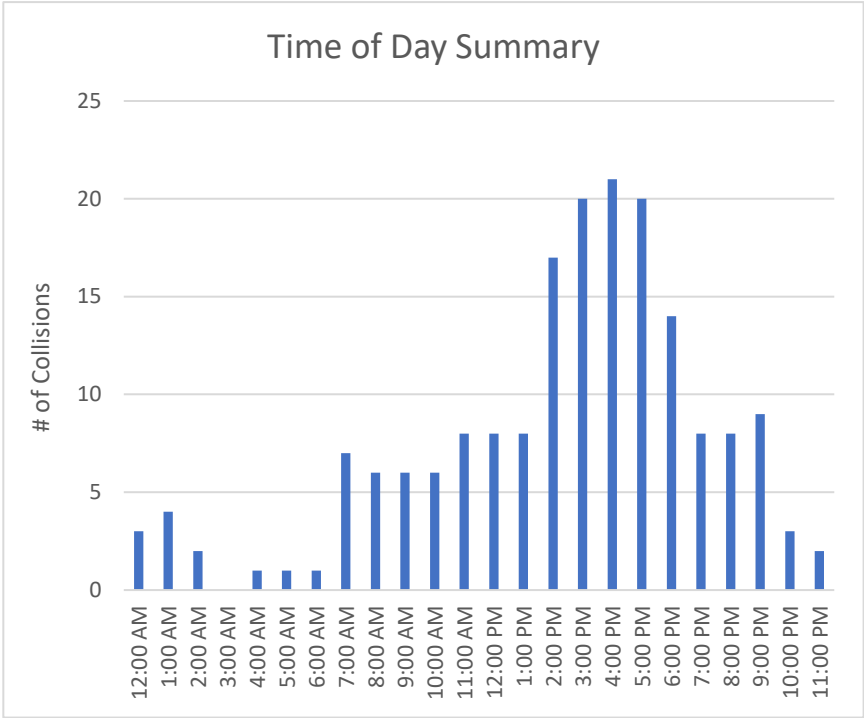
Configuration	# of Collisions
Fixed Object	4
Head On	1
Left Turn	8
Lost Control	6
Other	17
Rear End	107
Right Angle	8
Right Turn	4
Side Swipe	28



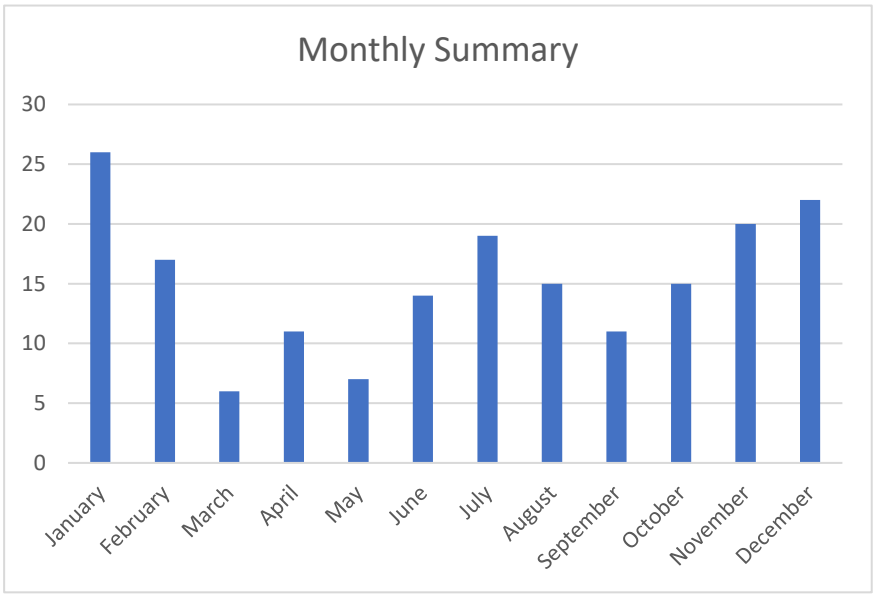
Collision Severity	# of Collisions
PDO	142
Minor Injury	41
Severe Injury	0
Fatality	0



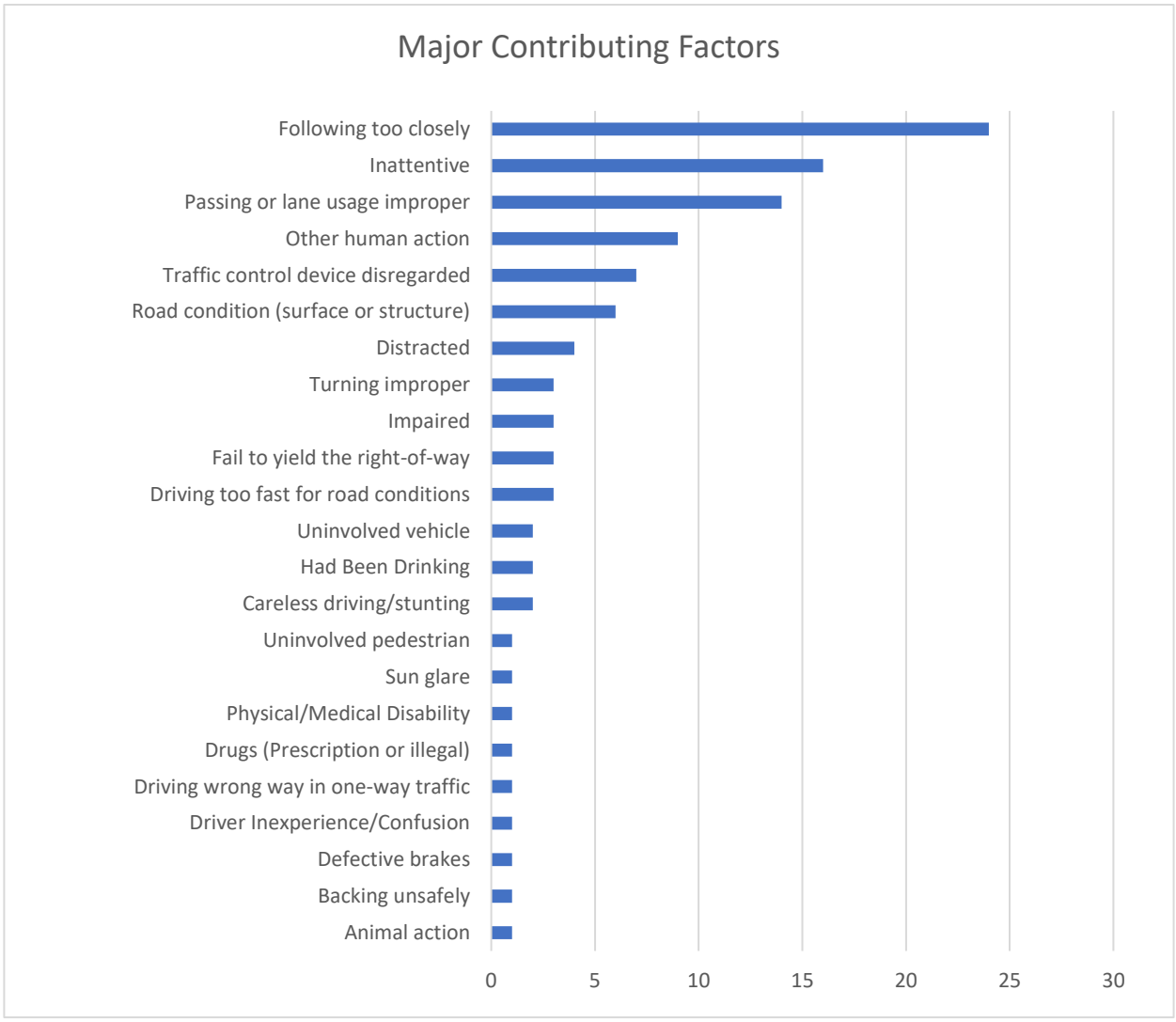
Time of Day	# of Collisions
12:00 AM	3
1:00 AM	4
2:00 AM	2
3:00 AM	0
4:00 AM	1
5:00 AM	1
6:00 AM	1
7:00 AM	7
8:00 AM	6
9:00 AM	6
10:00 AM	6
11:00 AM	8
12:00 PM	8
1:00 PM	8
2:00 PM	17
3:00 PM	20
4:00 PM	21
5:00 PM	20
6:00 PM	14
7:00 PM	8
8:00 PM	8
9:00 PM	9
10:00 PM	3
11:00 PM	2



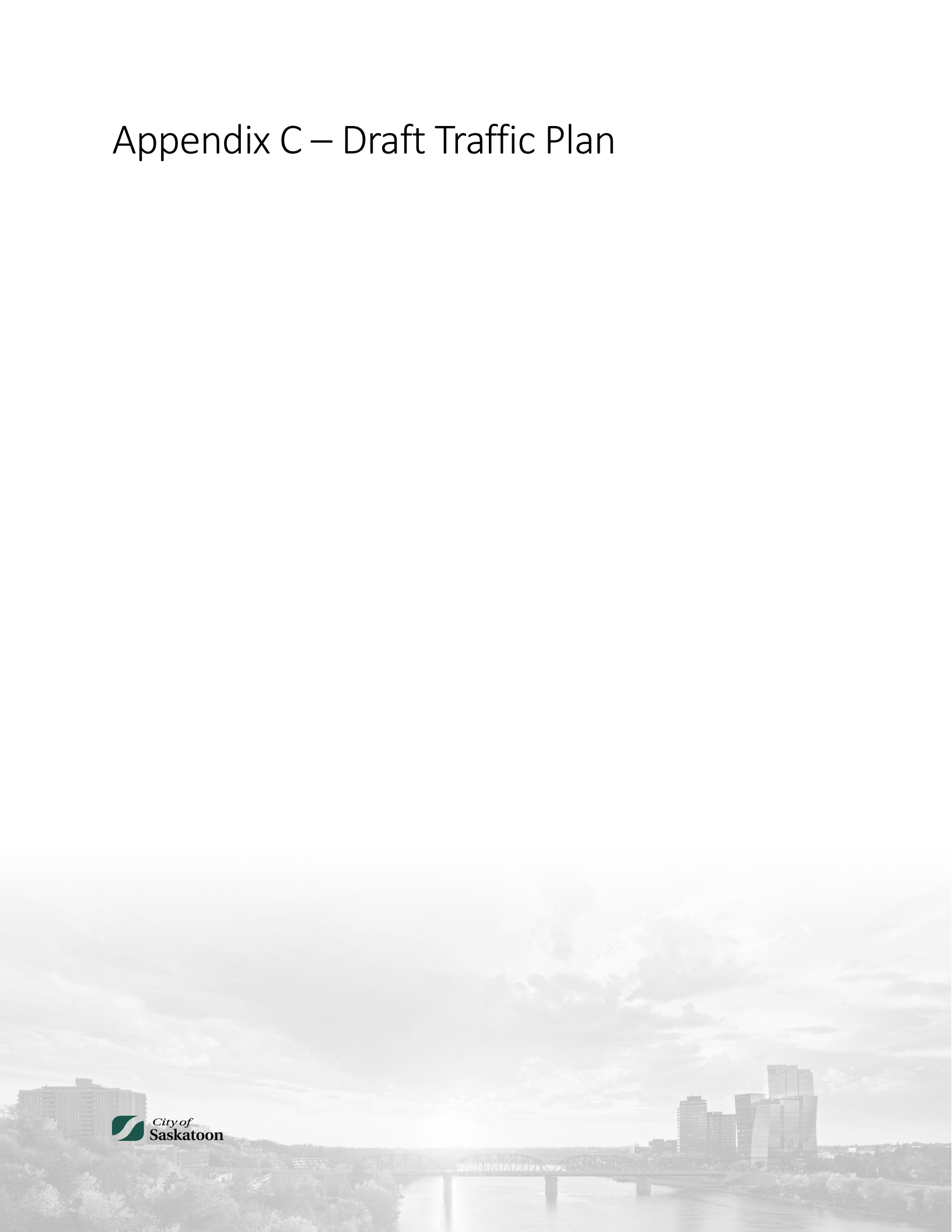
Month	# of Collisions
January	26
February	17
March	6
April	11
May	7
June	14
July	19
August	15
September	11
October	15
November	20
December	22



Major Contributing Factors	# of Collisions
Following too closely	24
Inattentive	16
Passing or lane usage improper	14
Other human action	9
Traffic control device disregarded	7
Road condition (surface or structure)	6
Distracted	4
Driving too fast for road conditions	3
Fail to yield the right-of-way	3
Impaired	3
Turning improper	3
Careless driving/stunting	2
Had Been Drinking	2
Uninvolved vehicle	2
Animal action	1
Backing unsafely	1
Defective brakes	1
Driver inexperience/confusion	1
Driving wrong way in one-way traffic	1
Drugs (Prescription or illegal)	1
Physical/Medical Disability	1
Sun glare	1
Uninvolved pedestrian	1


Major Contributing Factors
Following too closely
Inattentive
Passing or lane usage improper
Other human action
Traffic control device disregarded
Road condition (surface or structure)
Distracted
Turning improper
Impaired
Fail to yield the right-of-way
Driving too fast for road conditions
Uninvolved vehicle
Had Been Drinking
Careless driving/stunting
Uninvolved pedestrian
Sun glare
Physical/Medical Disability
Drugs (Prescription or illegal)
Driving wrong way in one-way traffic
Driver Inexperience/Confusion
Defective brakes
Backing unsafely
Animal action
0
5
10
15
20
25
30

Appendix C – Draft Traffic Plan



Proposed Traffic Plan

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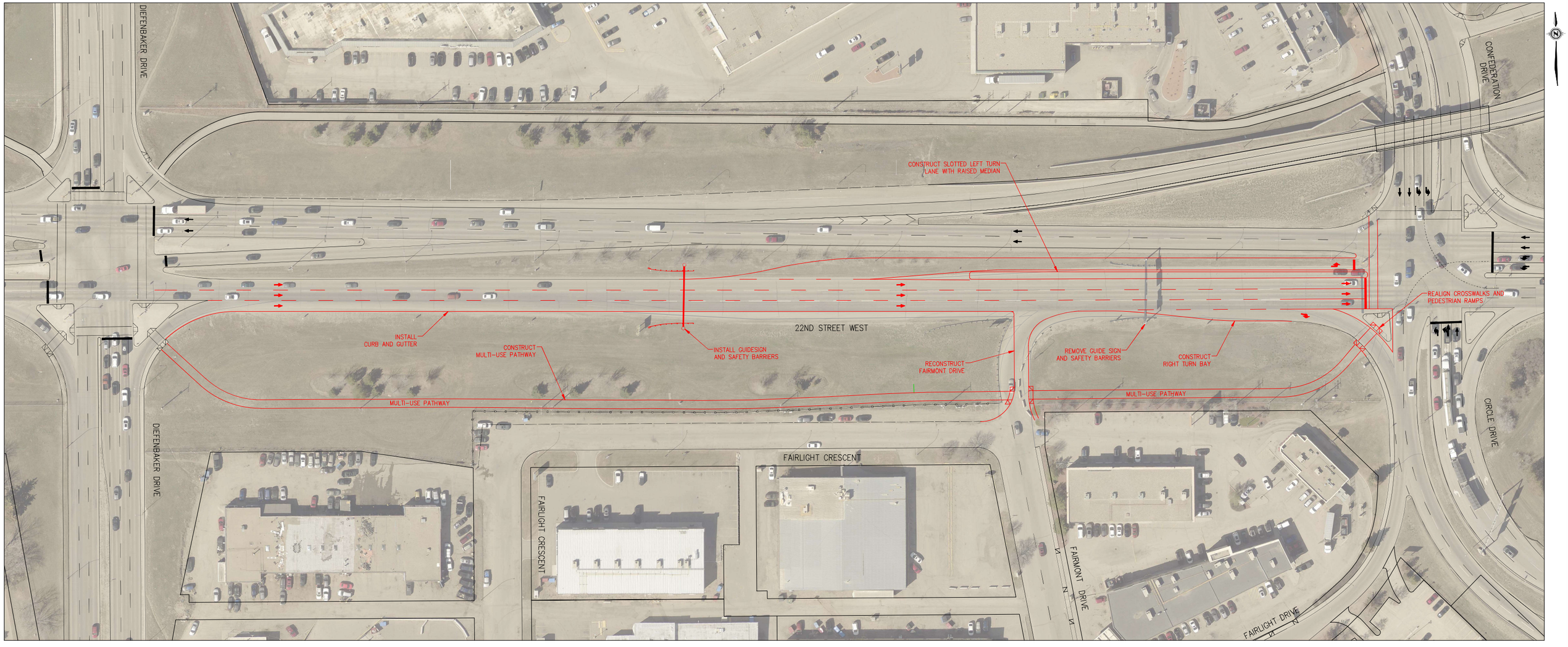
City of Saskatoon



Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.556

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	0	0	1	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	30.48	30.48	75.00	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	77	20	118	104	36	27	225	63	97	211	202
Total Analysis Volume [veh/h]	204	309	81	473	416	145	108	898	251	387	842	808
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	94.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	20	38	0	22	40	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	15	15	15	19	19	19	9	36	36	15	42
g / C, Green / Cycle	0.13	0.13	0.13	0.17	0.17	0.17	0.08	0.32	0.32	0.13	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.10	0.14	0.16	0.16	0.06	0.18	0.16	0.11	0.24
s, saturation flow rate [veh/h]	1781	1850	1702	3459	1870	1707	1781	5094	1589	3459	3560
c, Capacity [veh/h]	237	246	226	589	318	290	135	1615	504	452	1323
d1, Uniform Delay [s]	47.28	47.24	47.71	45.47	46.55	46.55	51.80	32.28	31.58	48.51	29.48
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.66	6.24	9.48	2.68	13.13	14.33	10.95	1.39	3.53	5.04	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.70	0.77	0.80	0.92	0.92	0.80	0.56	0.50	0.86	0.64
d, Delay for Lane Group [s/veh]	53.94	53.48	57.19	48.15	59.68	60.88	62.75	33.67	35.11	53.55	31.86
Lane Group LOS	D	D	E	D	E	E	E	C	D	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.96	5.08	5.34	6.63	9.30	8.59	3.44	7.00	6.07	5.68	9.78
50th-Percentile Queue Length [m/ln]	37.81	38.73	40.68	50.51	70.84	65.42	26.21	53.34	46.22	43.25	74.56
95th-Percentile Queue Length [veh/ln]	8.62	8.78	9.13	10.85	14.30	13.39	6.19	11.34	10.10	9.58	14.91
95th-Percentile Queue Length [m/ln]	65.65	66.91	69.55	82.68	108.94	102.04	47.18	86.41	76.99	73.02	113.65

Movement, Approach, & Intersection Results

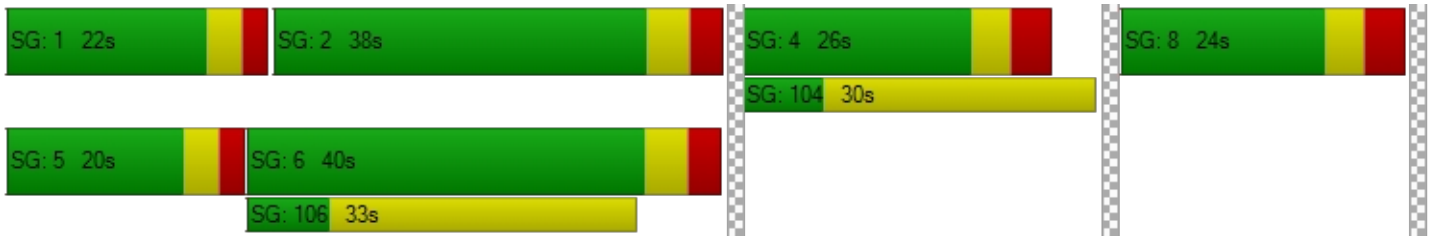
d_M, Delay for Movement [s/veh]	53.86	55.57	0.00	48.15	60.03	60.88	62.75	33.67	35.11	53.55	31.86	0.00
Movement LOS	D	E		D	E	E	E	C	D	D	C	
d_A, Approach Delay [s/veh]	54.89			54.72			36.46			38.69		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.16											
Intersection LOS	D											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.933	3.173	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	558	593
d_b, Bicycle Delay [s]	40.93	39.25	29.64	28.21
l_b,int, Bicycle LOS Score for Intersection	1.983	2.413	2.251	2.574
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 22nd St & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.531

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	40.00	30.48	30.48	70.00	30.48	30.48	130.00	30.48	30.48	150.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	151	361	255	163	249	216	179	733	198	230	1118	303
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	361	255	163	249	216	179	733	198	230	1118	303
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	90	64	41	62	54	45	183	50	58	280	76
Total Analysis Volume [veh/h]	151	361	255	163	249	216	179	733	198	230	1118	303
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	64.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsigna	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	31	0	23	30	0	23	33	0	23	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	50	38	50	38	38	52	37	37	52	39	39
g / C, Green / Cycle	0.46	0.34	0.46	0.35	0.35	0.47	0.34	0.34	0.47	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.14	0.13	0.14	0.27	0.26	0.26	0.26	0.27	0.27
s, saturation flow rate [veh/h]	1092	3560	1175	1870	1589	669	1870	1735	897	3560	1673
c, Capacity [veh/h]	502	1228	560	654	556	321	627	581	379	1265	594
d1, Uniform Delay [s]	18.46	26.26	18.27	26.84	26.92	22.82	32.78	32.80	22.51	31.38	31.40
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.44	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.61	1.32	1.69	2.06	6.13	9.42	10.20	7.24	4.55	9.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.29	0.29	0.38	0.39	0.56	0.77	0.77	0.61	0.76	0.77
d, Delay for Lane Group [s/veh]	18.79	26.87	19.59	28.53	28.98	28.95	42.20	42.99	29.75	35.93	41.05
Lane Group LOS	B	C	B	C	C	C	D	D	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.32	3.55	2.67	5.19	4.57	3.18	12.97	12.17	4.26	11.93	12.09
50th-Percentile Queue Length [m/ln]	17.65	27.04	20.37	39.56	34.81	24.26	98.80	92.77	32.49	90.94	92.09
95th-Percentile Queue Length [veh/ln]	4.17	6.39	4.81	8.93	8.07	5.73	18.87	17.90	7.65	17.60	17.79
95th-Percentile Queue Length [m/ln]	31.77	48.67	36.67	68.04	61.52	43.67	143.80	136.38	58.29	134.11	135.53

Movement, Approach, & Intersection Results

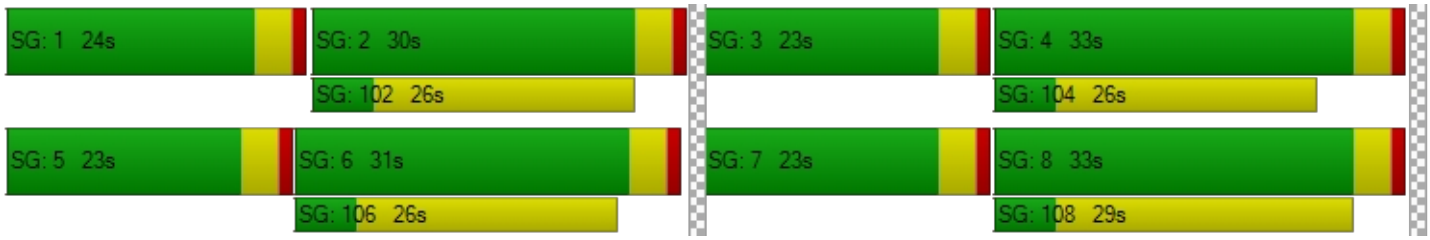
d_M, Delay for Movement [s/veh]	18.79	26.87	0.00	19.59	28.53	28.98	28.95	42.47	42.99	29.75	36.63	41.05
Movement LOS	B	C		B	C	C	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	24.49			26.36			40.38			36.48		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.39											
Intersection LOS	C											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.987	2.944	3.222	3.260
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	491	473	527	527
d_b, Bicycle Delay [s]	31.31	32.07	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	1.982	2.078	2.475	2.468
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Fairlight Dr & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.680

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	88	662	597	95	544	270
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	662	597	95	544	270
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	166	149	24	136	68
Total Analysis Volume [veh/h]	88	662	597	95	544	270
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Unsignalized
Signal Group	7	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	10	10	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	29	61	32	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	18	0	0	10	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	57	57	28
g / C, Green / Cycle	0.28	0.28	0.63	0.63	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.51	0.03	0.17
s, saturation flow rate [veh/h]	1603	2532	1168	3204	3204
c, Capacity [veh/h]	445	703	746	2029	997
d1, Uniform Delay [s]	24.84	31.78	12.47	6.23	25.72
k, delay calibration	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	31.56	9.43	0.04	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.94	0.80	0.05	0.55
d, Delay for Lane Group [s/veh]	25.83	63.34	21.91	6.28	27.89
Lane Group LOS	C	E	C	A	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	9.88	7.93	0.32	5.00
50th-Percentile Queue Length [m/ln]	11.70	75.31	60.44	2.44	38.08
95th-Percentile Queue Length [veh/ln]	2.76	15.04	12.55	0.58	8.66
95th-Percentile Queue Length [m/ln]	21.06	114.59	95.63	4.39	66.01

Movement, Approach, & Intersection Results

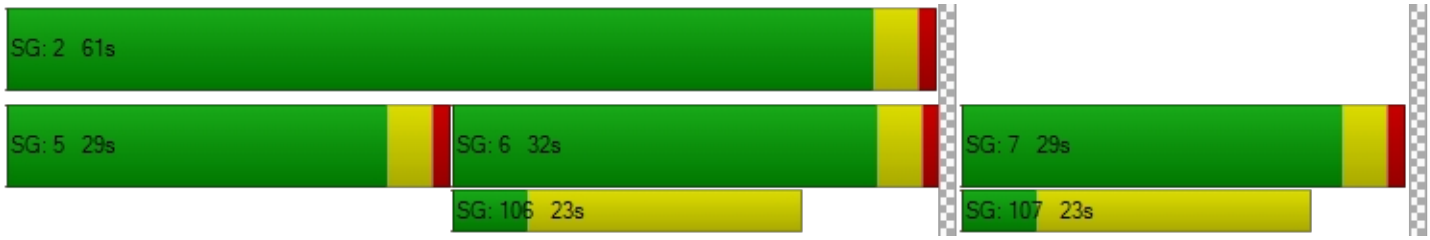
d_M, Delay for Movement [s/veh]	25.83	63.34	21.91	6.28	27.89	0.00
Movement LOS	C	E	C	A	C	
d_A, Approach Delay [s/veh]	58.94		19.76		27.89	
Approach LOS	E		B		C	
d_I, Intersection Delay [s/veh]	36.78					
Intersection LOS	D					
Intersection V/C	0.680					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	0.00	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.090	0.000	2.530
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	1267	622
d_b, Bicycle Delay [s]	23.47	6.05	21.36
l_b,int, Bicycle LOS Score for Intersection	1.560	2.131	2.119
Bicycle LOS	A	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Fairlight Dr & Fairmont Cr

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.057

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	24	54	21	207	555	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	54	21	207	555	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	14	5	52	139	8
Total Analysis Volume [veh/h]	24	54	21	207	555	30
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.09	0.03	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	14.65	12.16	10.85	0.00	0.00	0.00
Movement LOS	B	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.51	0.51	0.04	0.02	0.00	0.00
95th-Percentile Queue Length [m/ln]	3.92	3.92	0.27	0.13	0.00	0.00
d_A, Approach Delay [s/veh]	12.92		1.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.39					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Fairlight Dr & Fairmont Dr

Control Type:	Signalized	Delay (sec / veh):	31.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.595

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	90.00	30.48	30.48	30.48	30.48	30.48	40.00	30.48	30.48	20.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	419	232	38	3	63	82	74	28	149	253	382	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	232	38	3	63	82	74	28	149	253	382	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	58	10	1	16	21	19	7	37	63	96	15
Total Analysis Volume [veh/h]	419	232	38	3	63	82	74	28	149	253	382	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	27	0	0	27	0	17	18	0	15	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	0	0	9	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	29	14	14	29	12	12
g / C, Green / Cycle	0.38	0.38	0.38	0.48	0.23	0.23	0.48	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.37	0.16	0.10	0.06	0.02	0.10	0.19	0.09	0.09
s, saturation flow rate [veh/h]	1119	1642	1529	1241	1683	1431	1318	3204	1572
c, Capacity [veh/h]	438	630	647	703	393	334	796	641	314
d1, Uniform Delay [s]	20.31	13.65	12.63	8.62	17.93	19.68	9.52	21.14	21.18
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	53.98	2.14	0.82	0.30	0.35	4.33	1.05	2.38	5.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.43	0.23	0.11	0.07	0.45	0.32	0.46	0.47
d, Delay for Lane Group [s/veh]	74.29	15.80	13.45	8.92	18.28	24.01	10.57	23.52	26.18
Lane Group LOS	E	B	B	A	B	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.95	2.76	1.36	0.50	0.32	2.05	1.95	1.90	2.13
50th-Percentile Queue Length [m/ln]	91.07	21.06	10.36	3.83	2.44	15.60	14.88	14.50	16.23
95th-Percentile Queue Length [veh/ln]	17.62	4.97	2.45	0.91	0.58	3.68	3.52	3.43	3.83
95th-Percentile Queue Length [m/ln]	134.27	37.91	18.64	6.90	4.39	28.08	26.79	26.10	29.21

Movement, Approach, & Intersection Results

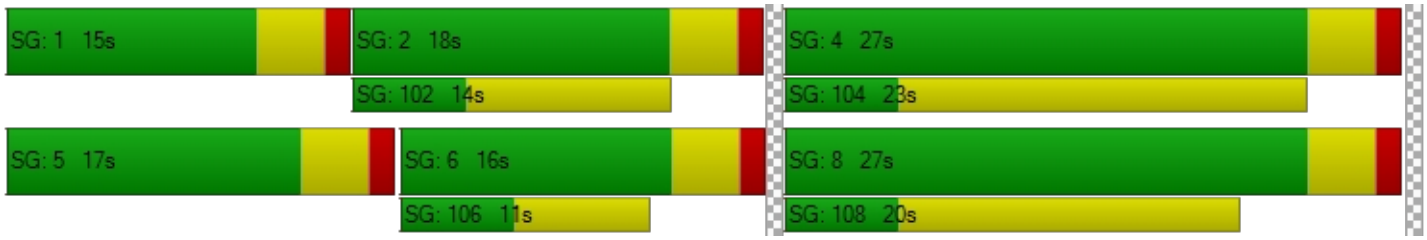
d_M, Delay for Movement [s/veh]	74.29	15.80	15.80	13.45	13.45	13.45	8.92	18.28	24.01	10.57	24.13	26.18
Movement LOS	E	B	B	B	B	B	A	B	C	B	C	C
d_A, Approach Delay [s/veh]	51.37			13.45			18.92			19.36		
Approach LOS	D			B			B			B		
d_I, Intersection Delay [s/veh]	31.18											
Intersection LOS	C											
Intersection V/C	0.595											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.620	2.123	3.326	2.524
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	467	400
d_b, Bicycle Delay [s]	11.41	11.41	17.63	19.20
l_b,int, Bicycle LOS Score for Intersection	2.807	1.804	1.974	1.941
Bicycle LOS	C	A	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	34.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.463

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	0	0	1	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	30.48	30.48	75.00	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	22	28	102	64	13	17	308	62	48	76	79
Total Analysis Volume [veh/h]	159	89	112	406	256	53	68	1232	247	190	304	315
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	21	39	0	21	39	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	10	10	10	16	16	16	6	51	51	8	53
g / C, Green / Cycle	0.09	0.09	0.09	0.14	0.14	0.14	0.05	0.45	0.45	0.07	0.47
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.05	0.12	0.08	0.09	0.04	0.24	0.16	0.05	0.09
s, saturation flow rate [veh/h]	1781	1786	1702	3459	1870	1760	1781	5094	1589	3459	3560
c, Capacity [veh/h]	157	158	150	491	265	250	98	2272	709	258	1658
d1, Uniform Delay [s]	49.68	49.67	49.85	47.55	45.86	45.88	52.93	23.07	20.71	51.64	17.79
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	4.59	5.59	3.74	2.18	2.34	8.91	0.94	1.36	4.15	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.52	0.56	0.83	0.60	0.60	0.69	0.54	0.35	0.74	0.18
d, Delay for Lane Group [s/veh]	54.30	54.26	55.43	51.29	48.04	48.21	61.84	24.01	22.07	55.79	18.03
Lane Group LOS	D	D	E	D	D	D	E	C	C	E	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.43	2.43	2.52	5.84	4.38	4.15	2.15	8.10	4.54	2.80	2.38
50th-Percentile Queue Length [m/ln]	18.54	18.55	19.21	44.51	33.35	31.62	16.39	61.74	34.56	21.34	18.11
95th-Percentile Queue Length [veh/ln]	4.38	4.38	4.54	9.81	7.81	7.47	3.87	12.77	8.03	5.04	4.28
95th-Percentile Queue Length [m/ln]	33.37	33.40	34.58	74.72	59.50	56.91	29.51	97.31	61.17	38.41	32.60

Movement, Approach, & Intersection Results

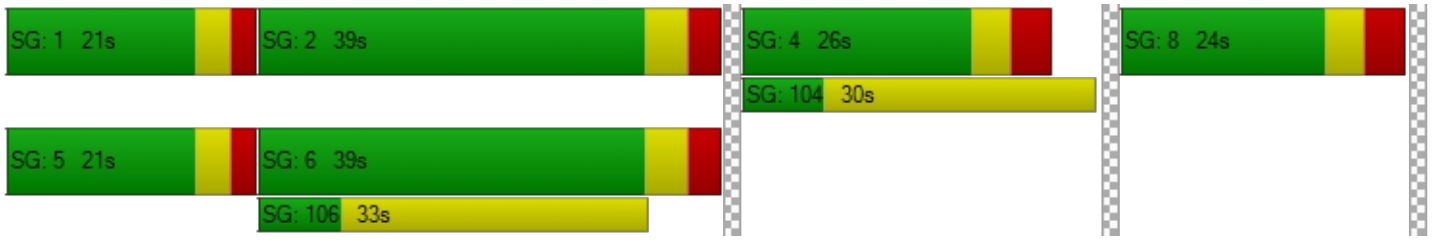
d_M, Delay for Movement [s/veh]	54.28	55.37	0.00	51.29	48.10	48.21	61.84	24.01	22.07	55.79	18.03	0.00
Movement LOS	D	E		D	D	D	E	C	C	E	B	
d_A, Approach Delay [s/veh]	54.67			49.92			25.36			32.55		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.81											
Intersection LOS	C											
Intersection V/C	0.463											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.803	3.084	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	575	575
d_b, Bicycle Delay [s]	40.93	39.25	28.92	28.92
l_b,int, Bicycle LOS Score for Intersection	1.764	2.149	2.410	1.967
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 22nd St & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.582

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	40.00	30.48	30.48	70.00	30.48	30.48	130.00	30.48	30.48	150.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	270	389	192	163	296	126	739	160	107	732	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	270	389	192	163	296	126	739	160	107	732	94
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	68	97	48	41	74	32	185	40	27	183	24
Total Analysis Volume [veh/h]	288	270	389	192	163	296	126	739	160	107	732	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	64.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsigna	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	31	0	23	30	0	23	33	0	23	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	50	37	50	32	32	52	42	42	52	41	41
g / C, Green / Cycle	0.46	0.33	0.46	0.29	0.29	0.47	0.38	0.38	0.47	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.24	0.08	0.15	0.09	0.19	0.15	0.25	0.25	0.14	0.15	0.16
s, saturation flow rate [veh/h]	1201	3560	1263	1870	1589	846	1870	1756	791	3560	1764
c, Capacity [veh/h]	497	1186	614	548	466	419	718	674	343	1340	664
d1, Uniform Delay [s]	21.47	26.47	18.46	30.12	33.79	17.46	27.76	27.77	19.16	25.31	25.35
k, delay calibration	0.36	0.50	0.50	0.50	0.50	0.12	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	0.45	1.33	1.39	6.68	0.43	4.54	4.84	2.37	0.94	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.23	0.31	0.30	0.64	0.30	0.65	0.65	0.31	0.41	0.41
d, Delay for Lane Group [s/veh]	25.07	26.91	19.79	31.51	40.46	17.89	32.31	32.60	21.53	26.25	27.26
Lane Group LOS	C	C	B	C	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.23	2.63	3.19	3.56	7.68	1.85	10.72	10.13	1.73	5.44	5.62
50th-Percentile Queue Length [m/ln]	39.82	20.05	24.30	27.11	58.52	14.07	81.71	77.17	13.21	41.46	42.80
95th-Percentile Queue Length [veh/ln]	8.98	4.74	5.74	6.40	12.22	3.32	16.09	15.35	3.12	9.27	9.50
95th-Percentile Queue Length [m/ln]	68.39	36.09	43.74	48.80	93.15	25.33	122.63	116.94	23.78	70.61	72.42

Movement, Approach, & Intersection Results

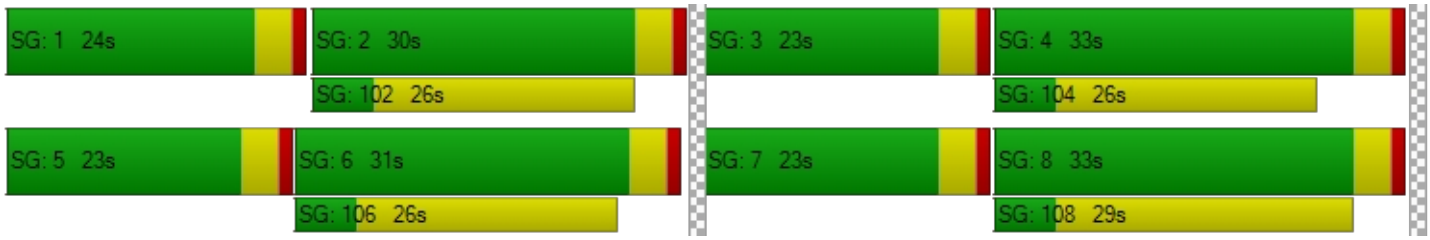
d_M, Delay for Movement [s/veh]	25.07	26.91	0.00	19.79	31.51	40.46	17.89	32.42	32.60	21.53	26.50	27.26
Movement LOS	C	C		B	C	D	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	25.96			32.12			30.66			26.01		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.76											
Intersection LOS	C											
Intersection V/C	0.582											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.888	2.833	3.203	3.119
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	491	473	527	527
d_b, Bicycle Delay [s]	31.31	32.07	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	2.020	2.097	2.405	2.073
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Fairlight Dr & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.439

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	72	200	784	119	121	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	200	784	119	121	147
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	50	196	30	30	37
Total Analysis Volume [veh/h]	72	200	784	119	121	147
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Unsignalized
Signal Group	7	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	10	10	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	29	61	32	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	18	0	0	10	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	57	57	28
g / C, Green / Cycle	0.28	0.28	0.63	0.63	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.58	0.04	0.04
s, saturation flow rate [veh/h]	1603	2532	1361	3204	3204
c, Capacity [veh/h]	445	703	947	2029	997
d1, Uniform Delay [s]	24.58	25.49	12.52	6.28	22.19
k, delay calibration	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	1.02	8.91	0.06	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.28	0.83	0.06	0.12
d, Delay for Lane Group [s/veh]	25.36	26.50	21.43	6.34	22.44
Lane Group LOS	C	C	C	A	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.24	1.75	11.98	0.40	0.94
50th-Percentile Queue Length [m/ln]	9.45	13.31	91.32	3.08	7.13
95th-Percentile Queue Length [veh/ln]	2.23	3.14	17.66	0.73	1.68
95th-Percentile Queue Length [m/ln]	17.01	23.96	134.58	5.54	12.84

Movement, Approach, & Intersection Results

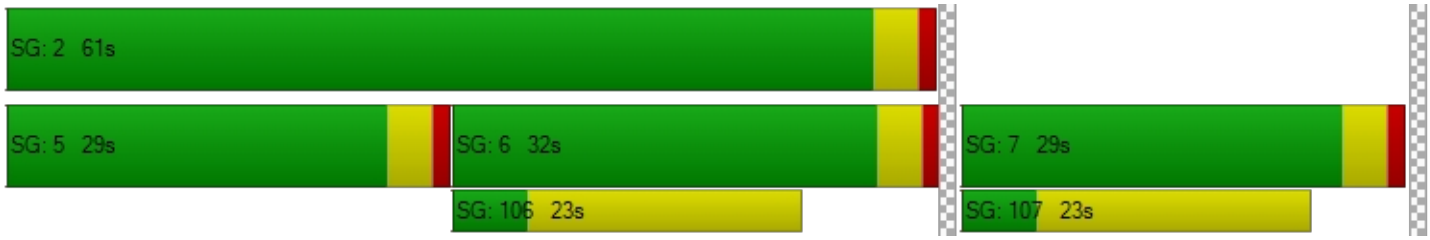
d_M, Delay for Movement [s/veh]	25.36	26.50	21.43	6.34	22.44	0.00
Movement LOS	C	C	C	A	C	
d_A, Approach Delay [s/veh]	26.20		19.44		22.44	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.14					
Intersection LOS	C					
Intersection V/C	0.439					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	0.00	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.111	0.000	2.399
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	1267	622
d_b, Bicycle Delay [s]	23.47	6.05	21.36
l_b,int, Bicycle LOS Score for Intersection	1.560	2.305	1.770
Bicycle LOS	A	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Fairlight Dr & Fairmont Cr

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.015

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	9	18	23	178	290	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	18	23	178	290	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	6	45	73	5
Total Analysis Volume [veh/h]	9	18	23	178	290	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.40	10.12	9.35	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.12	0.12	0.04	0.02	0.00	0.00
95th-Percentile Queue Length [m/ln]	0.95	0.95	0.30	0.15	0.00	0.00
d_A, Approach Delay [s/veh]	10.55		1.07		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.93					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Fairlight Dr & Fairmont Dr

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.304

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	90.00	30.48	30.48	30.48	30.48	30.48	40.00	30.48	30.48	20.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	197	194	70	1	52	94	63	73	101	124	134	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	194	70	1	52	94	63	73	101	124	134	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	49	18	0	13	24	16	18	25	31	34	7
Total Analysis Volume [veh/h]	197	194	70	1	52	94	63	73	101	124	134	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	27	0	0	27	0	17	18	0	15	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	0	0	9	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	29	14	14	29	12	12
g / C, Green / Cycle	0.38	0.38	0.38	0.48	0.23	0.23	0.48	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.18	0.16	0.10	0.05	0.04	0.07	0.09	0.03	0.04
s, saturation flow rate [veh/h]	1118	1608	1511	1361	1683	1431	1320	3204	1543
c, Capacity [veh/h]	437	616	640	799	393	334	773	641	309
d1, Uniform Delay [s]	15.28	13.65	12.64	8.36	18.43	18.97	8.72	19.87	19.90
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.37	2.18	0.84	0.19	1.05	2.34	0.44	0.56	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.43	0.23	0.08	0.19	0.30	0.16	0.17	0.18
d, Delay for Lane Group [s/veh]	18.65	15.83	13.48	8.56	19.48	21.31	9.17	20.43	21.16
Lane Group LOS	B	B	B	A	B	C	A	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.34	2.71	1.35	0.42	0.87	1.29	0.87	0.63	0.70
50th-Percentile Queue Length [m/ln]	17.80	20.64	10.31	3.19	6.62	9.84	6.59	4.81	5.33
95th-Percentile Queue Length [veh/ln]	4.20	4.88	2.44	0.75	1.56	2.33	1.56	1.14	1.26
95th-Percentile Queue Length [m/ln]	32.03	37.16	18.56	5.74	11.92	17.72	11.87	8.65	9.59

Movement, Approach, & Intersection Results

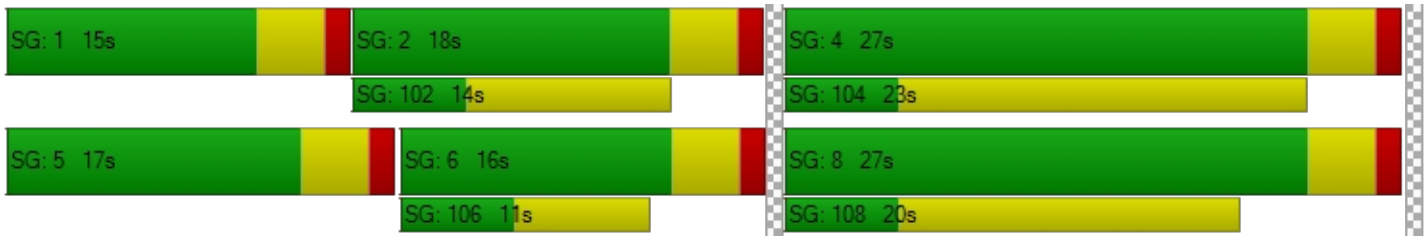
d_M, Delay for Movement [s/veh]	18.65	15.83	15.83	13.48	13.48	13.48	8.56	19.48	21.31	9.17	20.58	21.16
Movement LOS	B	B	B	B	B	B	A	B	C	A	C	C
d_A, Approach Delay [s/veh]	17.04			13.48			17.35			15.69		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.30											
Intersection LOS	B											
Intersection V/C	0.304											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.354	2.055	2.887	2.417
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	467	400
d_b, Bicycle Delay [s]	11.41	11.41	17.63	19.20
l_b,int, Bicycle LOS Score for Intersection	2.431	1.802	1.951	1.717
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix D – Engagement Summary

City of Saskatoon ENGAGE

May 13th, 2024

Have Your Say: 22nd Street and Confederation Drive Intersection Improvements

The City of Saskatoon is gathering your feedback on proposed changes to 22nd Street West between Diefenbaker Drive and Confederation Drive.

Residents are invited to provide ideas by phone, email, mail, or in-person at the open house on May 30th, 2024. The draft plan and public open house materials will be posted to **Saskatoon.ca/Improving22ndAndConfed.**

Don't leave yourself out of the conversation! There are multiple ways to participate and provide us with your ideas.

In-Person Public Open House:

When:
Thursday, May 30th, 2024
6:30 p.m. – 8:30 p.m.

Where:
St. Marguerite School Gym
1235 McCormack Road

By mail:
Transportation Customer Service
222 – 3rd Avenue North
Saskatoon, SK S7K 0J5

By email/phone:
TransportationSurvey@Saskatoon.ca or
306-975-2476

Online survey:
An online survey will be available at **Saskatoon.ca/Improving22ndAndConfed** or scan the QR code below:

Next Steps

- ✓ SUMMER 2024: Gather community feedback.
- ✓ FALL 2024: Present report to the Standing Policy Committee on Transportation.

22nd Street West and Confederation Drive

Intersection Improvements

saskatoon.ca / **Improving22ndAndConfed**

City of Saskatoon

Background

- Concerns with vehicles attempting to maneuver from Fairmont Drive to the eastbound left turn bay at 22nd Street & Confederation Drive.
- Various countermeasures have been implemented and ultimately removed because they were ineffective.
- Previous studies have recommended the construction of an eastbound slotted left turn to address the issue.

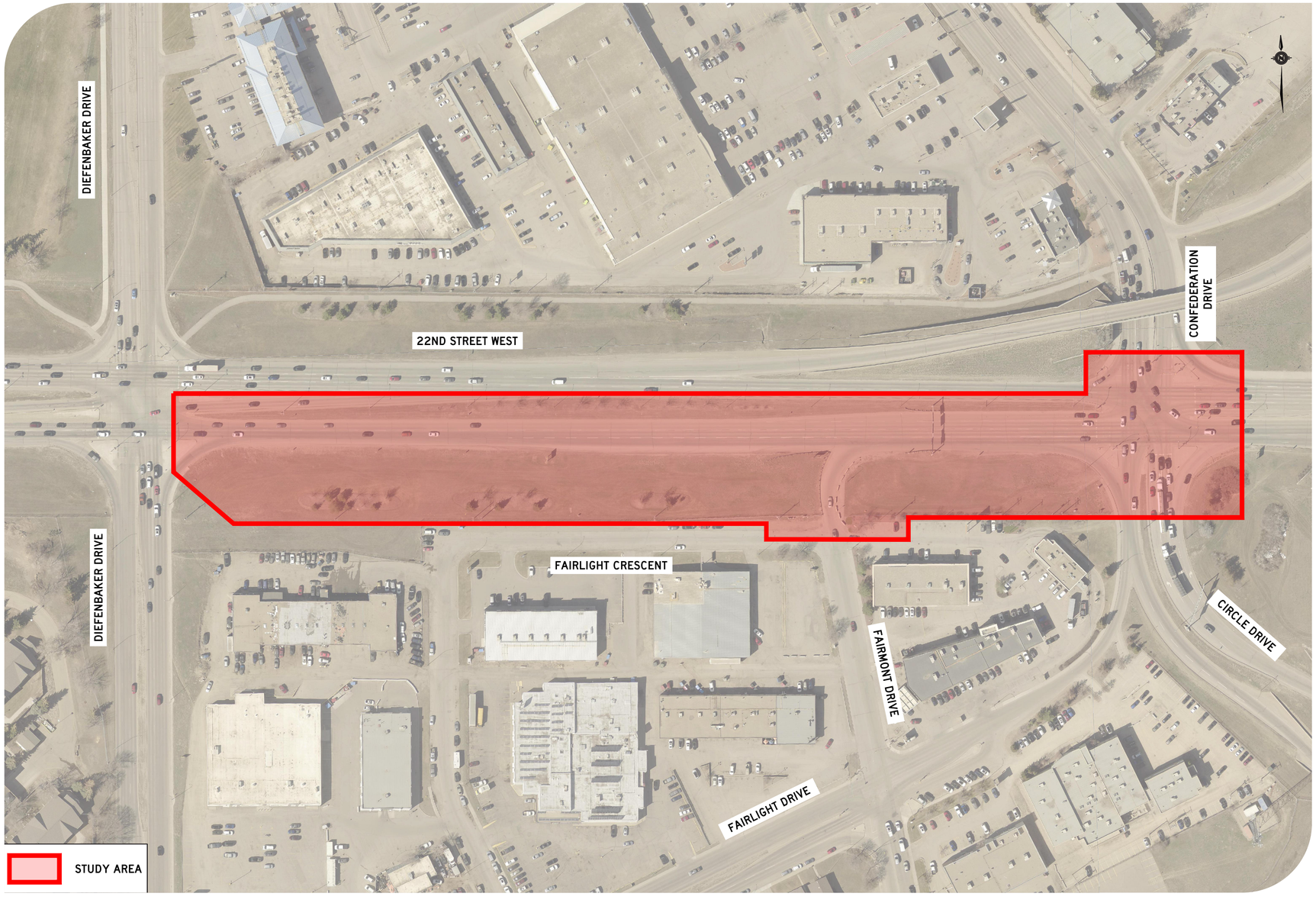
saskatoon.ca / **Improving22ndAndConfed**

City of Saskatoon

Purpose:

To gather public feedback on the proposed changes to the intersection of 22nd Street West and Confederation Drive prior to finalizing the functional plan.

Study Area:



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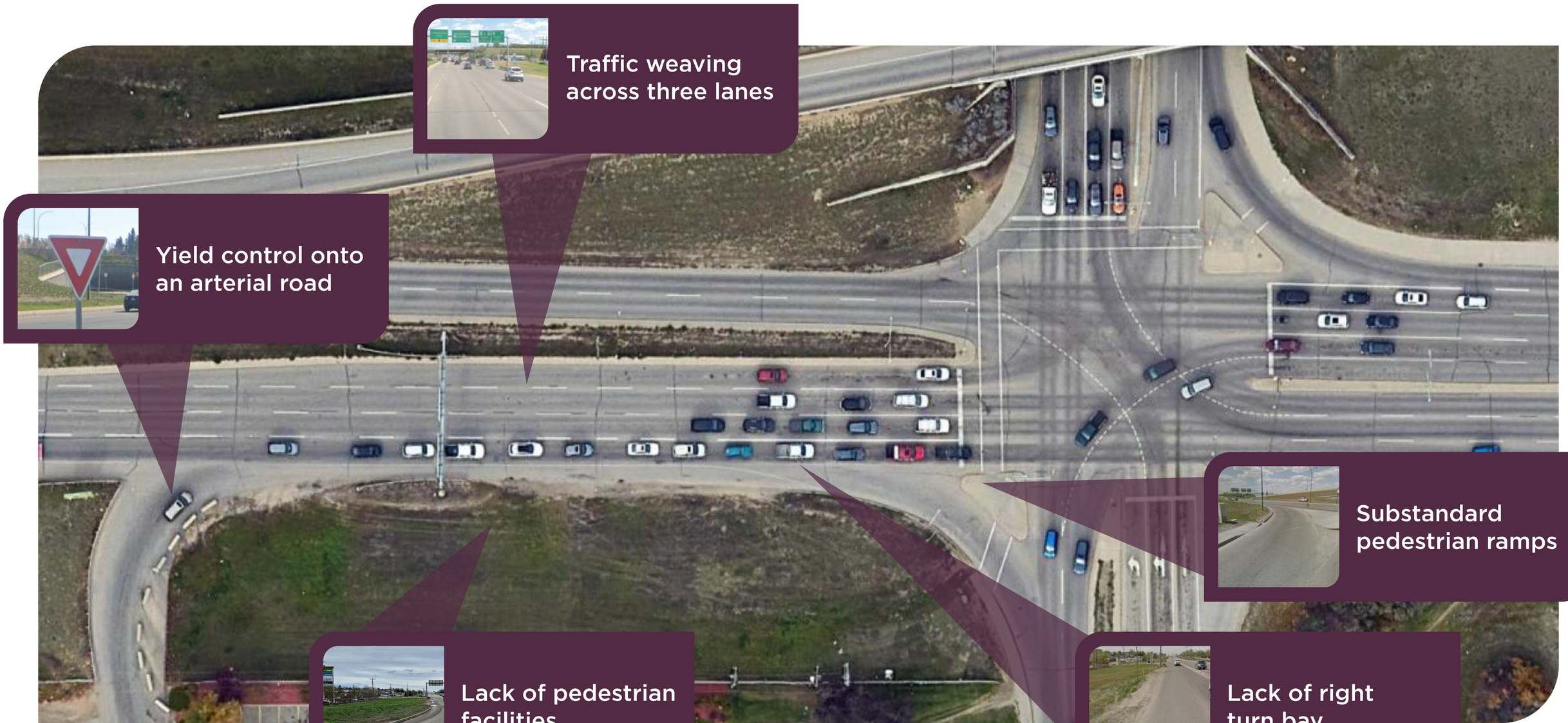
Challenges / Opportunities



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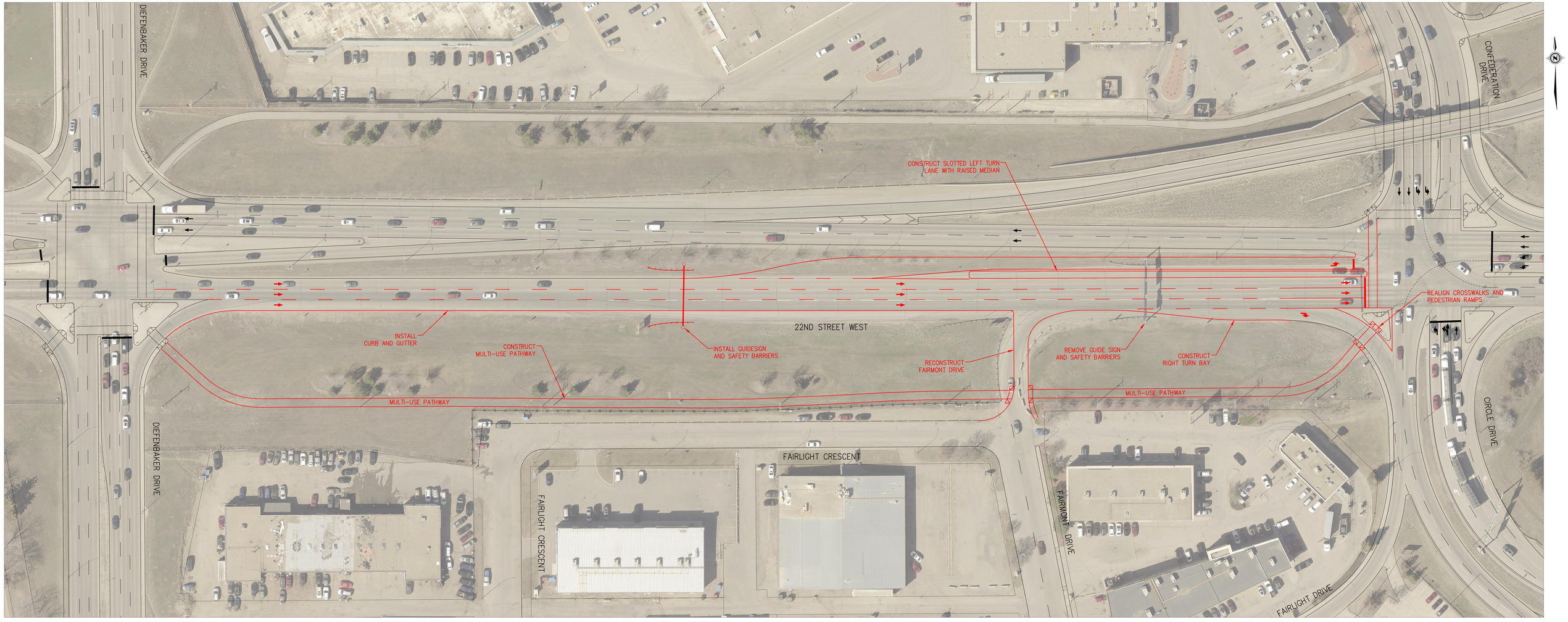
Proposed Traffic Plan

#	Recommenation	Estimated Cost
1	Construct an eastbound slotted left turn lane with a raised median	$800,000.00
2	Construct an eastbound right turn lane	$160,000.00
3	Realign Fairmont Drive between 22nd Street and Fairlight Crescent	$150,000.00
4	Relocate existing overhead guide sign to the west	$480,000.00
5	Construct curb and gutter on the south side of 22nd Street West	$160,000.00
6	Realign crosswalk and pedestrian ramps	$10,000.00
7	Install Multi-use Pathway	$200,000.00
	TOTAL:	**$1,960,000.00**

Proposed Traffic Plan



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Next Steps

May / June 2024

› Conduct public engagement

July 2024

› Summarize public feedback

› Finalize recommended functional plan

August 2024

› Report to Standing Policy Committee on Transportation (SPCT) and City Council

Have Your Say

Scan the QR code to share your feedback

› Collect a paper survey from City Staff
› Or visit saskatoon.ca/Improving22ndAndConfed
› Please take our survey before June 14

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City of Saskatoon

City of Saskatoon
Communications & Public Engagement

ENGAGE

22nd Street West & Confederation Drive Intersection Improvements

What We Learned - Engagement Summary

July 8, 2024

Project Overview

The City of Saskatoon is examining the intersection of 22nd Street West and Confederation Drive to identify a permanent design that addresses safety and operational issues that exist in the eastbound direction.

This location has long-standing concerns with the operation of vehicles attempting to maneuver from Fairmont Drive to the eastbound left turn bay at 22nd Street West and Confederation Drive. In the past, several measures have been implemented, and ultimately removed, along 22nd Street West to prevent this movement. Measures included concrete barriers, low profile barrier, and Tuff Curb with delineator posts. These measures were not effective at resolving the issue.

Currently multiple improvements are being proposed to address these issues, including:

- The construction of an eastbound slotted left turn bay at the intersection of 22nd Street West and Confederation Drive
- A formalized eastbound right turn lane at the intersection of 22nd Street West and Confederation Drive to access the Circle Drive southbound on-ramp
- Construction of a shared-use pathway on the south side of 22nd Street West
- Relocating the existing guide sign on the south side of 22nd Street West that will be impacted by the proposed changes, and
- Changes to the road alignment and traffic control at the intersection of 22nd Street West and Fairmont Drive

Engagement Summary

From May to June 2024, engagement activities took place for the proposed improvements for the 22nd Street West and Confederation Drive intersection.

The goal of the engagement activities was to involve and consult with the community and businesses on the proposed changes. A description of engagement events is outlined in Table 1 (see next page).

Table 1: Summary of Engagement Events

Engagement Activity		Engagement Purpose	Targeted Audience	Engagement Goal
1	Open House May 30, 2024	Communicate the proposed changes and gather feedback	• Fairhaven Residents/Businesses • Parkridge Residents/Businesses • Fairhaven Community Association • Parkridge Community Association • Confederation Suburban Centre • General Public	Share the proposed changes to the intersection of 22nd Street West and Confederation Drive and gather feedback.
2	Online survey May 22 to June 14, 2024	Gather feedback	General Public	Gather feedback on the proposed changes to the intersection of 22nd Street West and Confederation Drive.

Flyers were mailed to residents and business owners in the Parkridge and Fairhaven neighbourhoods and in the Confederation Suburban Centre. The flyer described the engagement activities, how to participate in them, and had a QR code linked to the engage page and online survey. The Community Associations for Parkridge and Fairhaven were contacted through the City's community consultants. The engagement activities were also promoted through the City's social media accounts and on the project's Engage Page.

Open House

An open house was held at St. Marguerite School Gym on May 30, 2024. Eighteen people attended the meeting. Engagement boards outlining the proposal and a roll plan were set up in the meeting space. Project team members were available to discuss the project and answer questions. Sticky notes were used to capture attendees' thoughts on the proposed changes to the intersection. Attendees were provided with evaluation forms to share their comments on the project and to let us know how the event went for them.

What We Learned

Most attendees provided their feedback directly to project team members. Some people wrote their comments on sticky notes and pasted them on the roll plan. Attendees who provided their feedback to the project team were also invited to submit comments on the evaluation form. Eleven evaluation forms were filled out. Those who filled out a form were either business owners, employees, or residents.

Six of the evaluation forms had comments regarding the project. Two attendees expressed their support for the proposed changes. One attendee commented that the proposed changes will shift traffic onto Diefenbaker Drive. Another attendee indicated that they supported the proposed changes but had an unspecified reservation.

Common themes from the sticky notes were:

- Some advocated for the closure of Fairmont Drive at 22nd Street West.
- Keep Fairmont Drive open at 22nd Street West by extending the right turn lane past Fairmont Drive.

Other themes on the sticky notes were:

- To relocate Fairmont Drive exit like the Circle Drive West plan.
- Put a gate in the fence for cyclists.
- Ensure proper drainage at the proposed realigned crosswalk and pedestrian ramp on the 22nd and Confederation intersection because there are water pools when it rains.
- Making a longer merge lane from Diefenbaker Drive onto 22nd Street.
- A path to join the proposed multiuse pathway from Diefenbaker Drive.

In relation to the format of the open house, the attendees said that they were satisfied with the engagement event.

Online Survey

Another engagement tool that was used was an online survey. The survey was available between May 22 and June 14, 2024. During this time 124 people accessed the survey with 122 respondents completing the survey. The six-question survey was developed to gather feedback on the proposed changes to the intersection. Respondents were asked to review the project materials on the Engage Page before completing the survey. Not all the respondents answered all the questions, and respondents had the option to select more than one answer for some of the questions.

The majority of the respondents were residents that will be impacted by the proposed changes (n=116). Three respondents were business owners or employees impacted by the project, three were not going to be impacted by the project.

When asked why respondents travel through the intersection of 22nd Street West and Confederation Drive (n=121), 36% responded to using the intersection to get to shops and restaurants, 29% to travel to community services, 24% to travel to work and 10% use the intersection to travel to school or to other activities.

When asked the mode of transport and the frequency of travel the majority of respondents answered, “using driving -passenger vehicle about daily” (see Figure 1, next page).

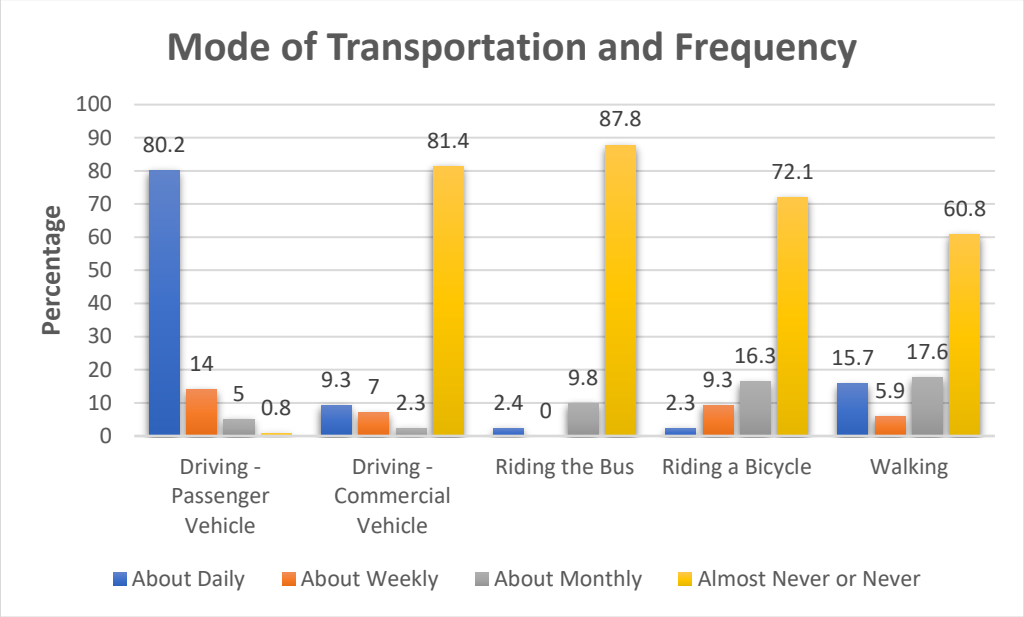


Figure 2: Summary of mode of transportation and frequency

What We Learned – Online Survey

Proposed changes to 22nd Street West between Diefenbaker Drive and Confederation Drive

When asked if respondents agree with the proposed option (n=113), 46% (n=53) supported the proposed changes, 34% (n=40) were not in support and 20% (n=20) were either unsure or proposed other options.

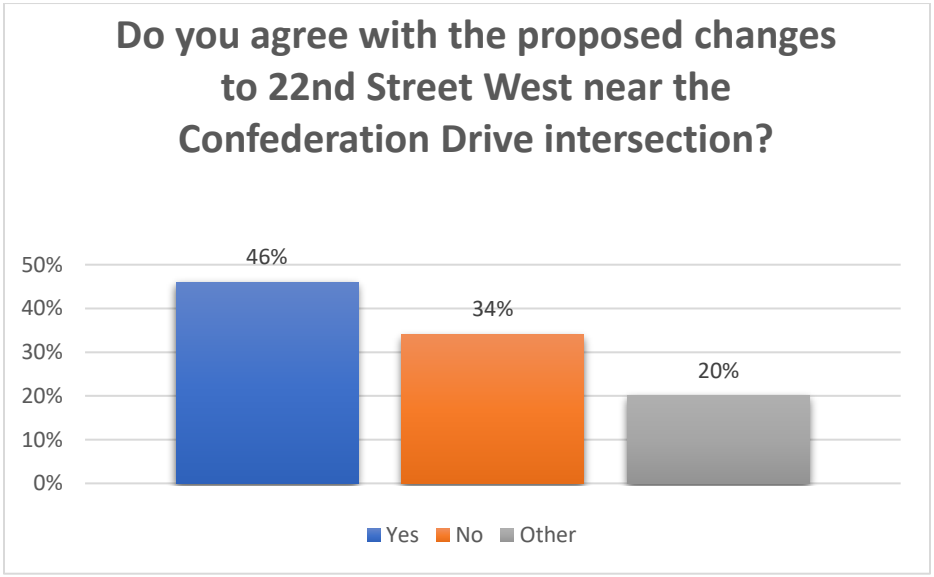


Figure 2: Summary of responses to proposed changes

Question five was an open-ended question that asked respondents to share their views on the proposed changes. Responses (n=75) were analysed for themes. Five themes emerged – why change is needed, why change is not needed, mention of Fairmont Drive and/or Circle Drive, alternatives to the proposed changes and links to other modes of transportation. The following is a sample of respondents' answers.

Why change is needed

- "I am glad that there is a plan to address the shoulder that gets used as a third lane already. That will make it safer".
- "Moving the merge lane back 2-3 blocks will allow drivers to merge and then slowly make there way over so they can turn left on Confed[eration] Dr".
- "Please do option 1, we need a left turning lane onto Confed. Dr. and a proper merge from Fairmont Dr".
- "This would solve a lot of the issues! Thank you!! It's been a TERRIBLE corner for way too long"!
- "I think this is a good more permanent plan to deter the long-term issues with this section".
- "The fact that vehicles will not be able to be three abreast coming off of Fairmont Drive onto 22nd street and that Fairmont traffic can no longer shoot across four lanes of traffic to turn left onto Confederation Drive are huge improvements".

Of those in support of the changes, some respondents also expressed concerns about how long it will take for construction to start.

Why change isn't needed

The reasons for why the changes are not needed included cost, other civic priorities, etc.

- "It's a waste of time, and more importantly taxpayer money. The intersection functions just fine as is".
- "It will make it harder to enter and leave my community".
- "I think the intersection should be left as it is now! When those pegs were up it…caused nothing but a traffic snarl. There is not enough room to do a proper circle so don't make it any worse by doing what was done on Diefenbaker and 22nd".

Mention of Fairmont Drive and/or Circle Drive

- "This is not addressing the issue of turning right off Fairmont onto 22nd and people crossing multiple lanes".
- "My frustration is how Saskatoon designs access to Circle Drive".
- "The cut through from Fairmont Drive onto 22nd street needs to be closed off completely as no matter whatever alterations are done, the DANGER of vehicles crossing multiple lanes of traffic to turn left at Confederation drive is extremely unsafe".

Some of the respondents mentioned Fairmont Drive connecting to Circle Drive as being an issue. For example, ten respondents shared that a full closure of Fairmont Drive onto 22nd Street West would be a better option. Some of these respondents added that traffic can be rerouted to Diefenbaker Drive.

- "There is not enough change to make a difference with the flow of traffic trying to access circle drive which is the main issue with this intersection. Add into the mix the circle drive traffic having to come into a residential neighbourhood and then attempt to get through that traffic to get on to 22nd street. Its all a terrible design."
- "I would like to see the exit from Tim Hortons onto 22nd street closed off".
- "I concur with all changes however, I strongly believe that the Fairmont Drive access between 22nd Street and Fairlight Crescent should be closed. Traffic can easily re-route to Diefenbaker Drive".
- "I think there should be more of an overpass built for east bound traffic to get onto Circle North and Circle South. If that was built then the traffic from Fairmont to get onto 22nd would not be as bad. Its the people trying to get onto Circle Dr that are causing the issue".

Possible Alternative Solutions

- "The only time everyone is aware of the two lanes turning is for a couple of months after the lines are freshly painted on the roadway and thus visible. Simple signage facing the right lane on Confederation would deal with the problem year round".
- "There should be 5 lanes. One specific to traffic traveling to south circle. One specific to traffic accessing north circle. Two for traveling downtown and one for left turning".

Alternatives could be traffic light sequencing. Four respondents indicated that turning left onto Confederation Drive should be longer to get more vehicles through and keep the flow of traffic moving.

Linkage to other modes of transportation

- "The multi-use pathway should connect to the future Diefenbaker BRT station on the RED Line".
- "Its not needed but the shown extra multi user path would be nice".
- "Spend the $ on better pedestrian & bike access".

How did the respondents learn about the survey?

Most of the survey respondents (n=73) heard about the survey through the flyer, followed by information from a Community Association (n=23). See Figure 3, below for more details.

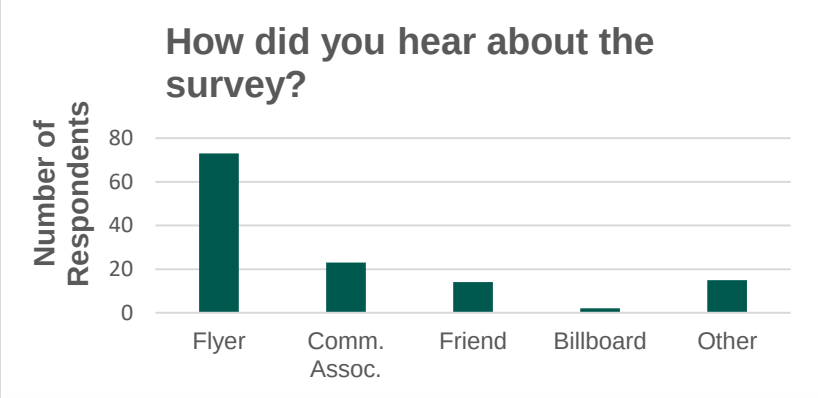


Figure 3: Summary of how respondents heard about the survey

Limitations

Some participants may have limited access to internet or technology that presented challenges in accessing the online survey. The number of attendees at the open house and survey respondents may not represent most people that use the intersection given the daily volume of traffic at that intersection.

Next Steps

Engagement results will be shared with the project team in the Transportation Department to determine next steps. The summary of this evaluation will also be provided to City Council in Fall 2024.

Appendix E – Fairmont Drive Access Analysis

Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	35.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.463

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	0	0	0	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	30.48	30.48	30.48	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	159	89	112	406	256	53	68	1232	185	190	304	315
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	89	112	406	256	53	68	1232	185	190	304	315
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	22	28	102	64	13	17	308	46	48	76	79
Total Analysis Volume [veh/h]	159	89	112	406	256	53	68	1232	185	190	304	315
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	21	39	0	21	39	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	10	10	10	16	16	16	6	51	51	8	53
g / C, Green / Cycle	0.09	0.09	0.09	0.14	0.14	0.14	0.05	0.45	0.45	0.07	0.47
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.05	0.12	0.08	0.09	0.04	0.24	0.12	0.05	0.09
s, saturation flow rate [veh/h]	1781	1786	1702	3459	1870	1760	1781	5094	1589	3459	3560
c, Capacity [veh/h]	157	158	150	491	265	250	98	2272	709	258	1658
d1, Uniform Delay [s]	49.68	49.67	49.85	47.55	45.86	45.88	52.93	23.07	19.80	51.64	17.79
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	4.59	5.59	3.74	2.18	2.34	8.91	0.94	0.90	4.15	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.52	0.56	0.83	0.60	0.60	0.69	0.54	0.26	0.74	0.18
d, Delay for Lane Group [s/veh]	54.30	54.26	55.43	51.29	48.04	48.21	61.84	24.01	20.69	55.79	18.03
Lane Group LOS	D	D	E	D	D	D	E	C	C	E	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.43	2.43	2.52	5.84	4.38	4.15	2.15	8.10	3.23	2.80	2.38
50th-Percentile Queue Length [m/ln]	18.54	18.55	19.21	44.51	33.35	31.62	16.39	61.74	24.63	21.34	18.11
95th-Percentile Queue Length [veh/ln]	4.38	4.38	4.54	9.81	7.81	7.47	3.87	12.77	5.82	5.04	4.28
95th-Percentile Queue Length [m/ln]	33.37	33.40	34.58	74.72	59.50	56.91	29.51	97.31	44.33	38.41	32.60

Movement, Approach, & Intersection Results

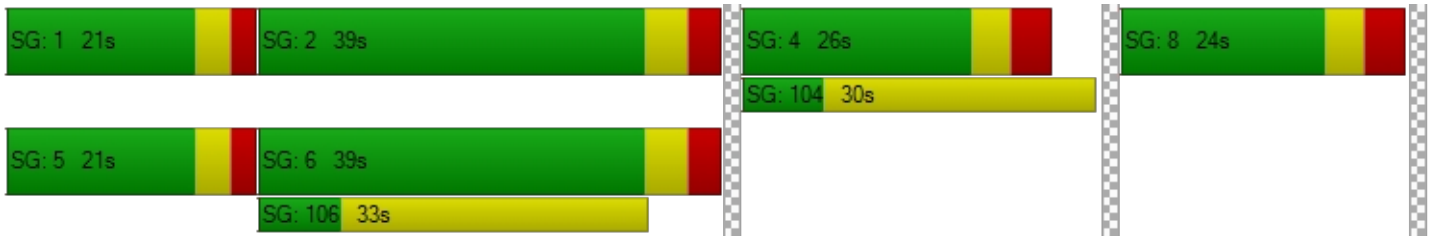
d_M, Delay for Movement [s/veh]	54.28	55.37	0.00	51.29	48.10	48.21	61.84	24.01	20.69	55.79	18.03	0.00
Movement LOS	D	E		D	D	D	E	C	C	E	B	
d_A, Approach Delay [s/veh]	54.67			49.92			25.33			32.55		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.99											
Intersection LOS	C											
Intersection V/C	0.463											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.803	3.070	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	575	575
d_b, Bicycle Delay [s]	40.93	39.25	28.92	28.92
l_b,int, Bicycle LOS Score for Intersection	1.764	2.149	2.376	1.967
Bicycle LOS	A	B	B	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 22nd St & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.580

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	40.00	30.48	30.48	70.00	30.48	30.48	130.00	30.48	30.48	150.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	288	270	389	192	163	296	126	780	120	107	732	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	270	389	192	163	296	126	780	120	107	732	94
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	68	97	48	41	74	32	195	30	27	183	24
Total Analysis Volume [veh/h]	288	270	389	192	163	296	126	780	120	107	732	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	64.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsigna	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	31	0	23	30	0	23	33	0	23	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	50	37	50	32	32	52	42	42	52	41	41
g / C, Green / Cycle	0.46	0.33	0.46	0.29	0.29	0.47	0.38	0.38	0.47	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.24	0.08	0.15	0.09	0.19	0.15	0.25	0.25	0.14	0.15	0.16
s, saturation flow rate [veh/h]	1201	3560	1263	1870	1589	846	1870	1784	791	3560	1764
c, Capacity [veh/h]	497	1186	614	548	466	419	718	685	344	1340	664
d1, Uniform Delay [s]	21.47	26.47	18.46	30.12	33.79	17.46	27.71	27.71	19.11	25.31	25.35
k, delay calibration	0.36	0.50	0.50	0.50	0.50	0.12	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.61	0.45	1.33	1.39	6.68	0.43	4.46	4.68	2.35	0.94	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.23	0.31	0.30	0.64	0.30	0.64	0.64	0.31	0.41	0.41
d, Delay for Lane Group [s/veh]	25.07	26.91	19.79	31.51	40.46	17.89	32.17	32.38	21.46	26.25	27.26
Lane Group LOS	C	C	B	C	D	B	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.23	2.63	3.19	3.56	7.68	1.85	10.62	10.18	1.73	5.44	5.62
50th-Percentile Queue Length [m/ln]	39.82	20.05	24.30	27.11	58.52	14.07	80.94	77.54	13.20	41.46	42.80
95th-Percentile Queue Length [veh/ln]	8.98	4.74	5.74	6.40	12.22	3.32	15.97	15.41	3.12	9.27	9.50
95th-Percentile Queue Length [m/ln]	68.39	36.09	43.74	48.80	93.15	25.33	121.67	117.41	23.77	70.61	72.42

Movement, Approach, & Intersection Results

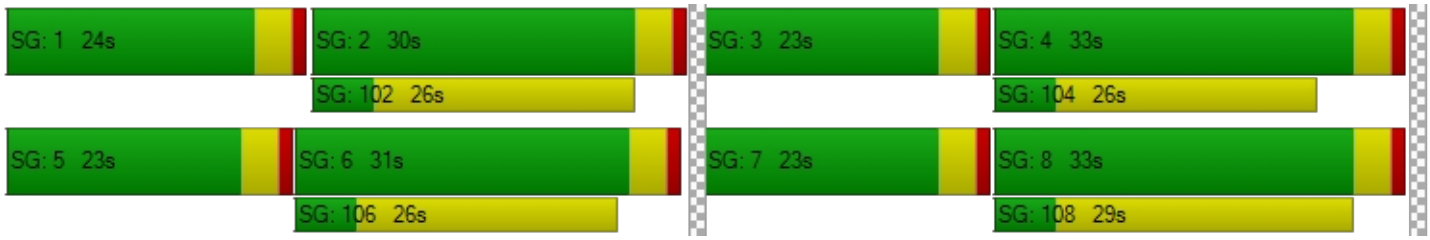
d_M, Delay for Movement [s/veh]	25.07	26.91	0.00	19.79	31.51	40.46	17.89	32.25	32.38	21.46	26.50	27.26
Movement LOS	C	C		B	C	D	B	C	C	C	C	C
d_A, Approach Delay [s/veh]	25.96			32.12			30.50			26.00		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	28.71											
Intersection LOS	C											
Intersection V/C	0.580											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.879	2.833	3.204	3.128
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	491	473	527	527
d_b, Bicycle Delay [s]	31.31	32.07	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	2.020	2.097	2.406	2.073
Bicycle LOS	B	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Fairlight Dr & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.439

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	72	200	784	119	121	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	200	784	119	121	147
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	50	196	30	30	37
Total Analysis Volume [veh/h]	72	200	784	119	121	147
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Unsignalized
Signal Group	7	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	10	10	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	29	61	32	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	18	0	0	10	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	57	57	28
g / C, Green / Cycle	0.28	0.28	0.63	0.63	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.58	0.04	0.04
s, saturation flow rate [veh/h]	1603	2532	1361	3204	3204
c, Capacity [veh/h]	445	703	947	2029	997
d1, Uniform Delay [s]	24.58	25.49	12.52	6.28	22.19
k, delay calibration	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	1.02	8.91	0.06	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.28	0.83	0.06	0.12
d, Delay for Lane Group [s/veh]	25.36	26.50	21.43	6.34	22.44
Lane Group LOS	C	C	C	A	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.24	1.75	11.98	0.40	0.94
50th-Percentile Queue Length [m/ln]	9.45	13.31	91.32	3.08	7.13
95th-Percentile Queue Length [veh/ln]	2.23	3.14	17.66	0.73	1.68
95th-Percentile Queue Length [m/ln]	17.01	23.96	134.58	5.54	12.84

Movement, Approach, & Intersection Results

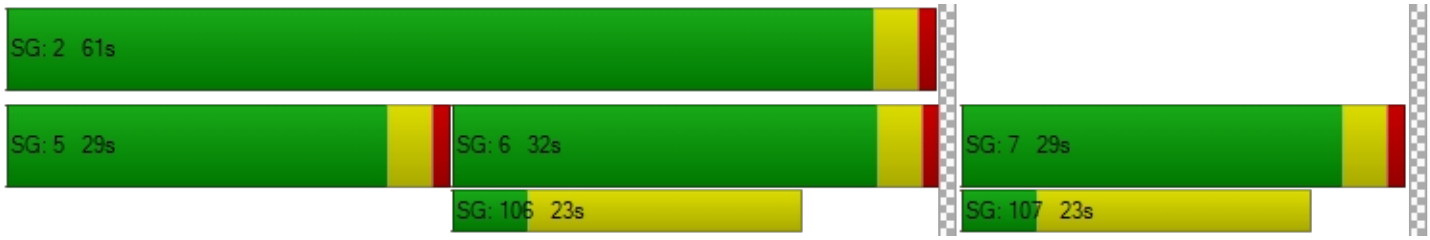
d_M, Delay for Movement [s/veh]	25.36	26.50	21.43	6.34	22.44	0.00
Movement LOS	C	C	C	A	C	
d_A, Approach Delay [s/veh]	26.20		19.44		22.44	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.14					
Intersection LOS	C					
Intersection V/C	0.439					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	0.00	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.111	0.000	2.399
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	1267	622
d_b, Bicycle Delay [s]	23.47	6.05	21.36
l_b,int, Bicycle LOS Score for Intersection	1.560	2.305	1.770
Bicycle LOS	A	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Fairlight Dr & Fairmont Cr

Control Type:	Two-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.016

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	9	18	31	178	290	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	18	31	178	290	64
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	5	8	45	73	16
Total Analysis Volume [veh/h]	9	18	31	178	290	64
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.77	10.31	9.58	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.05	0.03	0.00	0.00
95th-Percentile Queue Length [m/ln]	0.99	0.99	0.40	0.20	0.00	0.00
d_A, Approach Delay [s/veh]	10.79		1.42		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.00					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 6: Fairlight Dr & Fairmont Dr

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.339

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	90.00	30.48	30.48	30.48	30.48	30.48	40.00	30.48	30.48	20.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	242	149	70	1	52	94	55	73	101	114	104	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	149	70	1	52	94	55	73	101	114	104	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	37	18	0	13	24	14	18	25	29	26	4
Total Analysis Volume [veh/h]	242	149	70	1	52	94	55	73	101	114	104	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	27	0	0	27	0	17	18	0	15	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	0	0	9	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	29	14	14	29	12	12
g / C, Green / Cycle	0.38	0.38	0.38	0.48	0.23	0.23	0.48	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.22	0.14	0.10	0.04	0.04	0.07	0.09	0.02	0.03
s, saturation flow rate [veh/h]	1118	1593	1511	1382	1683	1431	1320	3204	1585
c, Capacity [veh/h]	437	611	640	818	393	334	773	641	317
d1, Uniform Delay [s]	16.16	13.23	12.64	8.31	18.43	18.97	8.66	19.68	19.70
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.08	1.65	0.84	0.16	1.05	2.34	0.40	0.39	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.36	0.23	0.07	0.19	0.30	0.15	0.12	0.13
d, Delay for Lane Group [s/veh]	21.25	14.87	13.48	8.47	19.48	21.31	9.06	20.07	20.52
Lane Group LOS	C	B	B	A	B	C	A	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.10	2.16	1.35	0.36	0.87	1.29	0.79	0.45	0.50
50th-Percentile Queue Length [m/ln]	23.66	16.43	10.31	2.76	6.62	9.84	6.01	3.44	3.83
95th-Percentile Queue Length [veh/ln]	5.59	3.88	2.44	0.65	1.56	2.33	1.42	0.81	0.91
95th-Percentile Queue Length [m/ln]	42.58	29.58	18.56	4.97	11.92	17.72	10.83	6.19	6.90

Movement, Approach, & Intersection Results

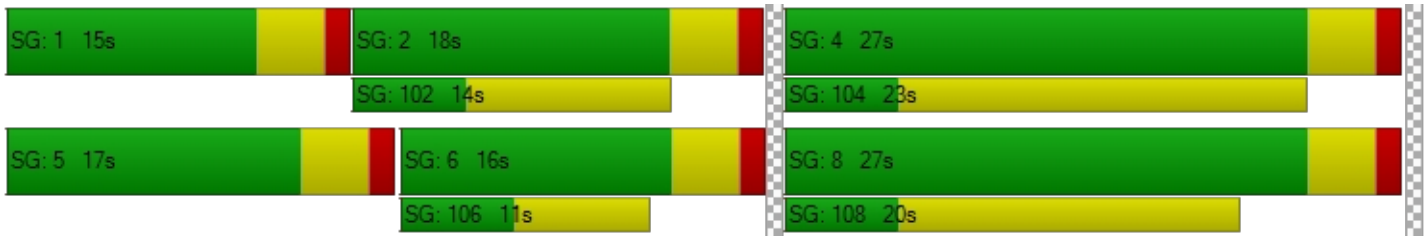
d_M, Delay for Movement [s/veh]	21.25	14.87	14.87	13.48	13.48	13.48	8.47	19.48	21.31	9.06	20.18	20.52
Movement LOS	C	B	B	B	B	B	A	B	C	A	C	C
d_A, Approach Delay [s/veh]	18.22			13.48			17.64			14.74		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.69											
Intersection LOS	B											
Intersection V/C	0.339											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.345	2.000	2.953	2.400
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	467	400
d_b, Bicycle Delay [s]	11.41	11.41	17.63	19.20
l_b,int, Bicycle LOS Score for Intersection	2.431	1.802	1.937	1.687
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: 22nd Street & Confederation Drive

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.556

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	2	0	1	1	0	0	0	0	0	2	0	0
Entry Pocket Length [m]	50.00	30.48	50.00	80.00	30.48	30.48	30.48	30.48	30.48	100.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	50.00			48.28			50.00			50.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	No			Yes			Yes			No		

Volumes

Name												
Base Volume Input [veh/h]	204	309	81	473	416	145	108	898	188	387	842	808
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	204	309	81	473	416	145	108	898	188	387	842	808
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	77	20	118	104	36	27	225	47	97	211	202
Total Analysis Volume [veh/h]	204	309	81	473	416	145	108	898	188	387	842	808
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	94.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	7	15	0	7	15	0
Maximum Green [s]	0	35	0	0	35	0	15	35	0	15	35	0
Amber [s]	0.0	3.3	0.0	0.0	3.3	0.0	3.0	3.7	0.0	3.0	3.7	0.0
All red [s]	0.0	3.3	0.0	0.0	3.3	0.0	2.0	2.5	0.0	2.0	2.5	0.0
Split [s]	0	24	0	0	26	0	20	38	0	22	40	0
Vehicle Extension [s]	0.0	4.5	0.0	0.0	3.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	0	0	0	0	0	26	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			Yes			Yes	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.6	0.0	0.0	4.6	0.0	3.0	4.2	0.0	3.0	4.2	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Detector Length [m]	0.0	7.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	6.60	6.60	6.60	6.60	6.60	6.60	5.00	6.20	6.20	5.00	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.60	4.60	4.60	4.60	4.60	4.60	3.00	4.20	4.20	3.00	4.20
g_i, Effective Green Time [s]	15	15	15	19	19	19	9	36	36	15	42
g / C, Green / Cycle	0.13	0.13	0.13	0.17	0.17	0.17	0.08	0.32	0.32	0.13	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.10	0.14	0.16	0.16	0.06	0.18	0.12	0.11	0.24
s, saturation flow rate [veh/h]	1781	1850	1702	3459	1870	1707	1781	5094	1589	3459	3560
c, Capacity [veh/h]	237	246	226	589	318	290	135	1615	504	452	1323
d1, Uniform Delay [s]	47.28	47.24	47.71	45.47	46.55	46.55	51.80	32.28	30.16	48.51	29.48
k, delay calibration	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.66	6.24	9.48	2.68	13.13	14.33	10.95	1.39	2.12	5.04	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.70	0.77	0.80	0.92	0.92	0.80	0.56	0.37	0.86	0.64
d, Delay for Lane Group [s/veh]	53.94	53.48	57.19	48.15	59.68	60.88	62.75	33.67	32.28	53.55	31.86
Lane Group LOS	D	D	E	D	E	E	E	C	C	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.96	5.08	5.34	6.63	9.30	8.59	3.44	7.00	4.28	5.68	9.78
50th-Percentile Queue Length [m/ln]	37.81	38.73	40.68	50.51	70.84	65.42	26.21	53.34	32.63	43.25	74.56
95th-Percentile Queue Length [veh/ln]	8.62	8.78	9.13	10.85	14.30	13.39	6.19	11.34	7.68	9.58	14.91
95th-Percentile Queue Length [m/ln]	65.65	66.91	69.55	82.68	108.94	102.04	47.18	86.41	58.49	73.02	113.65

Movement, Approach, & Intersection Results

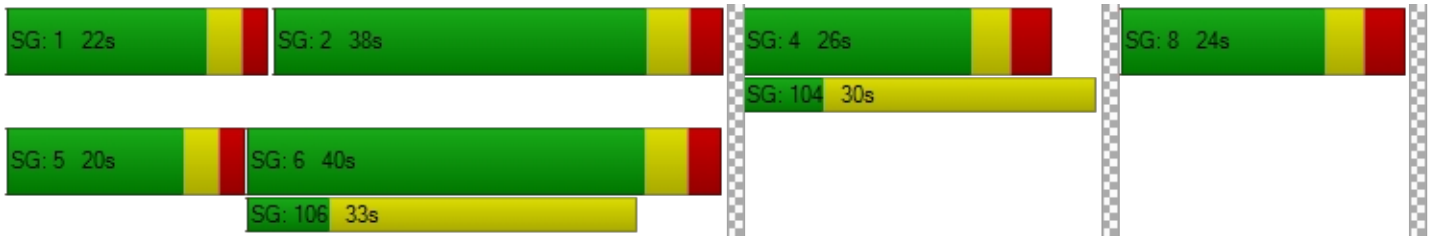
d_M, Delay for Movement [s/veh]	53.86	55.57	0.00	48.15	60.03	60.88	62.75	33.67	32.28	53.55	31.86	0.00
Movement LOS	D	E		D	E	E	E	C	C	D	C	
d_A, Approach Delay [s/veh]	54.89			54.72			36.08			38.69		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.17											
Intersection LOS	D											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	8.0	11.0	0.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	49.28	46.53	0.00
l_p,int, Pedestrian LOS Score for Intersection	0.000	2.933	3.159	0.000
Crosswalk LOS	F	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	305	340	558	593
d_b, Bicycle Delay [s]	40.93	39.25	29.64	28.21
l_b,int, Bicycle LOS Score for Intersection	1.983	2.413	2.216	2.574
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: 22nd St & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.532

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	40.00	30.48	30.48	70.00	30.48	30.48	130.00	30.48	30.48	150.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	151	361	255	163	249	216	179	793	148	230	1118	303
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	361	255	163	249	216	179	793	148	230	1118	303
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	90	64	41	62	54	45	198	37	58	280	76
Total Analysis Volume [veh/h]	151	361	255	163	249	216	179	793	148	230	1118	303
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	64.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsigna	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	31	0	23	30	0	23	33	0	23	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	24	0	0	21	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	Yes		No	Yes	
Pedestrian Recall	No	No		No	No		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	50	38	50	38	38	52	37	37	52	39	39
g / C, Green / Cycle	0.46	0.34	0.46	0.35	0.35	0.47	0.34	0.34	0.47	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.14	0.10	0.14	0.13	0.14	0.27	0.26	0.26	0.26	0.27	0.27
s, saturation flow rate [veh/h]	1092	3560	1175	1870	1589	669	1870	1769	893	3560	1673
c, Capacity [veh/h]	502	1228	560	654	556	321	627	593	378	1265	594
d1, Uniform Delay [s]	18.46	26.26	18.27	26.84	26.92	22.82	32.79	32.81	22.54	31.38	31.40
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.44	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.61	1.32	1.69	2.06	6.13	9.47	10.05	7.30	4.55	9.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.29	0.29	0.38	0.39	0.56	0.77	0.77	0.61	0.76	0.77
d, Delay for Lane Group [s/veh]	18.79	26.87	19.59	28.53	28.98	28.95	42.27	42.86	29.84	35.93	41.05
Lane Group LOS	B	C	B	C	C	C	D	D	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.32	3.55	2.67	5.19	4.57	3.18	13.00	12.41	4.27	11.93	12.09
50th-Percentile Queue Length [m/ln]	17.65	27.04	20.37	39.56	34.81	24.26	99.03	94.55	32.52	90.94	92.09
95th-Percentile Queue Length [veh/ln]	4.17	6.39	4.81	8.93	8.07	5.73	18.91	18.18	7.66	17.60	17.79
95th-Percentile Queue Length [m/ln]	31.77	48.67	36.67	68.04	61.52	43.67	144.08	138.56	58.34	134.11	135.53

Movement, Approach, & Intersection Results

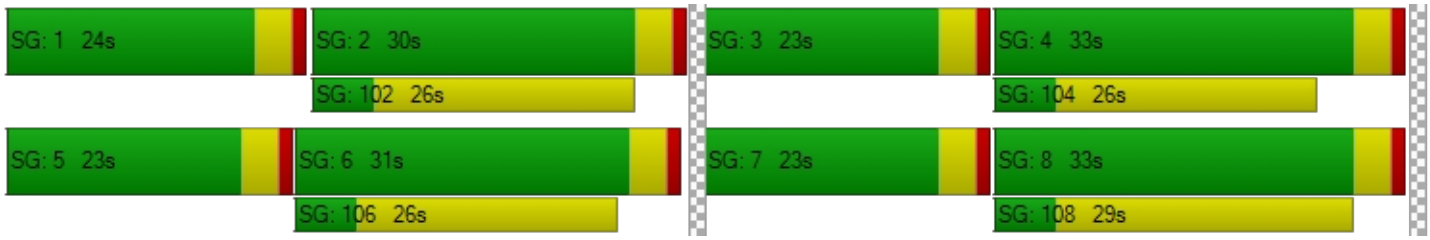
d_M, Delay for Movement [s/veh]	18.79	26.87	0.00	19.59	28.53	28.98	28.95	42.50	42.86	29.84	36.63	41.05
Movement LOS	B	C		B	C	C	C	D	D	C	D	D
d_A, Approach Delay [s/veh]	24.49			26.36			40.38			36.49		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.41											
Intersection LOS	C											
Intersection V/C	0.532											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.976	2.944	3.224	3.274
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	491	473	527	527
d_b, Bicycle Delay [s]	31.31	32.07	29.82	29.82
l_b,int, Bicycle LOS Score for Intersection	1.982	2.078	2.484	2.468
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Fairlight Dr & Diefenbaker Dr

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.680

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [m]	30.48	30.48	50.00	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name						
Base Volume Input [veh/h]	88	662	597	95	544	270
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	662	597	95	544	270
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	166	149	24	136	68
Total Analysis Volume [veh/h]	88	662	597	95	544	270
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Unsignalized
Signal Group	7	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	10	10	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	29	0	29	61	32	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	18	0	0	10	18	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	57	57	28
g / C, Green / Cycle	0.28	0.28	0.63	0.63	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.51	0.03	0.17
s, saturation flow rate [veh/h]	1603	2532	1168	3204	3204
c, Capacity [veh/h]	445	703	746	2029	997
d1, Uniform Delay [s]	24.84	31.78	12.47	6.23	25.72
k, delay calibration	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	31.56	9.43	0.04	2.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.94	0.80	0.05	0.55
d, Delay for Lane Group [s/veh]	25.83	63.34	21.91	6.28	27.89
Lane Group LOS	C	E	C	A	C
Critical Lane Group	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	9.88	7.93	0.32	5.00
50th-Percentile Queue Length [m/ln]	11.70	75.31	60.44	2.44	38.08
95th-Percentile Queue Length [veh/ln]	2.76	15.04	12.55	0.58	8.66
95th-Percentile Queue Length [m/ln]	21.06	114.59	95.63	4.39	66.01

Movement, Approach, & Intersection Results

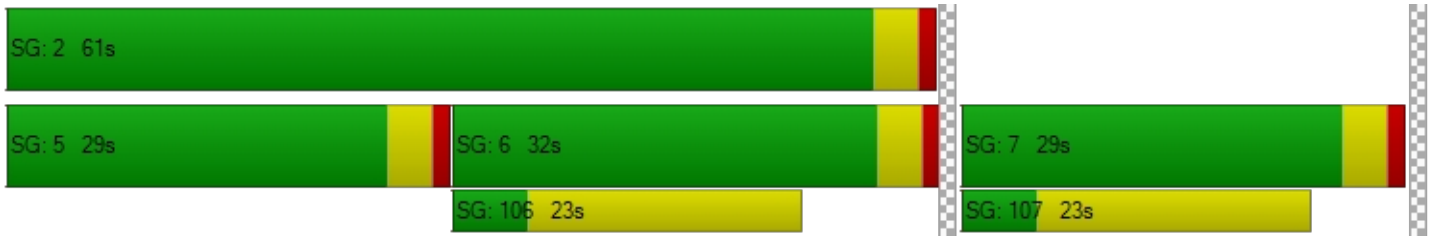
d_M, Delay for Movement [s/veh]	25.83	63.34	21.91	6.28	27.89	0.00
Movement LOS	C	E	C	A	C	
d_A, Approach Delay [s/veh]	58.94		19.76		27.89	
Approach LOS	E		B		C	
d_I, Intersection Delay [s/veh]	36.78					
Intersection LOS	D					
Intersection V/C	0.680					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	0.00	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.090	0.000	2.530
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	556	1267	622
d_b, Bicycle Delay [s]	23.47	6.05	21.36
l_b,int, Bicycle LOS Score for Intersection	1.560	2.131	2.119
Bicycle LOS	A	B	B

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Fairlight Dr & Fairmont Cr

Control Type:	Two-way stop	Delay (sec / veh):	16.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.066

Intersection Setup

Name						
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30.48	30.48	30.48	30.48	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28		48.28		48.28	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	24	54	41	207	555	130
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	54	41	207	555	130
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	14	10	52	139	33
Total Analysis Volume [veh/h]	24	54	41	207	555	130
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.07	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	16.28	12.91	11.55	0.00	0.00	0.00
Movement LOS	C	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.58	0.58	0.07	0.03	0.00	0.00
95th-Percentile Queue Length [m/ln]	4.42	4.42	0.53	0.27	0.00	0.00
d_A, Approach Delay [s/veh]	13.94		1.91		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.54					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 6: Fairlight Dr & Fairmont Dr

Control Type:	Signalized	Delay (sec / veh):	101.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.655

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66	3.66
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [m]	90.00	30.48	30.48	30.48	30.48	30.48	40.00	30.48	30.48	20.00	30.48	30.48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [km/h]	48.28			48.28			48.28			48.28		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name												
Base Volume Input [veh/h]	499	152	38	3	63	82	54	28	149	228	372	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	152	38	3	63	82	54	28	149	228	372	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	38	10	1	16	21	14	7	37	57	93	8
Total Analysis Volume [veh/h]	499	152	38	3	63	82	54	28	149	228	372	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	0	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	27	0	0	27	0	17	18	0	15	16	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	0	0	9	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		Yes			Yes		No	Yes		No	Yes	
Detector Location [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [m]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
C, Cycle Length [s]	60	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	29	14	14	29	12	12
g / C, Green / Cycle	0.38	0.38	0.38	0.48	0.23	0.23	0.48	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.45	0.12	0.10	0.04	0.02	0.10	0.17	0.08	0.08
s, saturation flow rate [veh/h]	1119	1626	1530	1256	1683	1431	1318	3204	1618
c, Capacity [veh/h]	438	623	648	715	393	334	796	641	324
d1, Uniform Delay [s]	20.73	12.92	12.63	8.46	17.93	19.68	9.34	20.94	20.97
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	281.63	1.27	0.82	0.21	0.35	4.33	0.91	2.00	4.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.14	0.30	0.23	0.08	0.07	0.45	0.29	0.42	0.42
d, Delay for Lane Group [s/veh]	302.36	14.18	13.45	8.67	18.28	24.01	10.25	22.94	25.00
Lane Group LOS	F	B	B	A	B	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	40.03	1.81	1.36	0.36	0.32	2.05	1.72	1.70	1.92
50th-Percentile Queue Length [m/ln]	305.05	13.79	10.36	2.75	2.44	15.60	13.13	12.93	14.62
95th-Percentile Queue Length [veh/ln]	55.22	3.26	2.45	0.65	0.58	3.68	3.10	3.06	3.45
95th-Percentile Queue Length [m/ln]	420.76	24.82	18.64	4.95	4.39	28.08	23.63	23.28	26.31

Movement, Approach, & Intersection Results

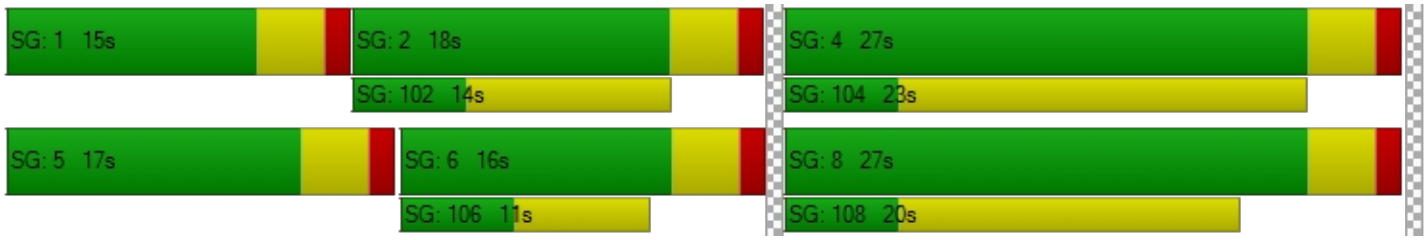
d_M, Delay for Movement [s/veh]	302.36	14.18	14.18	13.45	13.45	13.45	8.67	18.28	24.01	10.25	23.52	25.00
Movement LOS	F	B	B	B	B	B	A	B	C	B	C	C
d_A, Approach Delay [s/veh]	222.89			13.45			19.73			18.80		
Approach LOS	F			B			B			B		
d_I, Intersection Delay [s/veh]	101.23											
Intersection LOS	F											
Intersection V/C	0.655											

Other Modes

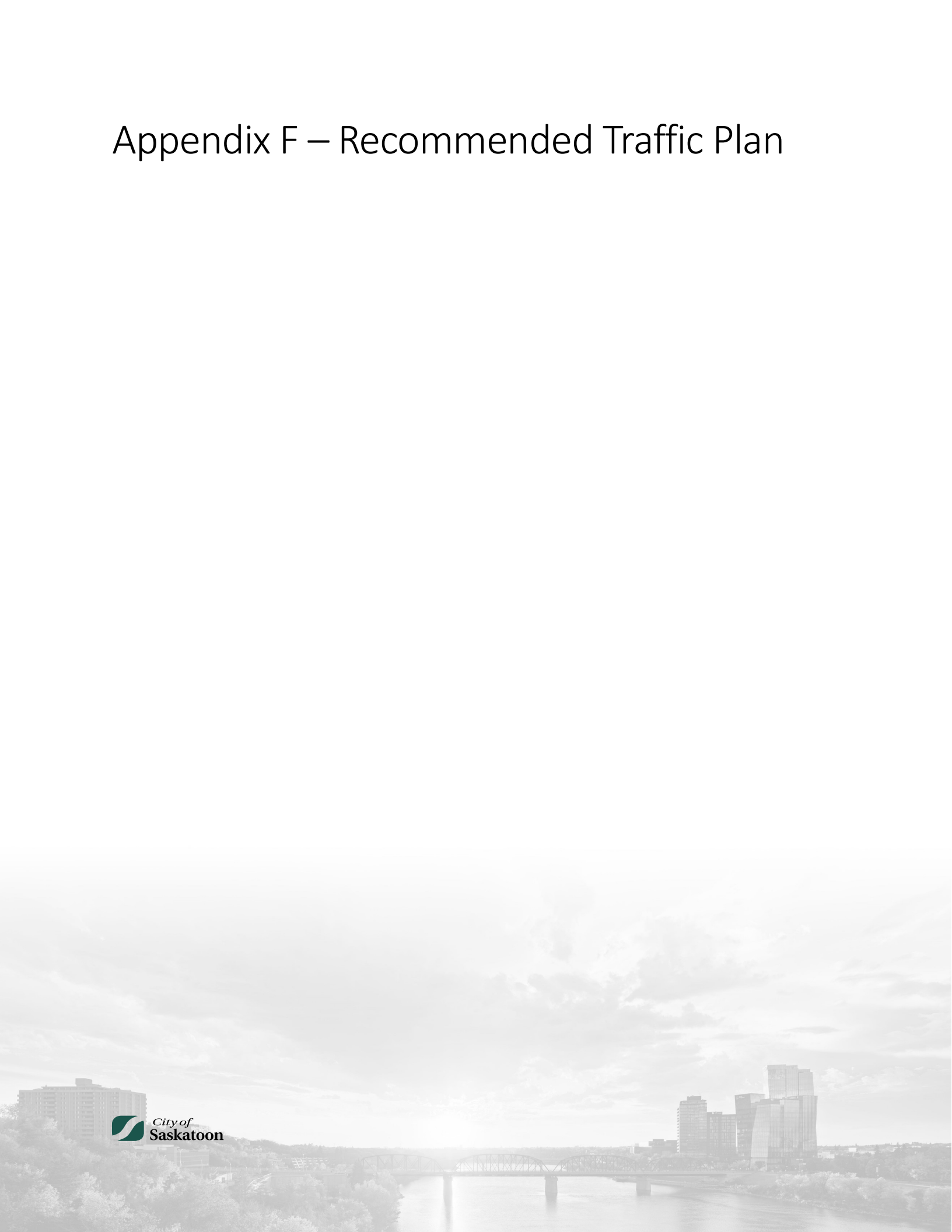
g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [m²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	21.68	21.68	21.68
l_p,int, Pedestrian LOS Score for Intersection	2.598	2.016	3.453	2.504
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	767	767	467	400
d_b, Bicycle Delay [s]	11.41	11.41	17.63	19.20
l_b,int, Bicycle LOS Score for Intersection	2.807	1.804	1.941	1.907
Bicycle LOS	C	A	A	A

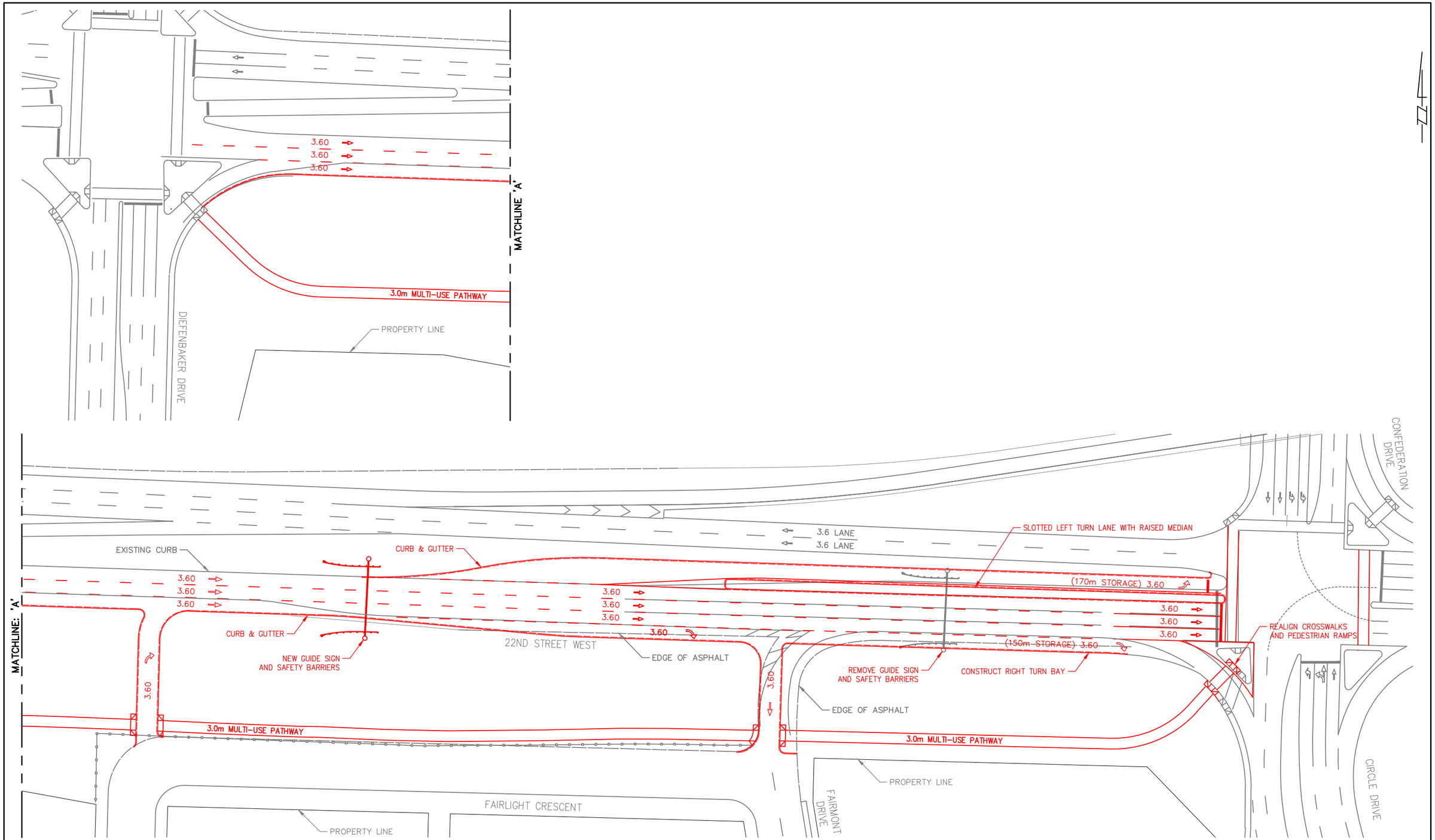
Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix F – Recommended Traffic Plan





FUNCTIONAL

LANE WIDTH LABELLING

LANE WIDTH LABELLING IS EXCLUSIVE OF GUTTER AND OFFSET DIMENSIONS

22ND STREET WEST
ROADWAY CLASSIFICATION: EXPRESSWAY
POSTED SPEED: 60 km/h (Ds: 70 km/h)
DESIGN VEHICLE: WB-20
CONTROL VEHICLE: WB-20

CHECKED BY:	CHECKED BY:
DATE	DATE

DRAWN BY SJK DATE 2024-JUN-17

City of Saskatoon
Transportation

FUNCTIONAL

22ND STREET WEST
DIEFNBAKER DRIVE TO CONFEDERATION DRIVE
RECOMMENDED OPTION

ENGINEER

SCALES :
HOR. 1:1000
VERT. 1:1000

DATE

SHEET NO. 1 OF 1

PLAN NO. 249-0128-103r001