Appendix 1

University Heights Suburban Centre Neighbourhood Traffic Review

City of Saskatoon

12/10/2019

Photograph Credit: SaskTourism

Authorization

Prepared By:

Justine Marcoux, P.Eng.
Transportation Engineer

Nathalie Baudais, P.Eng.
Senior Transportation Engineer

Checked By:

David LeBoutillier, P.Eng.
Engineering Manager, Transportation

Acknowledgements

The completion of this review would not be possible without the contribution of the following organizations and individuals:

- University Heights Suburban Centre residents
- Willowgrove/University Heights Community Association
- Saskatoon Police Service
- Saskatoon Light and Power
- Saskatoon Fire Department
- Saskatoon Transit
- City of Saskatoon Environmental Services
- City of Saskatoon Planning and Development
- City of Saskatoon Roadways, Fleet and Support
- City of Saskatoon Community Standards
- City of Saskatoon Transportation
- Great Works Consulting
- Councillor Jeffries

Executive Summary

The objective of the Neighbourhood Traffic Management Program is to address traffic concerns within neighbourhoods such as speeding, shortcutting, and pedestrian safety. The program was revised in August 2013 to address traffic concerns on a neighbourhood-wide basis. The program involves community and stakeholder consultation that provides residents and City staff the opportunity to work together in developing solutions to address traffic concerns within their neighbourhood. The process is outlined in the Traffic Calming Guidelines and Tools, City of Saskatoon, 2016.

A public meeting was held in May 2019 to identify traffic concerns and potential solutions within the University Heights Suburban Centre (S.C.) neighbourhood. As a result of the meeting, a number of traffic assessments were completed to confirm and quantify the concerns raised by the residents. Based on the residents' input and the completed traffic assessments, a Traffic Plan was developed and presented to the community at a follow-up meeting held in September 2019.

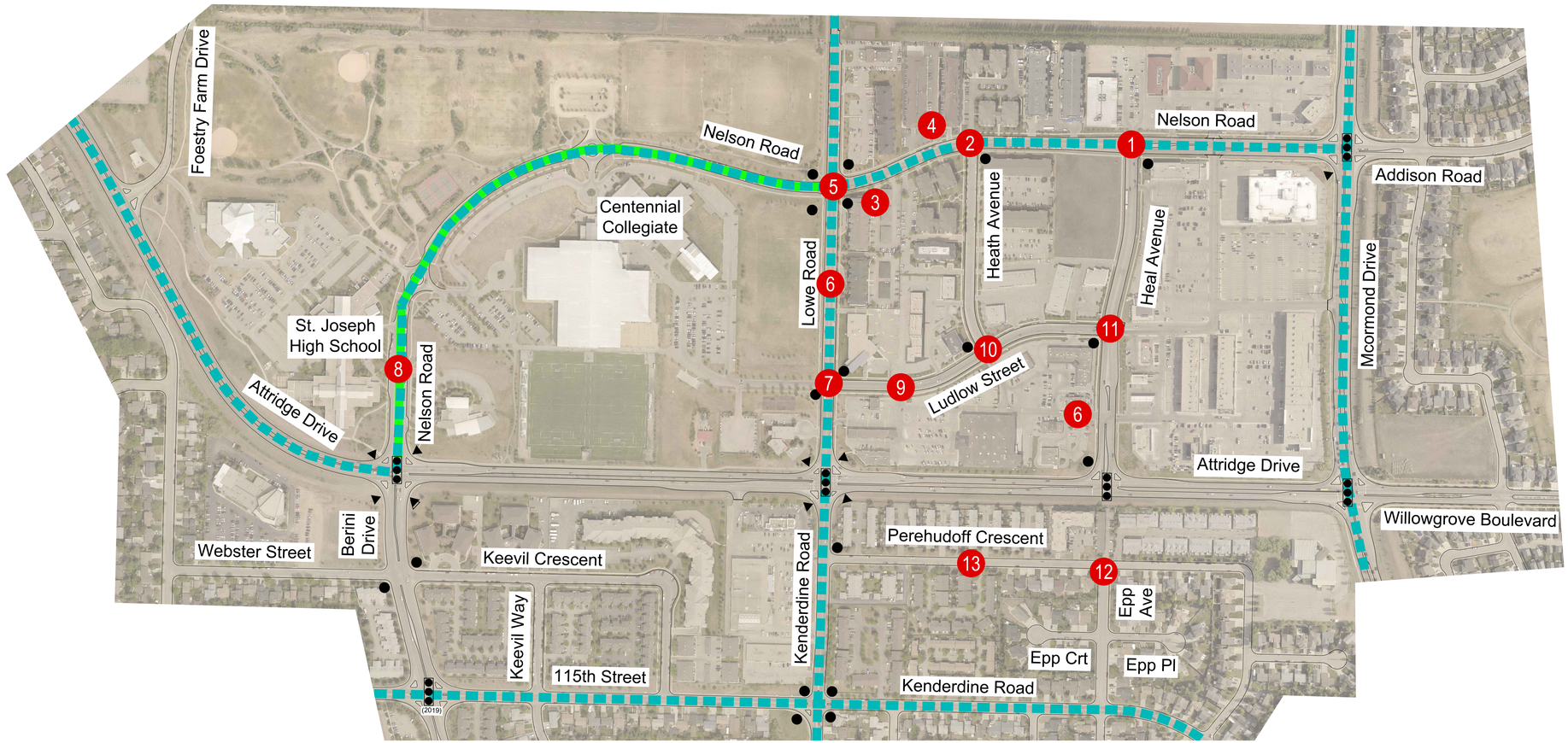
A summary of recommended improvements for the University Heights S.C. neighbourhood is included in Table ES-1. The summary identifies the locations, recommended improvements, and implementation schedule. The schedule to implement the Traffic Plan can vary depending on the complexity of the proposed improvement. According to the Traffic Calming Guidelines and Tools, the time frame may range from short-term (1 to 2 year); medium-term (3 to 5 years) and long-term (5 years plus). Accordingly, the goals for implementing the improvements ranges from 1 to 5 years.

The University Heights S.C. Traffic Plan is illustrated in Exhibit ES-1.

Table ES-1: University Heights S.C. Neighbourhood Recommended Improvements

Item	Location	Recommended Improvement	Justification
1	Nelson Road and Heal Avenue	Extend median, RRFB and zebra crosswalk (east side)	Improve pedestrian safety
2	Nelson Road and Heath Avenue	Curb extension Parking restriction on Nelson Road (30 m on southwest corner)	Improve pedestrian safety and enhance visibility of pedestrians crossing
3	333 Nelson Road	Parking restrictions at west driveway (25 m to west and 7 m to east)	Enhance sightlines at driveways
4	302 Nelson Road	Parking restrictions (10 m west of most westerly driveway to east property line)	Enhance sightlines at driveways
5	Lowe Road and Nelson Road	Short Term: Change lane designation - northbound shared left turn/through and right turn, and - westbound shared left turn/through and right turn	Improve intersection level of service
		Short Term: Parking restrictions (east leg, north side of Nelson Road and south leg, east side of Lowe Road)	Improve intersection level of service
		Short Term: Additional stop signs	Ensure visibility of stop signs
		Medium Term: Traffic Signals	Improve intersection operations
6	Lowe Road between Ludlow Street and Nelson Road	Speed boards (facing northbound and southbound traffic)	Reduce speed
7	Lowe Road and Ludlow Street	RRFB (on south side)	Improve pedestrian safety
8	Alice Turner Library driveway	Stop sign	Improve safety from driveway
9	Ludlow Street and 402 Ludlow Street (Co-Op driveway)	Parking restrictions (15 m on either side of driveway)	Enhance sightlines at driveway
10	Ludlow Street and Heath Avenue	Parking restrictions on Ludlow Street (15 m on all corners)	Enhance sightlines and improve visibility for pedestrian crossing
11	Ludlow Street and Heal Avenue	Four-way stop with geometric changes (northbound shared left/through and shared through/right)	Improve intersection and pedestrian safety
12	Perehudoff Crescent and Epp Avenue	Pedestrian crossing study to be completed in spring 2020	Determine whether pedestrian crossing upgrades are needed
13	Perehudoff Crescent near Epp Avenue	Speed study to be completed in spring 2020	Determine whether improvements are needed to address speeding

Exhibit ES-1: University Heights S.C. Traffic Plan



LEGEND

- EXISTING STOP SIGN
- EXISTING YIELD SIGN
- BUS ROUTE
- SCHOOL ZONE
- EXISTING TRAFFIC SIGNAL
- EXISTING PEDESTRIAN ACTUATED SIGNAL LOCATION
- EXISTING ACTIVE PEDESTRIAN CORRIDOR SIGNAL LOCATION
- # RECOMMENDATIONS

UNIVERSITY HEIGHTS SUBURBAN CENTER TRAFFIC PLAN

City of Saskatoon

Contents

List of Figures

List of Tables

List of Appendices

1. Introduction

As the City of Saskatoon continues to grow, many neighbourhoods face issues such as pedestrian safety, cut-through traffic, and increased speeds. In August 2013, City Council adopted the City of Saskatoon Traffic Guidelines and Tools that outlines a procedure for completing traffic reviews on a neighbourhood-wide basis. Prior to this, neighbourhood traffic issues were dealt with on a case-by-case basis with mixed results. Since 2013, the formal process has proven to be very successful in providing recommendations that improve neighbourhood traffic conditions and pedestrian safety. Recommendations are developed by the Administration and residents in a collaborative manner. Accordingly, this report provides the Traffic Plan for the University Heights S.C. neighbourhood.

The University Heights S.C. neighbourhood is bound by Attridge Drive and Kenderdine Road to the south, McOrmond Drive to the east, Nelson Road to the north, and Forestry Farm Park Drive to the west. The land use is mostly commercial with two grocery stores, and a number of restaurants, and stores. There are two high schools, a large sporting facility and a library. Residential areas include a number of high-density units north of Nelson Road and medium-density units south of Attridge Drive.

The neighbourhood traffic review includes four stages:

- **Stage 1** – Identify issues, concerns and possible solutions through the initial neighbourhood consultation and the Saskatoon Engage online discussion.
- **Stage 2** – Develop a draft traffic plan based on residents' input and traffic assessments.
- **Stage 3** – Present the draft traffic plan to the neighbourhood at a follow-up meeting; circulate the plan to other civic divisions for feedback; make adjustments as needed; and present the plan to Standing Policy Committee on Transportation.
- **Stage 4** – Implement the proposed measures in specific time frame, short-term (1 to 2 years), medium-term (3 to 5 years) or long-term (5 years plus).

This report presents the study findings and recommendations.

2. Identify Issues, Concerns and Possible Solutions

A public meeting was held in May 2019 to identify traffic concerns in the University Heights S.C. neighbourhood and residents were given the opportunity to express their concerns and suggest possible solutions. The meeting minutes and presentation are provided in **Appendix A.**

The following pages summarize concerns and suggested solutions identified during the initial consultation with the residents including all correspondence, and Saskatoon Engage discussion comments received prior to the follow-up meeting.

2.1. Speeding and Shortcutting

Shortcutting occurs when non-local traffic passes through the neighbourhood on streets that are designed and intended for low volumes of traffic (i.e. local streets). As speeding often accompanies shortcutting, these concerns have been grouped into one category.

Neighbourhood concerns for speeding and shortcutting were identified at the following locations:

- Nelson Road;
- Lowe Road;
- Perehudoff Avenue near Epp Avenue; and
- McOrmond Drive.

The residents proposed the following solutions:

- Photo radar;
- Enforcement;
- Speed boards; and
- Posted speed limit should be lowered by 10 kph.

2.2. Pedestrian Safety

It is important to address pedestrian safety concerns to support active transportation. Walking to nearby amenities reduces traffic volumes.

Pedestrian crosswalks need to adhere to the City of Saskatoon Council Policy C07-018 Traffic Control at Pedestrian Crossings.

Neighbourhood concerns regarding pedestrian safety were raised at the following locations:

- Nelson Road and Lowe Road;
- Nelson Road and Heath Avenue;
- Nelson Road and Heal Avenue;
- Nelson Road at Safeway/Boston Pizza driveways;

- Lowe Road and Ludlow Street;
- Perehudoff Avenue and Epp Avenue;
- Attridge Drive and Berini Drive; and
- Shopping centre sites.

The residents proposed the following solutions:

- Traffic signals;
- Four-way stop;
- Actuated pedestrian crossing;
- Tree trimming (to improve visibility);
- Flashing lights for pedestrians to cross or something to slow down drivers; and
- Lighted crosswalks.

2.3. Traffic Control

Traffic control signs are used to assign the right-of-way. City of Saskatoon Council Policy C07-007 Traffic Control – Use of Stop and Yield Signs states that stop and yield signs are not to be used:

- as speed control devices;
- to stop priority traffic over minor traffic;
- on the same approach to an intersection where traffic signals are operational; or
- as a pedestrian crossing device.

An all-way stop must meet the conditions for traffic volumes, collision history, and a balanced volume from each leg to operate sufficiently.

Neighbourhood concerns regarding traffic controls were identified at the following locations:

- Lowe Road and Nelson Road;
- Nelson Road and University Heights Shopping Centre;
- Nelson Road and Heal Avenue;
- Nelson Road roundabouts (north of Centennial Collegiate);
- Lowe Road and Ludlow Street;
- Heal Avenue and Ludlow Street; and
- Shopping centre driveways (to Ludlow Street and Heal Avenue).

Proposed solutions identified by residents:

- Traffic signals;
- All-way stop; and
- Educate drivers on how to use roundabouts.

2.4. Parking

Parking is allowed on all city streets unless signage is posted. According to City of Saskatoon Bylaw 7200, The Traffic Bylaw, vehicles are restricted from parking within 10 metres of an intersection and one metre of a driveway or back lane.

Neighbourhood concerns regarding parking were identified at the following locations:

- Nelson Road (at Heath Avenue, in front of apartment driveways at 302 Nelson Road and 333 Nelson Road);
- Nelson Road and Lowe Road (parked buses block stop signs);
- Heath Avenue and Ludlow Street; and
- Alice Turner Library (not enough on-site parking displaces parking onto Nelson Road).

Proposed solutions identified by residents:

- Parking enforcement;
- More off-street parking; and
- No Parking signs.

2.5. Maintenance

Maintenance is requested throughout the consultation process that reflects the work of other civic departments. These include the condition of the street signs (i.e. knocked over, damaged, obstructed by trees), trees obstructing driver's view, or roadway maintenance (i.e. snow clearing, potholes, sanding).

Neighbourhood concerns regarding maintenance were identified at the following location:

- Nelson Road and Heal Avenue – trees blocking signs and visibility at pedestrian crosswalk.

2.6. Major Intersections and Corridors

Major intersections include roadways with higher traffic volumes (i.e. arterials, collectors) or intersections with an existing traffic signal.

Neighbourhood concerns regarding major intersections were raised at the following locations:

- Nelson Road and Lowe Road
    - Drivers aren't stopping at the four-way stop.
    - Dangerous for pedestrians to cross.
    - Suggest traffic signals.
- Nelson Road east of Centennial Collegiate
    - This roadway was not built to accommodate the volume of traffic associated with high schools.
    - The roundabouts are too small and contribute to the congestion and safety concerns.
    - Having transit go on this road puts them behind schedule which is incredibly frustrating as a transit user.
    - Really poor road design.
    - Huge congestion every morning and afternoon. Some days it takes 15 minutes to just get out of the area.
- 115th Street and Berini Drive
    - Drivers use the outside lane to bypass left turning drivers (westbound and eastbound).
- 115th Street and Kenderdine Road
    - Drivers use the outside lane to bypass left turning drivers (westbound and eastbound).
- Kenderdine Road
    - Suggestion to have two southbound lanes between Attridge Drive and 115th Street.
- Attridge Drive and Berini Drive
    - Drivers are using northbound centre lane to turn left.
    - Suggest installing left turn arrows for southbound traffic.
    - Many children crossing the street makes it very difficult to have multiple cars turning left.
- Lowe Road between Ludlow Street and Nelson Road
    - Road needs clarification to indicate if it has one or two lanes in the southbound direction.

3. Develop Draft Traffic Plan

3.1. Methodology

Stage 2 of the neighbourhood traffic review included development of a draft traffic plan. This was completed through the following actions:

- Create a detailed list of all the issues provided by the residents.
- Collect historical traffic studies and information the City has on file for the neighbourhood.
- Prepare a data collection program that will provide the appropriate information needed to undertake the assessments.
- Complete the data collection, which may include:
  - Daily and weekly traffic counts;
  - Speed measurements;
  - Intersection turning movement counts;
  - Pedestrian counts;
  - Site observations; and
  - Collision analysis.
- Assess the issues by using the information in reference with City policies, bylaws, and guidelines, transportation engineering design guidelines and technical documents, and professional engineering judgment.

The following sections provide details on the data collected for traffic volume and speed assessments, traffic control assessments, pedestrian crossing assessments, traffic signal assessments and collision analysis. A map of the traffic data collection is shown in **Appendix B**.

3.2. Traffic Volume and Speed Assessments

Traffic volumes and travel speeds were measured to assist in determining the need for traffic calming devices. In Saskatoon, the neighbourhood streets are classified typically as either local or collector streets. Traffic volumes (referred to as Average Daily Traffic) on these streets should meet the City of Saskatoon guidelines shown in Table 3-1.

Table 3-1: City of Saskatoon Street Classifications and Characteristics

Characteristic	Classifications									
	Back Lanes		Locals		Collectors		Arterials		Freeways / Expressways
	Residential	Commercial	Residential	Commercial	Residential	Commercial	Minor	Major	
Traffic Service Function	Land access function only (traffic movement not a consideration)		Land access primary function (traffic movement secondary consideration)		Traffic movement and land access of equal importance		Traffic movement major consideration	Traffic movement primary consideration	Traffic movement primary consideration
Land Service/ Access	Land access only function		Land access primary function		Traffic movement and land access of equal importance		Some access control	Rigid access control	No access
Typical Traffic Volume (veh/day)	<500	<1,000	<1,000	<5,000	<5,000	8,000 to 10,000	5,000 to 25,000		>20,000 >10,000
Traffic Flow Characteristics	Interrupted flow		Interrupted flow		Interrupted flow		Uninterrupted flow except at signals and crosswalks		Uninterrupted flow except at signals Free-flow (grade separated)
Typical Posted Speed Limit (kph)	20		50		50		50 to 70		80 to 90
Typical Vehicle Type	Passenger and service vehicles	All types	Passenger and service vehicles	All types	Passenger and service vehicles	All types	All types	All types, large portion of trucks	All types, large portion of trucks
Desirable Network Connections	Lanes, Locals		Lanes, Locals, Collectors		Locals, Collectors, Arterials		Collectors, Arterials, Freeways/Expressways		Arterials, Freeways/ Expressways
Transit Service	Not permitted		Generally avoided		Permitted		Permitted		Express buses only
Cyclist Facilities	No restrictions or special facilities		No restrictions or special facilities		No restrictions; special facilities considered		No restrictions; special facilities considered		Prohibited*
Pedestrians Facilities	Permitted, no special facilities		Sidewalks provided both sides		Sidewalks provided both sides, separation from traffic lanes preferred		Sidewalks provided both sides, separation from traffic lanes required		Prohibited*
Typical Parking Restrictions	Some restrictions		No restrictions or restrictions one side only		Few restrictions other than peak hour		Permitted, restricted or prohibited	Prohibited or peak hour restrictions	Prohibited
Minimum Intersection Spacing (m)	As needed		60		60		200	400	800 or 1,600 between interchanges
Typical Right-of-Way Width (m)	6		15 to 22		21 to 41		33 to 43		75 to 125

*May be considered beyond the clear zone

Vehicle speeds were measured to determine the 85th percentile speed, which is the speed at which 85 percent of vehicles are travelling at or below. The speed limit in the University Heights S.C. neighbourhood is 50 kph, except for the school zones where the speed limit is 30 kph from September and June, Monday to Friday, 8:00 am to 5:00 pm.

The speed studies and Average Daily Traffic (ADT) on streets where speeding was identified as a concern are summarized in Table 3-2.

Table 3-2: Speed Studies and Average Daily Traffic Counts (2018)

Street	Between	Class	Average Daily Traffic (vehicles per day)	Speed (kph)
Nelson Road	East of Centennial Collegiate	Collector	3,200	48
Nelson Road	Heath Avenue and Heal Avenue	Collector	5,800	51
Lowe Road	Ludlow Street and Nelson Road	Collector	8,700	56

3.3. Traffic Control Assessments

Yield, stop, and all-way stop controls need to the meet City of Saskatoon Council Policy C07-007 Traffic Control – Use of Stop and Yield Signs.

Turning movement counts were completed to determine the need for an all-way (i.e. three-way or four-way) stop control. Criteria outlined in Council Policy C07-007 that may warrant an all-way stop include:

- a peak hour count greater than 600 vehicles;
- an ADT greater than 6,000 vehicles per day; or
- when five or more collisions are reported in a one-year period within the last three years and are of a type susceptible to correction by an all-way stop control.

Further conditions that must be met for an all-way stop to be warranted are:

1. At least 35% of the traffic entering the intersection from the minor street for a four-way stop and 25% for a three-way stop.
2. No other all-way stop or traffic signals within 200 m.

Results of the studies are shown in Table 3-3 and Table 3-4.

Table 3-3: All-Way Stop Warrant Criteria

Location	Criteria 1: Peak Hour Count (greater than 600)	Criteria 2: Average Daily Traffic (greater than 6,000 vpd)	Criteria 3: Collisions in one-year period within three years (5 or more)	Results
Nelson Road and Heal Avenue	909	9,360	3	Criteria met. Proceed to Step 2.
Nelson Road and Heath Avenue	611	6,830	0	Criteria met. Proceed to Step 2.
Nelson Road and University Heights Shopping Centre	1,094	11,170	0	Criteria met. Proceed to Step 2.

Provided one of the above criteria are met, continue to Step 2 to check the condition requirements.

Table 3-4: All-Way Stop Warrant Condition Requirements

Location	Condition 1: Traffic on minor street is at least 35% (25% for a 3-way stop)	Condition 2: No all-way stop or traffic signals within 200 metres	Results
Nelson Road and Heal Avenue	28 (considered a 4-way stop due to the driveway on the north side)	240	All-way stop NOT warranted
Nelson Road and Heath Avenue	13	160	All-way stop NOT warranted
Nelson Road and University Heights Shopping Centre	27	140	All-way stop NOT warranted

Although the intersection of Ludlow Street and Heal Avenue did not meet the warrant criteria because it is within 200 m of a traffic signal, an all-way stop is recommended based on collision history, balanced traffic volumes entering the intersection, site observations, community input, and engineering judgement.

Details of the all-way stop assessments are provided in **Appendix C**.

3.4. Pedestrian Assessments

Pedestrian assessments were conducted to determine the need for pedestrian actuated signalized crosswalks in adherence to the City of Saskatoon Council Policy C07-018 Traffic Control at Pedestrian Crossings.

Pedestrian crossing devices include:

- standard crosswalk;
- zebra crosswalk;
- rectangular rapid flashing beacon (ground mounted flashing lights);
- actuated pedestrian corridor (overhead flashing yellow lights); and
- pedestrian actuated signals.

The policy provides a decision matrix for locating pedestrian devices considering a number of elements:

- traffic signal warrants;
- pedestrian and traffic volumes;
- distance to nearest traffic control device;
- pedestrian desire line; and
- network connectivity.

Once a location has been identified as a necessary pedestrian connection, the type of pedestrian device is selected using a treatment matrix which considers traffic volume, posted speed limit and number of lanes for pedestrian crossing.

A summary of the pedestrian studies are provided in Table 3-5 and details are provided in **Appendix D**.

Table 3-5: Pedestrian Assessments

Location	Pedestrian Desire Confirmation	Results
Nelson Road and Heal Avenue	Confirmed	Distance from nearest control >200 m Provides connectivity to gym, bus stop, shopping RRFB and extension of median recommended
Nelson Road and Heath Avenue	Confirmed	Distance from nearest control <200 m Provides connectivity to gym, bus stop, shopping Existing zebra crosswalk is appropriate with the recommended curb extension
Nelson Road and University Heights Shopping Centre	Confirmed	Distance from nearest control <200 m Provides connectivity restaurants, grocery store No pedestrian devices recommended
Ludlow Street and Heath Avenue	Confirmed	Distance from nearest control <200 m Provides connectivity to bus stops, shopping Existing standard crosswalk is appropriate
Lowe Road and Ludlow Street	Confirmed	Distance from nearest control <200 m, Provides connectivity to school, sporting facility, shopping RRFB recommended

3.5. Traffic Signal Assessments

Assessments are conducted to determine the need for traffic signals in adherence to the Traffic Signal and Pedestrian Signal Head Warrant Handbook. A warrant system assigns points for a variety of conditions including:

- number of traffic lanes;
- posted speed limit of the street;
- distance to the nearest traffic signal; and
- number of pedestrians and vehicles at the location.

Pedestrian and traffic data is collected during the five peak hours of: 8:00 am to 9:00 am, 11:30 am to 1:30 pm, and 4:00 pm to 6:00 pm.

If a traffic signal is not warranted, additional measures to improve safety (i.e. parking restrictions, oversized stop signs) may be considered.

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), as shown in Table 3-7. 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 cost.

Table 3-7: Level of Service

Signalized - Average Control Delay (sec./veh.)	Unsignalized - Average Control Delay (sec./veh.)	Level of Service	General Description
<= 10	<= 10	A	Free Flow
>10 to 20	>10 to 15	B	Stable Flow (slight delays)
>20 to 35	>15 to 25	C	Stable Flow (acceptable delays)
>35 to 55	>25 to 35	D	Approaching unstable flow (tolerable delay, occasional wait through more than one signal cycle before proceeding)
>55 to 80	>55 to 50	E	Unstable flow (intolerable delay)
>80	>50	F	Forced flow (jammed)

A summary of the traffic signal assessments is provided in Table 3-6.

Table 3-6: Traffic Signal Assessments

Location	Traffic Signal Warrant Points	Results
Nelson Road and Lowe Road	112	Traffic Signals Recommended
115th Street and Kenderdine Road	104	Traffic Signals NOT Recommended
Lowe Road and Ludlow Street	92	
Nelson Road and University Heights Shopping Centre	56	
Nelson Road and Heal Avenue	39	
Nelson Road and Heath Avenue	13	

Details of the traffic signal assessments are provided in **Appendix E**.

Traffic signals are warranted at the intersection of Nelson Road and Lowe Road. At the second public meeting, the majority of residents agreed that the intersection is operating acceptably with the existing four-way stop. The proposed bus rapid transit system will develop a station at this intersection; the work would include the installation of traffic signals. Until the implementation of the bus rapid transit system, the intersection will be monitored. If

the operations have a decrease in the LOS (or an increase in traffic delays), the installation of traffic signals may occur sooner.

Traffic signals are warranted at the intersection of 115th Street and Kenderdine Road; therefore, this location was further reviewed to determine if traffic signals are appropriate. Further analysis indicated an existing LOS C or greater; therefore, traffic signals are not recommended at this time.

3.6. Collision Analysis

The most recently available five-year collision data (2014 to 2018) was provided by Saskatchewan Government Insurance (SGI). High-collision locations, typically noted as the locations with an average of three or more collisions per year, were reviewed in more depth to identify trends and possible improvements. Signalized intersections were not included in the collision analysis as they have higher traffic volumes resulting in higher collision trends. These intersections are studied as part of the major intersection reviews. Intersections with three or more collisions per year within University Heights S.C. include:

- Lowe Road and Nelson Road;
- Nelson Road between Attridge Drive and roundabout to St. Joseph High School/SaskTel Sports Centre;
- Heal Avenue between Attridge Drive and Ludlow Street;
- Heal Avenue and Ludlow Street;
- Lowe Road and Ludlow Street; and
- 115th Street and Kenderdine Road.

Details of the collision analysis are provided **Appendix F**.

3.7. Ludlow Street and Heal Avenue Analysis

During the consultation a number of residents expressed concerns regarding the intersection of Ludlow Street and Heal Avenue. In addition the collision analysis showed high collisions (i.e. average 5 collisions per year) and a need for pedestrian connectivity. Additional analysis was required for the intersection. Details on the analysis are shown in **Appendix G.**

4. Present Traffic Plan

4.1. Methodology

Stage 3 of the neighbourhood traffic review included finalizing the traffic plan. This was achieved by completing the following steps:

- Based on the assessments, prepare a draft plan that illustrates the appropriate recommended improvements.
- Present the draft plan to the residents at a follow-up public meeting.
- Circulate the draft plan to the civic divisions for comment.
- Revise the draft plan based on feedback from the stakeholders.
- Prepare a technical document summarizing the revised plan and project process.

The tables in the following sections provide the details of the recommended traffic plan, including the location, recommended improvement and justification of the recommended improvement.

4.2. Speeding and Shortcutting

As stated in Council Policy C07-007 Traffic Control – Use of Stop and Yield Signs, “stop signs are not to be used as speed control devices.”

The recommended improvements to address speeding and shortcutting are detailed in Table 4-1.

Table 4-1: Recommended Improvements – Speeding and Shortcutting

Location	Recommended Improvement	Justification
Lowe Road between Ludlow Street and Nelson Road	Speed boards (facing northbound and southbound traffic)	Reduce speed
Perehudoff Crescent near Epp Avenue	Speed study in spring 2020	Determine if improvements are needed to address speed

4.3. Pedestrian Safety

The recommended improvements to increase pedestrian safety are detailed in Table 4-2.

Table 4-2: Recommended Improvements – Pedestrian Safety

Location	Recommended Improvement	Justification
Nelson Road and Heal Avenue	Extend median, RRFB and zebra crosswalk (east side)	Improve pedestrian safety
Nelson Road and Heath Avenue	Curb extension (on southwest corner)	Improve pedestrian safety
Lowe Road and Ludlow Street	RRFB (on south side)	Improve pedestrian safety
Perehudoff Crescent and Epp Avenue	Pedestrian crossing study to be completed in spring 2020	Determine if pedestrian crossing upgrades are needed

4.4. Intersection Safety

The recommended improvements to intersections that will improve the level of safety by clearly identifying the right-of-way through traffic controls are provided in Table 4-3.

Table 4-3: Recommended Improvements – Intersection Safety

Location	Recommended Improvement	Justification
Lowe Road and Nelson Road	Short Term: Change lane designation - northbound shared left turn/through and right turn - westbound shared left turn/through and right turn	Improve intersection level of service
	Short Term: Parking restrictions (east leg, north side of Nelson Road and south leg, east side of Lowe Road)	Improve intersection level of service
	Short Term: Additional stop signs	Ensure visibility of stop signs
	Medium Term: Traffic Signals	Improve intersection operations
Ludlow Street and Heal Avenue	Four-way stop with geometric changes (northbound shared left/through and shared through/right)	Improve intersection and pedestrian safety
Nelson Road and Alice Turner Library driveway	Stop sign	Improve safety from driveway

4.5. Parking

The recommended improvements to parking that will improve the level of safety are provided in Table 4-4.

Table 4-4: Recommended Improvements – Parking

Location	Recommended Improvement	Justification
Nelson Road and Heath Avenue	Parking restriction on Nelson Road (30 m on southwest corner)	Enhance visibility of pedestrian crossing
333 Nelson Road	Parking restrictions at west driveway (25 m to west and 7 m to east)	Enhance sightlines at driveways
302 Nelson Road	Parking restrictions (10 m west of most westerly driveway to east property line)	Enhance sightlines at driveways
Ludlow Street and 402 Ludlow Street (Co-Op driveway)	Parking restrictions (15 m on either side of driveway)	Enhance sightlines at driveway
Ludlow Street and Heath Avenue	Parking restrictions on Ludlow Street (15 m on all corners)	Enhance sightlines and improve visibility for pedestrian crossing

4.6. Follow-up Consultation – Presentation of Draft Traffic Plan

The recommended improvements were presented to residents and stakeholders at a follow-up public meeting in September 2019. The meeting minutes and presentation are provided in **Appendix H**. Recommended improvements that were not supported were eliminated or altered accordingly.

A decision matrix detailing the list of recommended improvements presented at the follow-up meeting are included in **Appendix I**. Additional issues raised during and after the follow-up meeting were assessed and outlined **Appendix J**. Recommendations were added to the list of improvements if necessary. The revised list of recommendations received general support from Saskatoon Police Service, Saskatoon Light and Power, Saskatoon Fire Department, Environmental Services, Parking Services, Roadways, Fleet & Support and Transit.

4.7. Engagement Summary

For the NTRs, residents and stakeholders were invited to participate in the process through two public meetings that are outlined in Table 4-5.

Table 4-5: Public Meetings Summary

Meeting Details	Meeting Purpose	Meeting Materials
Meeting #1 May 9, 2019 Forest Grove Community Church 10 attendees	To identify specific traffic concerns and potential improvements	Meeting minutes and presentation included in **Appendix A**
Meeting #2 September 26, 2019 Forest Grove Community Church 32 attendees	To discuss the draft neighbourhood traffic plan	Meeting minutes, presentation and draft traffic plan included in **Appendix H**

Residents and stakeholders in University Heights S.C. were notified of the meetings via:

- A flyer delivered to each residence in the neighbourhood;
- City of Saskatoon events calendar, saskatoon.ca/engage, and saskatoon.ca/NTR;
- requesting the neighbourhood community associations and schools to post the information on their website or social media pages; and
- notifying the appropriate City Councillor.

The Engage page was used to disseminate information about the meetings, as well as status updates and notifications for the project. It also provided a forum for resident comments.

Ten residents subscribed for email updates. Study updates were provided to these residents at several milestones throughout the project.

Residents were invited to provide their concerns and feedback through the following:

- saskatoon.ca/engage webpage;
- report a traffic issues application;
- written submissions at the meetings;
- written notes taken by the Administration at the meetings; and
- written, verbal, and e-mail submission to the Administration.

Residents and business owners who could not attend the meetings were able to view the meeting materials and provide feedback via the City's saskatoon.ca/engage website, or by phone, email, or mail. Feedback received throughout the process is included in **Appendix K**.

Photo 1: Meeting #1 Presentation

Photo 2: Meeting #2 Presentation

5. Implementation

Stage 4, the final stage of the neighbourhood traffic review, is to install the recommended improvements. The time frame depends upon the complexity and cost of the solution. A short-term time frame is defined by implementing the improvements within 1 to 2 years; medium-term is 3 to 5 years; and long-term is 5 years plus.

The placement of signs, pavement markings and temporary traffic calming will be completed short-term (1 to 2 years). Most often the installations take place in spring/summer of the following year. Installations for University Heights S.C. are likely to begin in spring/summer 2020.

The estimated costs of the improvements included in the Traffic Plan are outlined in the following tables:

- Table 5-1: Signs, Pavement Markings and Temporary Traffic Calming Cost Estimate
- Table 5-2: Speed Enforcement Cost Estimate
- Table 5-3: Additional Traffic Counts Cost Estimate
- Table 5-4: Pedestrian Safety Devices Cost Estimate
- Table 5-5: Permanent Traffic Calming Cost Estimate
- Table 5-6: Traffic Signal Cost Estimate
- Table 5-7: Total Cost Estimate

Table 5-1: Signs, Pavement Markings and Temporary Traffic Calming Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Nelson Road and Heal Avenue	Extend Median and Zebra Crosswalk (1)	$700	1 to 2 years (all traffic calming devices will be installed temporary for at least one year to measure effectiveness)
Nelson Road and Heath Avenue	Curb Extension (1) and No Parking signs (2)	$1,000	
333 Nelson Road	No Parking signs (3)	$750	
302 Nelson Road	No Parking signs (4)	$1,000	
Lowe Road and Nelson Road	Lane Designation (4), No Parking sign (4) and Stop signs (4)	$3,000	
Lowe Road and Nelson Road	Lane delineation pavement markings (2)	$500	
Nelson Road and Alice Turner driveway	Stop sign (1)	$250	
Ludlow St and 402 Ludlow Street (Co-Op driveway)	No Parking signs (2)	$500	
	Total	**$7,700**	

Table 5-2: Speed Enforcement Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Lowe Road between Ludlow Street and Nelson Road	Speed boards (2)	$0 (Ten devices purchased in 2017 are relocated annually.)	1 to 2 years
	Total	**$0**	

Table 5-3: Additional Traffic Counts Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Perehudoff Crescent and Epp Avenue	Intersection and Pedestrian Study	$250	1 to 2 years
Perehudoff Crescent near Epp Avenue	Speed Study	$250	
	Total	**$500**	

Table 5-4: Pedestrian Safety Devices Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Nelson Road and Heal Avenue	RRFB (3)	$25,000	3 to 5 years
Lowe Road and Ludlow Street	RRFB (2)	$20,000	
	Total	**$45,000**	

Table 5-5: Permanent Traffic Calming Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Nelson Road and Heal Avenue	Extend Median	$15,000	3 to 5 years
Nelson Road and Heath Avenue	Curb Extension (1)	$45,000	
Ludlow Street and Heal Avenue	Median islands (2)	$10,000	
	Total	**$70,000**	

Table 5-6: Traffic Signal Cost Estimate

Location	Device	Cost Estimate	Implementation Goal
Lowe Road and Nelson Road	Traffic Signals	$0 (Funded as part of bus rapid transit system)	3 to 5 years
	Total	**$0**	

Table 5-7: Total Cost Estimate

Category	Implementation Goal		
	Short-Term (1-2 years)	Medium-Term (3 to 5 years)	Long-Term (5 years plus)
Signs, Pavement Markings and Temporary Traffic Calming	$7,700	-	-
Speed Enforcement	$0	-	-
Additional Traffic Counts	$500	-	-
Pedestrian Safety Devices	-	$45,000	-
Permanent Traffic Calming	-	$70,000	-
Traffic Signals	-	$200,000*	-
Total	**$8,200**	**$115,000**	**-**

*funded by the bus rapid transit project therefore not added to the total costs

The total cost estimate for short-term improvements (signs, pavement markings and temporary traffic calming) is $8,200. The total cost estimate for medium and long-term improvements (permanent traffic calming and pedestrian safety devices) is $115,000.

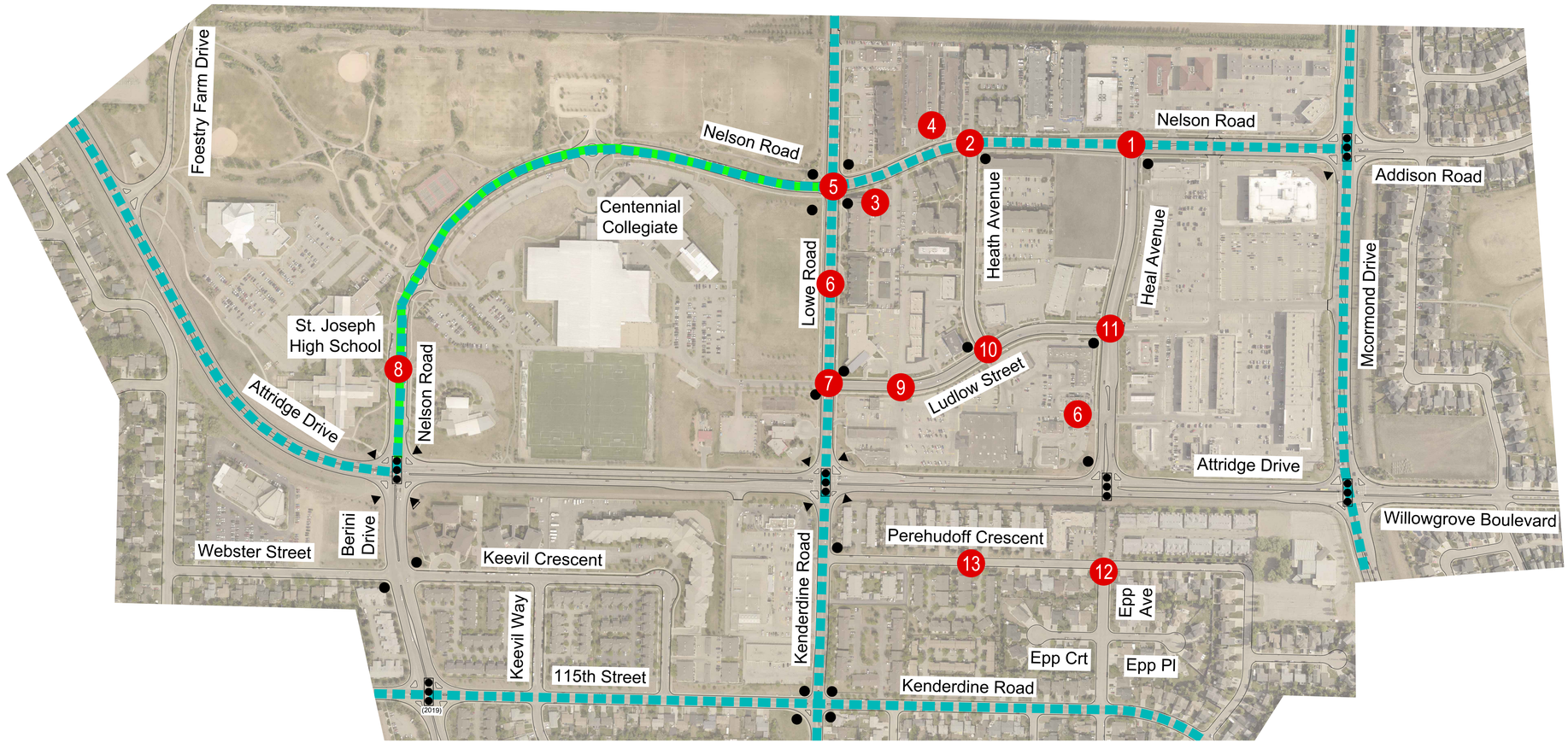
The list of recommended improvements resulting from the neighbourhood traffic review including the location and justification is summarized in Table 5-6.

The resulting recommended University Heights S.C. Neighbourhood Traffic Plan is illustrated in Exhibit 5-1.

Table 5-6: University Heights S.C. Recommended Improvements

Item	Location	Recommended Improvement	Justification
1	Nelson Road and Heal Avenue	Extend median, RRFB and zebra crosswalk (east side)	Improve pedestrian safety
2	Nelson Road and Heath Avenue	Curb extension Parking restriction on Nelson Road (30 m on southwest corner)	Improve pedestrian safety and enhance visibility of pedestrians crossing
3	333 Nelson Road	Parking restrictions at west driveway (25 m to west and 7 m to east)	Enhance sightlines at driveways
4	302 Nelson Road	Parking restrictions (10 m west of most westerly driveway to east property line)	Enhance sightlines at driveways
5	Lowe Road and Nelson Road	Short Term: Change lane designation - northbound shared left turn/through and right turn, and - westbound shared left turn/through and right turn	Improve intersection level of service
		Short Term: Parking restrictions (east leg, north side of Nelson Road and south leg, east side of Lowe Road)	Improve intersection level of service
		Short Term: Additional stop signs	Ensure visibility of stop signs
		Medium Term: Traffic Signals	Improve intersection operations
6	Lowe Road between Ludlow Street and Nelson Road	Speed boards (facing northbound and southbound traffic)	Reduce speed
7	Lowe Road and Ludlow Street	RRFB (on south side)	Improve pedestrian safety
8	Alice Turner Library driveway	Stop sign	Improve safety from driveway
9	Ludlow Street and 402 Ludlow Street (Co-Op driveway)	Parking restrictions (15 m on either side of driveway)	Enhance sightlines at driveway
10	Ludlow Street and Heath Avenue	Parking restrictions on Ludlow Street (15 m on all corners)	Enhance sightlines and improve visibility for pedestrian crossing
11	Ludlow Street and Heal Avenue	Four-way stop with geometric changes (northbound shared left/through and shared through/right)	Improve intersection and pedestrian safety
12	Perehudoff Crescent and Epp Avenue	Pedestrian crossing study to be completed in spring 2020	Determine whether pedestrian crossing upgrades are needed
13	Perehudoff Crescent near Epp Avenue	Speed study to be completed in spring 2020	Determine whether improvements are needed to address speeding

Exhibit 5-1: Recommended University Heights S.C. Traffic Plan



LEGEND

- EXISTING STOP SIGN
- EXISTING YIELD SIGN
- BUS ROUTE
- SCHOOL ZONE
- EXISTING TRAFFIC SIGNAL
- EXISTING PEDESTRIAN ACTUATED SIGNAL LOCATION
- EXISTING ACTIVE PEDESTRIAN CORRIDOR SIGNAL LOCATION
- # RECOMMENDATIONS

UNIVERSITY HEIGHTS SUBURBAN CENTER TRAFFIC PLAN

City of Saskatoon

Appendix A

Public Meeting #1 – May 9, 2019

University Heights Suburban Centre (SC) Neighbourhood Traffic Review Minutes

Date: Thursday, May 9, 2019

Time: 7:00 – 9:00 pm

Location: Forest Grove Community Church (502 Webster Street)

Attendees:

Name	Position
Kathy Dahl	Facilitator, Great Works Consulting
Mitch Riabko	Facilitator, Great Works Consulting
Justine Marcoux	City of Saskatoon Transportation Engineer University Heights SC Neighbourhood Traffic Review Project Manager
Nathalie Baudais	City of Saskatoon Transportation Engineer
Councillor Zach Jeffries	Ward 10 City Council Representative

Items:

Welcome and Introductions

Presentation from the Transportation Division

(Presented by Justine Marcoux – Transportation Engineer)

See Attachment: Presentation – May 9, 2019

Resident: Other Studies / Projects – Traffic Signals at Lowe Rd & Nelson Rd could be a problem because traffic to/from Evergreen may race to get to the green light. Have doubts that it will be a good solution.

Saskatoon Police Services
306-975-8300 OR 306-975-8068 to report a traffic complaint or a concern.

Small Group Discussions

Breakout into small groups to discuss traffic concerns in University Heights SC and potential solutions.

Group 1: Nathalie Baudais

- Nelson Road & Lowe Road:
  - Prefer signals with protected left turn for westbound left turn
  - Concerns regarding pedestrian safety at roundabouts
  - Concerns with semi-trucks maneuvering around roundabouts
  - Traffic signals would help with access onto Lowe Road from apartment buildings
  - Transit buses block visibility of stop signs for northbound traffic
- Nelson Road:
  - Speeding between McOrmond Drive and Lowe Road, especially in the evenings. Photo radar or enforcement suggested.
  - Drivers passes on the right when drivers in the left lane are stopped for pedestrians.
  - More enforcement needed.
- Nelson Road & Heal Avenue
  - Pedestrian crossing issues.
  - There are 2 driveways very close to the crosswalk. Drivers focus on vehicle traffic to turn onto Nelson Road and don't see the pedestrians.
  - Something needs to be done. It is unsafe. Perhaps a pedestrian actuated device would resolve the issues.
- Nelson Road & Heath Avenue:
  - Would like an Actuated Pedestrian Crossing (APC) device.
  - Drivers don't stop for pedestrians.
  - Many elderly in the condo buildings on the north side.
  - If a device is installed, either side of the intersection would work but try to place it in line with the west side of the Milano driveway.
- Stensrud speed hump pilot project discussed.
- Entire University Heights Suburban Centre neighbourhood is not pedestrian-friendly.
- Lots of truck traffic on Nelson Road. Why don't they use Attridge Drive instead?
- Pavement marking repainting should start with curves rather than straight lines. The curves are where drivers need the most assistance.
- Lowe Road & Ludlow Street:
  - Pedestrian crossing safety needs to be addressed.
  - Students drive across to school.
- Sidewalk slope to Safeway (within the development, east of Heal Avenue) is steep and discontinuous (planted shrubs).
- Heal Avenue & Ludlow Street:
  - Should be a 4-way stop.

Group 2: Justine Marcoux

- Nelson Road & Lowe Road:
    - Drivers aren't stopping at the 4-way stop (particularly northbound right turn)
    - Lots of pedestrians (seniors and students) crossing. Roundabout is not a good solution for pedestrians.
    - Traffic signals would be a good solution but there might also be drivers speeding to catch a green light.
- Nelson Road:
    - There's a driveway near the 4-way stop at Lowe Road (east of intersection) that drivers are speeding by. Enforcement is needed. Vehicles parked near the driveway also make it difficult to see.
    - Speeding.
- Nelson Road & Heal Avenue:
    - Install flashing lights for pedestrians to cross or something to slow down drivers
- Nelson Road & Heath Avenue
    - Pedestrian sign is blocked by a tree. Install something to improve the pedestrian crossing.

Next Steps

1. Continue monitoring traffic issues in your neighbourhood
2. Mail-in or email comments no later than June 9, 2019
3. Additional public input via Engage Page no later than June 9, 2019
4. Traffic counts data collection, analysis
5. Develop recommendations and prepare draft traffic plan
6. Follow-up public meeting to provide input on draft plan
7. Determine revisions and finalize traffic plan
8. Present traffic plan to City Standing Policy Committee on Transportation

Question and Answer

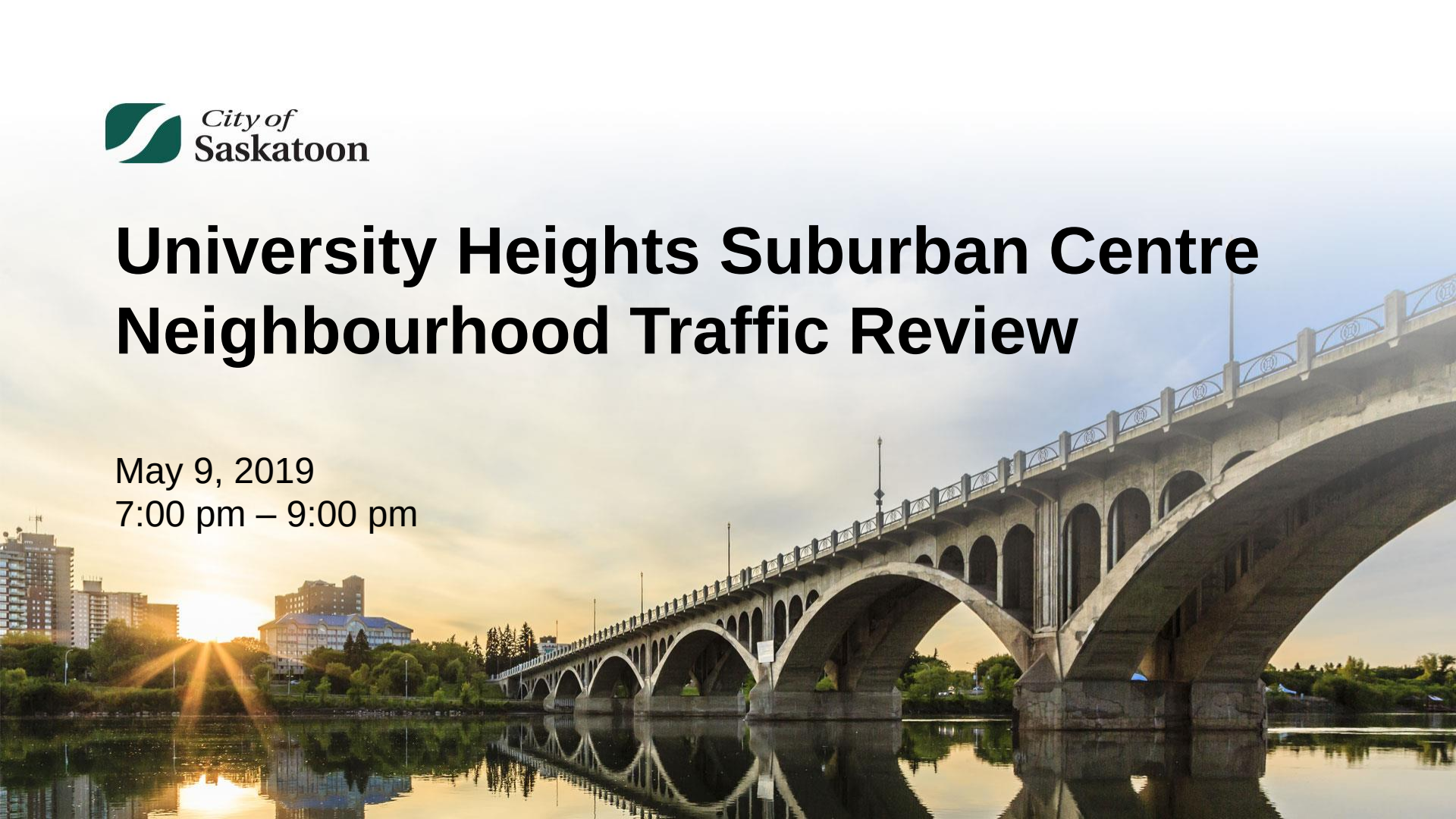
Resident: Lowe Road. Centennial Collegiate green space has lots of family activities during the summer months. Vehicles parked on Lowe Road. Speeds are a concern. Speeds should be reduced to 40 kph during the summer months.

Justine: City-wide Speed Limit Review is currently undergoing. Playgrounds and school zones will be considered as part of that review.

City of Saskatoon

University Heights Suburban Centre Neighbourhood Traffic Review

May 9, 2019
7:00 pm – 9:00 pm



Outline

- Neighbourhood Traffic Review (NTR) Process
- University Heights SC Schedule
- Sources of Information
- Sample of Concerns Received
- Examples of Traffic Calming & Pedestrian Devices
- Next Steps

City of Saskatoon

Neighbourhood Traffic Review Background

- NTR Introduction
  - Developed to address traffic issues holistically rather than case by case
  - Mandate: Reduce and calm traffic, improve safety within neighbourhoods
- Neighbourhood Selection
  - Number of outstanding concerns
  - Number of collisions
  - Number of existing temporary traffic calming devices
  - Regional representation throughout the City
  - Age and stage of development of the neighbourhood

City of Saskatoon

Neighbourhood Traffic Review Background

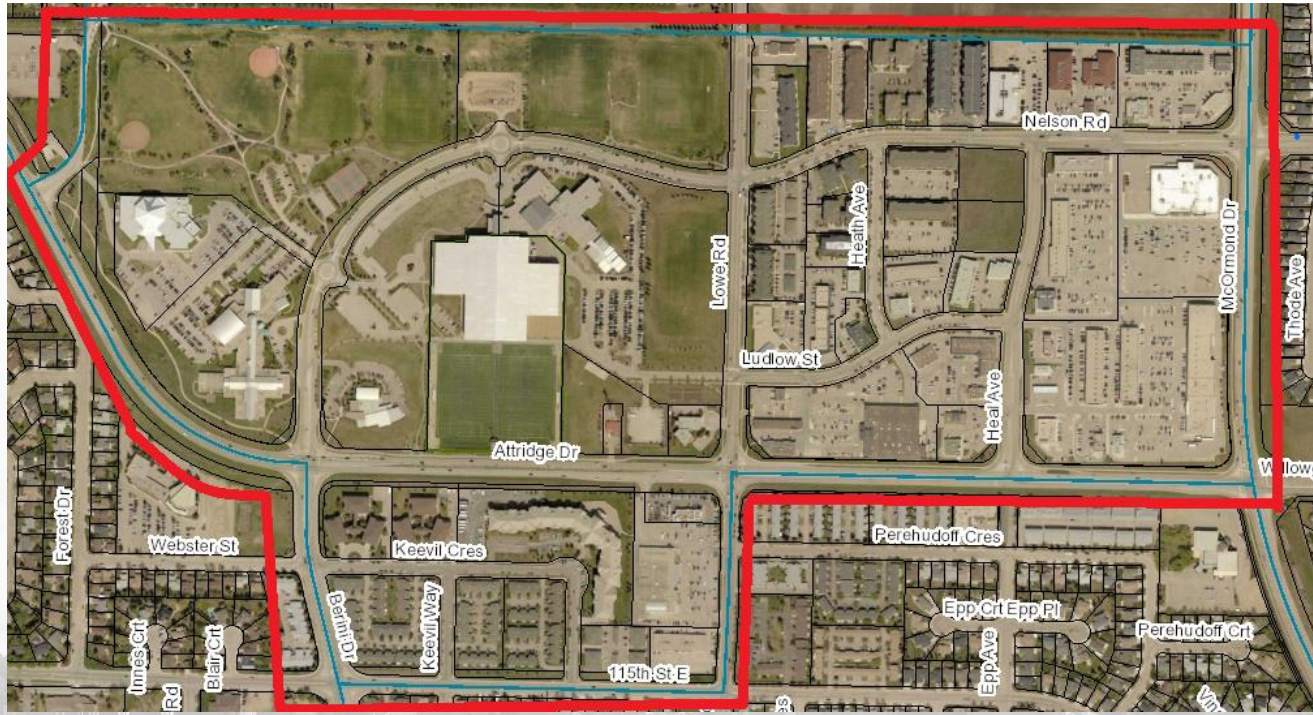
- 2014
  - 11 neighbourhood traffic reviews completed
- 2015 / 2016 / 2017 / 2018
  - 8 neighbourhood traffic reviews completed per year

- 2019 Selected Neighbourhoods
  - University Heights Suburban Centre
  - Pacific Heights/Kensington
  - Holiday Park / King George
  - Lawson Heights / Lawson Heights Suburban Centre
  - Nutana Park
  - Briarwood
  - Airport Business Area
  - Blairmore Suburban Centre

City of Saskatoon

Study Area

- Study Limits
  - Attridge Dr, Berini Dr, 115th St, Kenderdine Rd, McOrmond Dr, north of Nelson Rd



City of Saskatoon

Neighbourhood Traffic Review Process

Phase 1
Responding to Issues

Phase 2
Neighbourhood Selection

Phase 3
Plan and Development Approval

- **Stage 1 Identify Problems** ← We are here
- Stage 2 Develop Traffic Plan
- Stage 3 Approval
- Stage 4 Implementation
- Stage 5 Evaluation

Phase 4
Permanent Implementation

City of Saskatoon

Neighbourhood Traffic Review Schedule

Stage 1
Identify Problems

- Spring 2019
- Public meeting
- Collect input via calls, emails, letters, Engage Page etc.

Stage 2
Develop Traffic Plan

- Spring / Summer 2019
- Data collection
- Field observation
- Prepare Traffic Plan

Stage 3
Review and Approval

- Fall 2019
- Public meeting
- Collect feedback via calls, emails, Engage Page etc.
- Prepare report
- Committee meeting

Stage 4
Implementation

- Beginning Spring 2020
- Prepare plans
- Installation of Traffic Plan
- Traffic calming measures will be installed temporarily

Stage 5
Evaluation

- 2021 and beyond
- Follow up assessments
- Permanent installation for measures that are deemed effective (budget permitting)

City of Saskatoon

Sample of Concerns Received

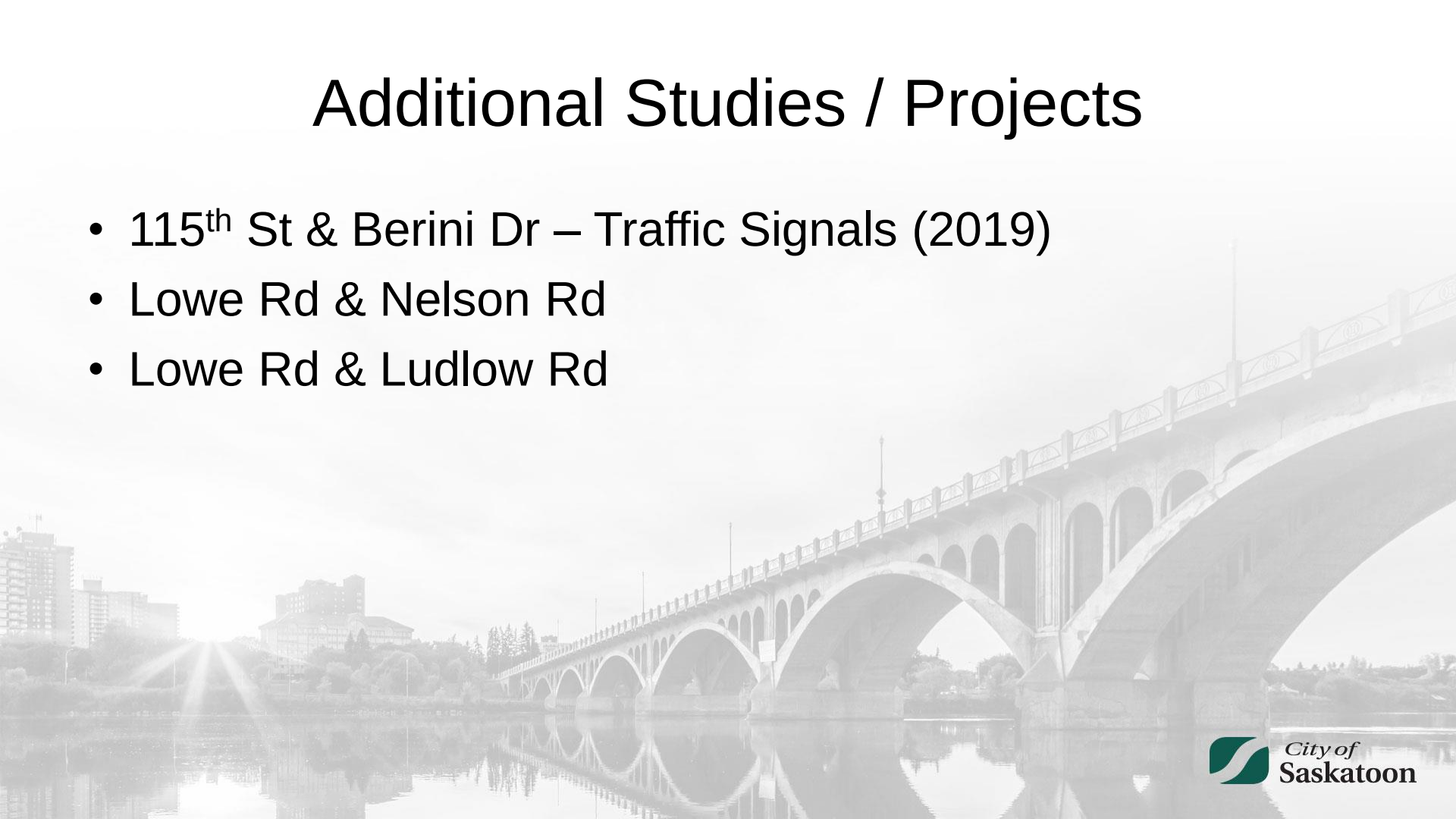
- Nelson Rd
- Lowe Rd & Ludlow St
- 115th St at Berini Dr and Kenderdine Rd
- Kenderdine Rd
- Attridge Dr & Berini Dr

- *Note: This is a sample of concerns received and does not include every reported traffic issue for this area*

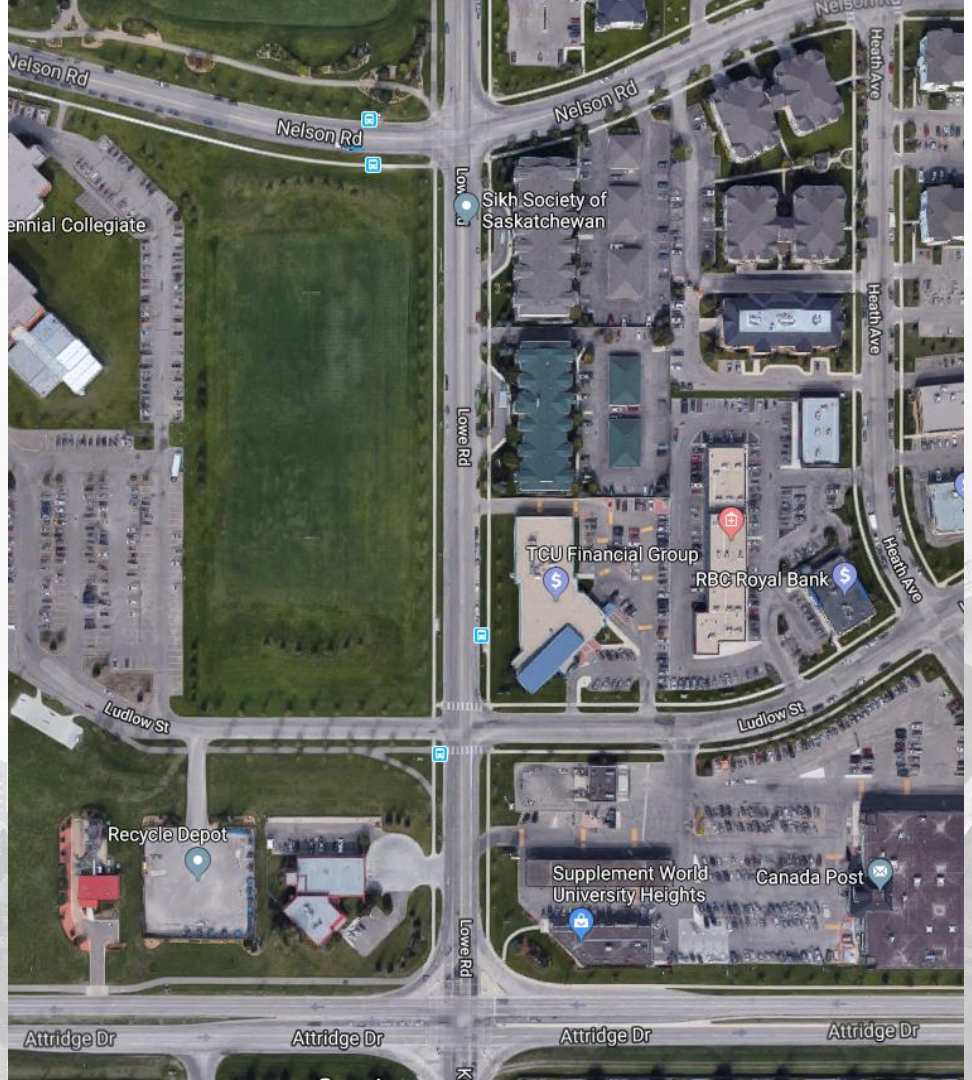
City of Saskatoon

Additional Studies / Projects

- 115th St & Berini Dr – Traffic Signals (2019)
- Lowe Rd & Nelson Rd
- Lowe Rd & Ludlow Rd



City of Saskatoon



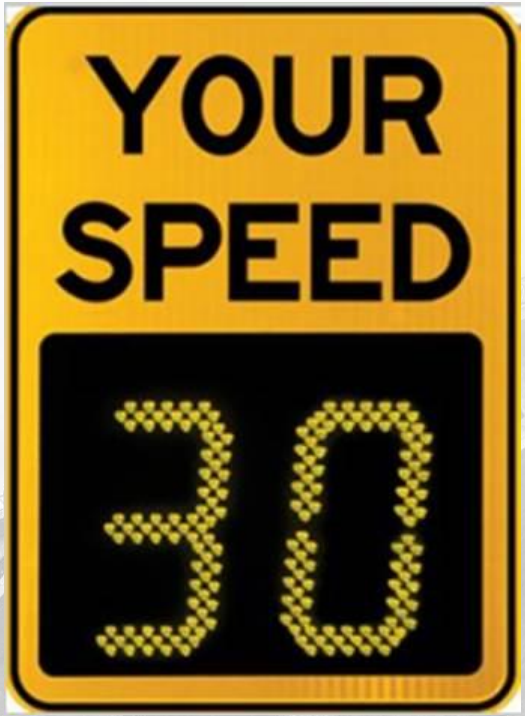
City of Saskatoon

Traffic Calming Measures Examples

City of Saskatoon

Speed Display Devices

- Interactive sign that displays vehicle speeds as motorists approach.
- Reduces speeds.
- Can be relocated.
- Drivers may become immune to the devices.



City of Saskatoon

Horizontal Deflection Devices

- Physical measure that requires motorists to steer around them.
- Discourage short-cutting traffic.
- May reduce vehicle speeds, turning movement conflicts or enhance the neighbourhood environment.
- Enhance pedestrian crossings and sign placement.
- Relatively inexpensive.

Curb Extension

City of Saskatoon

Raised Median Island

City of Saskatoon

Roundabout

City of Saskatoon

Vertical Deflection Devices

- Causes a vertical upward movement of the vehicle.
- Reduces vehicle speeds.
- May reduce traffic volumes, turning movement conflicts or enhance the neighbourhood environment.
- Can increase emergency response times.
- Can affect transit and maintenance operations.

Raised Crosswalk

City of Saskatoon

Raised Intersection

City of Saskatoon

Speed Humps

City of Saskatoon

Obstructions

- Physically restrict certain vehicle movements.
- Used to discourage shortcutting.
- Should only be used where horizontal or vertical deflection measures cannot adequately address a traffic problem.

City of Saskatoon

Directional Closure

City of Saskatoon

Diverter

City of Saskatoon

Right In / Right Out Island

City of Saskatoon

Raised Median Through Intersection

City of Saskatoon

Full Closure

City of Saskatoon

Pedestrian Crossing Devices

- Assist pedestrians in safely crossing streets.
- Promotes orderly and predictable movement of vehicular and pedestrian traffic.

City of Saskatoon

Standard Crosswalk

City of Saskatoon

Zebra Crosswalk

City of Saskatoon

Rectangular Rapid Flashing Beacon

City of Saskatoon

Active Pedestrian Corridor

City of Saskatoon

Pedestrian Actuated Signal

City of Saskatoon

TRAFFIC ISSUES IN UNIVERSITY HEIGHTS SUBURBAN CENTRE

Seeking Your **Ideas** and **Solutions**!

City of Saskatoon

Table Group Discussions

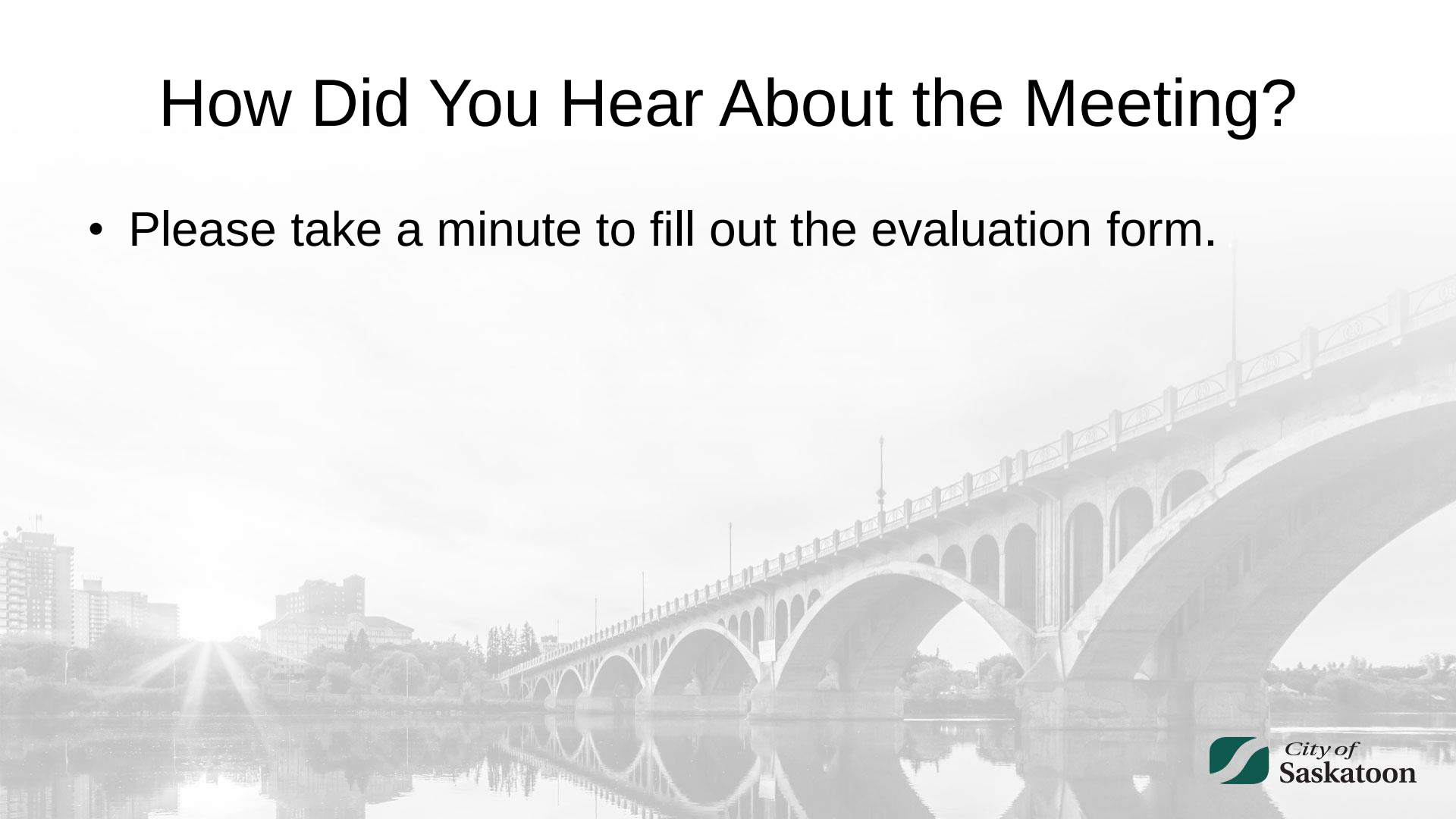
1. What ideas or solutions do you have to improve traffic flow/safety in your neighbourhood (what's working or not working)?

2. Identify additional traffic issues and solutions in University Heights SC.

City of Saskatoon

How Did You Hear About the Meeting?

- Please take a minute to fill out the evaluation form.



City of Saskatoon

Next Steps

Stage 1
Identify Problems

- **Spring 2019**
- Public meeting
- Collect input via calls, emails, letters, Engage Page etc

Stage 2
Develop Traffic Plan

- **Spring / Summer 2019**
- Data collection
- Field observation
- Prepare Traffic Plan

Stage 3
Review and Approval

- **Fall 2019**
- Public meeting
- Collect feedback via calls, emails Engage Page etc.
- Prepare report
- Committee meeting

Stage 4
Implementation

- **Beginning Spring 2020**
- Prepare plans
- Installation of Traffic Plan
- Traffic calming measures will be installed temporarily

Stage 5
Evaluation

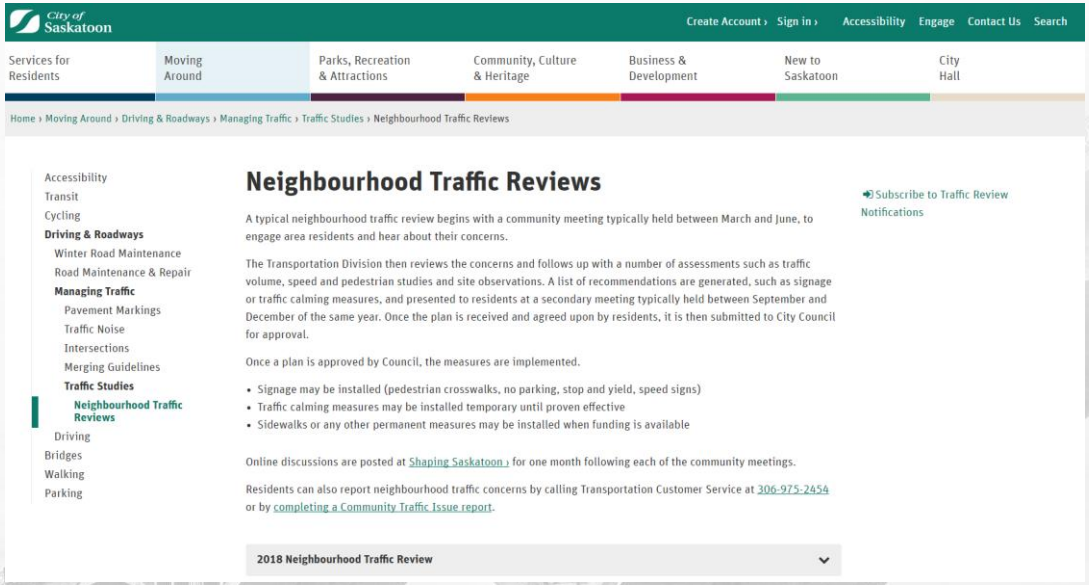
- **2021 and beyond**
- Follow up assessments
- Permanent installation for measures that are deemed effective

City of Saskatoon

Join the Discussion

- Subscribe for updates at www.saskatoon.ca/NTR
- Post comments at www.saskatoon.ca/engage
- Provide comments by:

  June 9, 2019

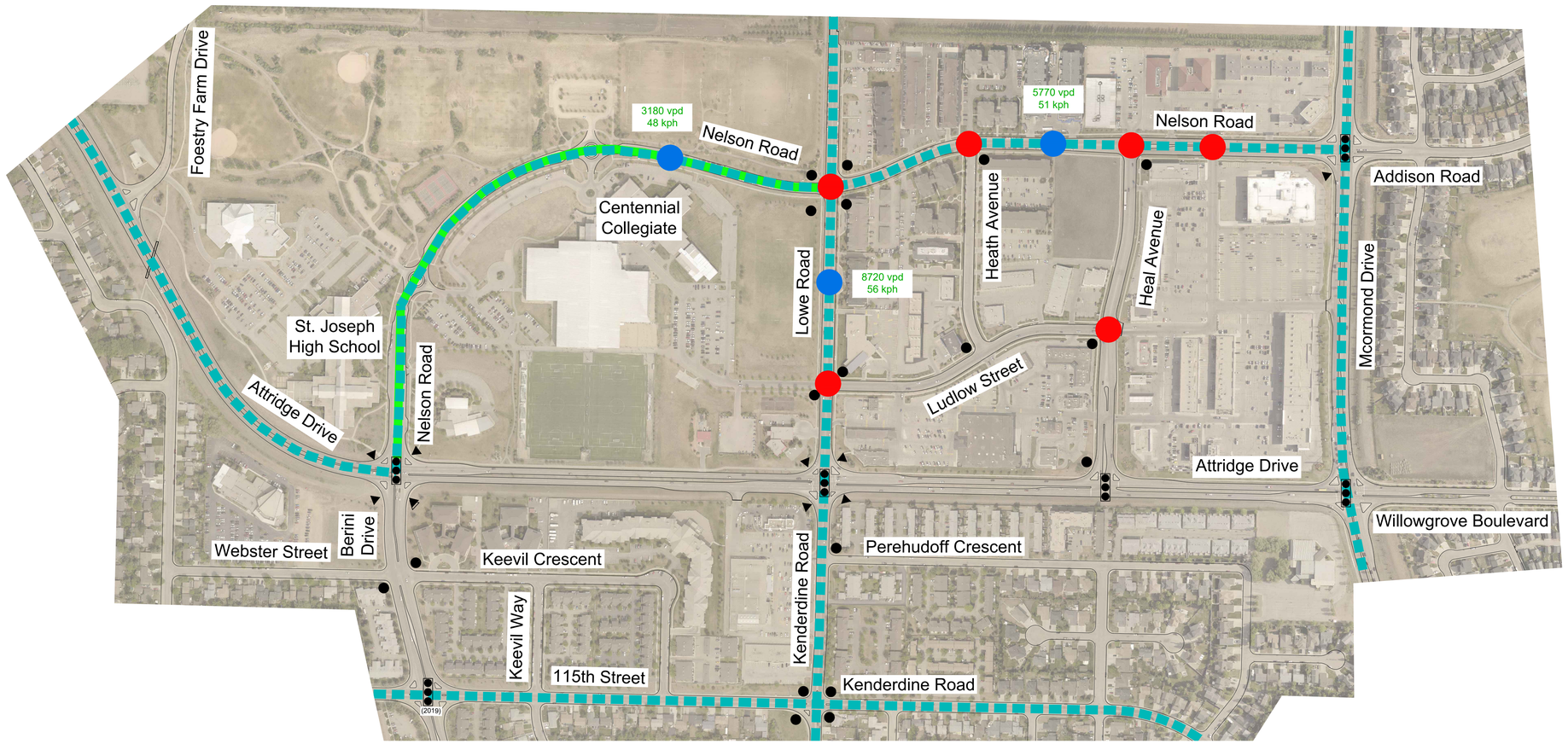


City of Saskatoon

City of Saskatoon

Appendix B

Traffic Data Collection



LEGEND

- EXISTING STOP SIGN
- EXISTING YIELD SIGN
- BUS ROUTE
- SCHOOL ZONE
- EXISTING TRAFFIC SIGNAL
- TRAFFIC + PEDESTRIAN COUNT MOVEMENT COUNT (INTERSECTION)
- 7 DAY SPEED + TRAFFIC VOLUME STUDY (MIDBLOCK)
  - 786 vpd — NUMBER OF VEHICLES PER DAY
  - 47 kph (School kph) — 85th PERCENTILE SPEED

FOR COMMENTS & INFORMATION VISIT:
www.saskatoon.ca/engage/University-Heights-SC
www.saskatoon.ca/NTR

UNIVERSITY HEIGHTS SUBURBAN CENTER TRAFFIC DATA

City of Saskatoon

Appendix C

All-Way Stop Assessments

All-way Stop Assessment (Policy C07-007 – Traffic Control – Use of Stop & Yield Signs)

Step 1:

One of the following criteria must be met to warrant an all-way stop:

i) When five or more collisions are reported in a one-year period within the three years and are of a type susceptible to correction be an all-way stop control.
ii) When the total number of vehicles entering the intersection from all approaches averages at least 600 per hour for the peak hour OR the total intersection entering volume exceeds 6,000 vehicles per day.
iii) The average delay per vehicle to the minor street traffic must be 30 seconds or greater during the peak hour.
iv) As an interim measure to control traffic while arrangements are being made for the installation of traffic signals.
v) When an engineering study has identified a safety concern dangerous pattern of traffic that is susceptible to correction by an all-way stop control.

Location	Criteria 1: # of Collisions	Criteria 2: Peak hour is greater than 600 vehicles OR total exceeds 6,000 vpd	Criteria 3: Delay	Criteria 4: Interim Measure	Criteria 5: Safety Concern	All-Way Stop Warrant
Nelson Road & Heal Avenue	3 – Criteria NOT met	909 – Criteria met 9,360 – Criteria met	NA	No – Criteria NOT met	NA	Criteria met. Proceed to Step 2.
Nelson Road & Heath Avenue	0 – Criteria NOT met	611 – Criteria met 6,830 – Criteria met	NA	No – Criteria NOT met	NA	
Nelson Road & University Heights Shopping Centre	0 – Criteria NOT met	1,094 – Criteria met 11,170 – Criteria met	NA	No – Criteria NOT met	NA	

Continue to Step 2 if one of the criteria are met.

Step 2:

The following conditions must be met for all-way stop control to be considered:

i) The combined volume of traffic entering the intersection over the five peak hour periods from the minor street must be at least 25% of the total volume for a three-way stop control, and at least 35% of the total volume for a four-way stop control.

ii) There can be no all-way stop control and traffic signal within 200 metres of the proposed intersection being considered for all-way stop control on either of the intersecting streets.

Location	Condition 1: % of Traffic from minor street	Condition 2: Traffic Signals or all-way stop within 200m	All-Way Stop Warrant
Nelson Road & Heal Avenue	28% - Condition NOT met (analyzed as 4-way stop due to driveway)	No – Condition met	Conditions NOT met
Nelson Road & Heath Avenue	13% - Condition NOT met	Yes – Condition NOT met	
Nelson Road & University Heights Shopping Centre	27% - Condition NOT met	Yes – Condition NOT met	

Appendix D

Pedestrian Device Assessments

Nelson Road & Heal Avenue

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	39
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	12 EAU (worst-case scenario)
	Vehicular Volume	5,700 vehicles/day
	Answer (Y/N)	No
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	240 m
	Answer (Y/N)	Yes
Is average hourly latent pedestrian crossing demand ≥ 15 EAUs OR is there requirement for system connectivity?	Latent pedestrian crossing demand	Similar to existing demand
	Required connection?	Gym; restaurants; bus stops; shopping
	Answer (Y/N)	Yes
Treatment Selection	Table-1 in Pedestrian Crossing Guide	RRFB recommended for east side since pedestrian volume is higher on that side. Extension of the existing median tip is recommended to provide pedestrian refuge area.

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

Nelson Road & Heath Avenue

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	13
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	12 EAU (assumed all age +65)
	Vehicular Volume	5,800 vehicles/day
	Answer (Y/N)	No
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	160 m
	Answer (Y/N)	No
Treatment Selection	Table-1 in Pedestrian Crossing Guide	Unmarked crosswalk appropriate. Existing zebra crosswalk will remain. Curb extension recommended to improve visibility of pedestrians on southwest corner.

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

Nelson Road & University Heights Shopping Centre

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	56
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	12 EAU (worst-case scenario)
	Vehicular Volume	>1,500 vehicles/day
	Answer (Y/N)	No
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	150 m
	Answer (Y/N)	No
Treatment Selection	Table-1 in Pedestrian Crossing Guide	Site is not a candidate for device. Pedestrian device is not recommended. Pedestrians are encouraged to use the traffic signals at Nelson Road & McOrmond Road or RRFB device recommended at Nelson Road & Heal Avenue.

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

Ludlow Street & Heath Avenue

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	NA
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	10 EAU (west=30, east=12)
	Vehicular Volume	NA
	Answer (Y/N)	No
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	140 m
	Answer (Y/N)	No
Treatment Selection	Table-1 in Pedestrian Crossing Guide	Unmarked pedestrian crosswalk is appropriate. Existing standard crosswalk to remain.

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

Lowe Road & Ludlow Street

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	92
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	32 EAU
	Vehicular Volume	9,000 vehicles/day
	Answer (Y/N)	Yes
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	95 m
	Answer (Y/N)	No
Is average hourly latent pedestrian crossing demand ≥ 15 EAUs OR is there requirement for system connectivity?	Latent pedestrian crossing demand	Similar to existing demand
	Required connection?	Schools, soccer centre, convenience store, restaurants
	Answer (Y/N)	Yes
Treatment Selection	Table-1 in Pedestrian Crossing Guide	RRFB recommended for the south leg since this crosswalk had higher pedestrian volumes

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

Appendix E

Traffic Signal Warrants

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	**Nelson**	**Direction (EW or NS)**	**EW**	**Road Authority:**	**City of Saskatoon**
Side Street (name)	**Lowe**	**Direction (EW or NS)**	**NS**	**City:**	**Saskatoon**
Quadrant / Int #		**Comments**		**Analysis Date:**	**2019 Aug 27, Tue**
for Warrant Calculation Results, please hit 'Page Down'	**CHECK SHEET**			**Count Date:**	**2019 Apr 16, Tue**
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Nelson	WB				1				1
Nelson	EB				1				1
Lowe	NB				1				
Lowe	SB				1				

Are the Lowe NB right turns significantly impeded by through movements? (y/n) n

Are the Lowe SB right turns significantly impeded by through movements? (y/n) n

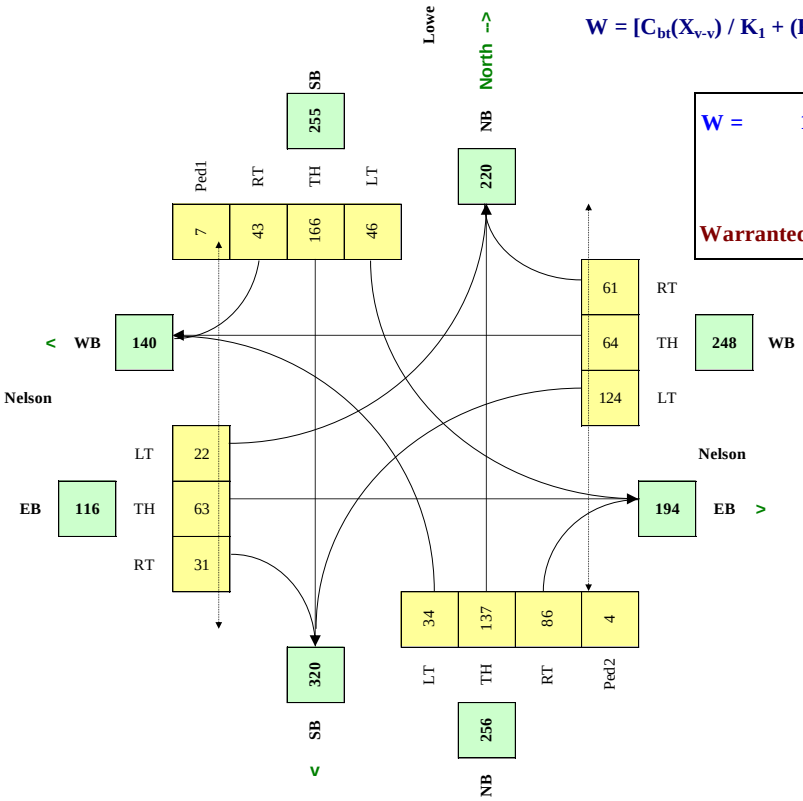
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Nelson	EW	50	20.0%	y	
Lowe	NS	50	10.0%	y	

Set Peak Hours

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1 NS**	**Ped2 NS**	**Ped3 EW**	**Ped4 EW**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**W Side**	**E Side**	**N Side**	**S Side**
7:00 - 8:00	13	48	21	45	215	27	76	37	18	4	19	7	3	3	4	3
8:00 - 9:00	68	80	61	41	226	142	100	134	27	38	107	72	6	1	8	43
11:30 - 12:30	21	130	94	44	125	9	119	32	56	28	71	39	10	4	22	10
12:30 - 13:30	38	105	93	34	151	32	173	74	58	14	46	25	11	6	21	22
4:00 - 5:00	22	223	125	60	132	15	125	44	90	37	66	15	4	6	23	14
5:00 - 6:00	41	235	120	49	148	32	149	60	115	13	68	25	9	4	27	17
Total (6-hour peak)	**203**	**821**	**514**	**273**	**997**	**257**	**742**	**381**	**364**	**134**	**377**	**183**	**43**	**24**	**105**	**109**
Average (6-hour peak)	**34**	**137**	**86**	**46**	**166**	**43**	**124**	**64**	**61**	**22**	**63**	**31**	**7**	**4**	**18**	**18**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	**112**	**108**	**4**
		Veh	***Ped***

Warranted

RESET SHEET

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	**Kenderdine Rd**	**Direction (EW or NS)**	**NS**	**Road Authority:**	**City of Saskatoon**
Side Street (name)	**115th St**	**Direction (EW or NS)**	**EW**	**City:**	**Saskatoon**
Quadrant / Int #		**Comments**	**1pm an elementary school class was crossing (81 on W side and 51 on S side). They weren't included in count as this likely doesn't occur daily.**	**Analysis Date:**	**2019 Jun 13, Thu**
				Count Date:	**2019 Jun 04, Tue**
for Warrant Calculation Results, please hit 'Page Down'	**CHECK SHEET**			**Date Entry Format:**	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Kenderdine Rd	NB				1				1
Kenderdine Rd	SB				1				1
115th St	WB				1				
115th St	EB		1				1		
Are the 115th St WB right turns significantly impeded by through movements? (y/n)							y		
							y		

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

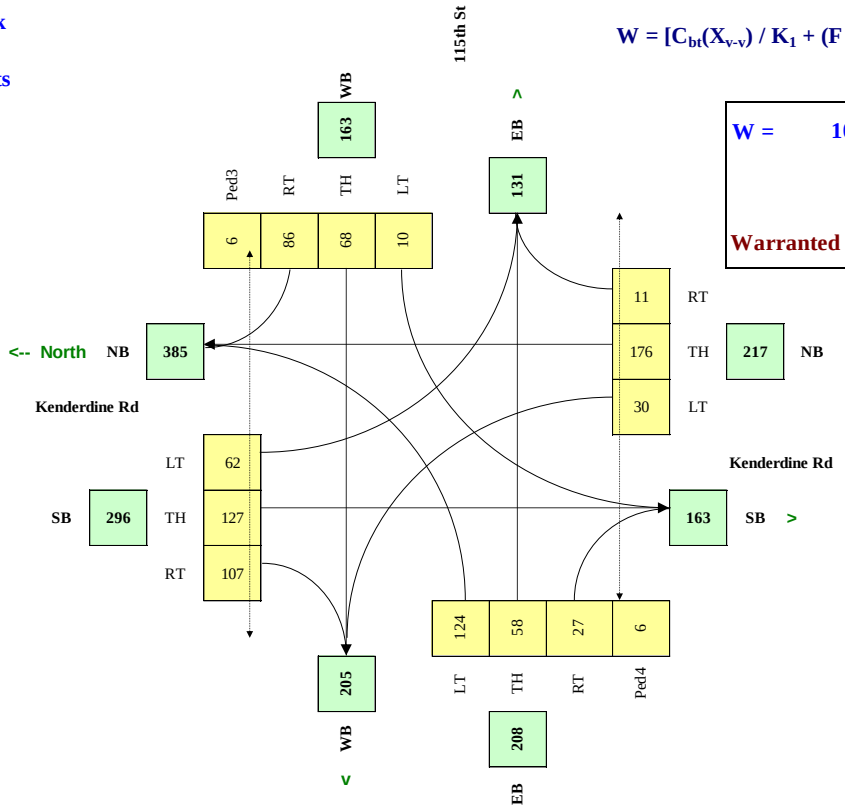
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Kenderdine Rd	NS	50	1.0%	y	
115th St	EW	50	1.0%	y	

Set Peak Hours

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1 NS**	**Ped2 NS**	**Ped3 EW**	**Ped4 EW**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**W Side**	**E Side**	**N Side**	**S Side**
7:00 - 8:00	45	185	8	11	56	44	4	80	78	54	18	8	4		7	3
8:00 - 9:00	43	274	20	47	101	85	16	106	132	126	62	27	8	16	17	5
11:30 - 12:30	16	120	7	65	107	115	6	36	53	91	41	23	15	4	3	5
12:30 - 13:30	17	130	4	63	92	105	7	54	82	133	41	15	10	6	3	10
4:00 - 5:00	18	177	16	99	187	143	19	66	85	142	87	25	2	3	2	4
5:00 - 6:00	41	171	10	86	217	151	9	63	83	195	99	61	14	2	2	7
Total (6-hour peak)	**180**	**1,057**	**65**	**371**	**760**	**643**	**61**	**405**	**513**	**741**	**348**	**159**	**53**	**31**	**34**	**34**
Average (6-hour peak)	**30**	**176**	**11**	**62**	**127**	**107**	**10**	**68**	**86**	**124**	**58**	**27**	**9**	**5**	**6**	**6**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	**104**	**97**	**7**
		Veh	***Ped***
Warranted			

RESET SHEET

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	**Lowe Rd**	**Direction (EW or NS)**	**NS**	**Road Authority:**	**City of Saskatoon**
Side Street (name)	**Ludlow St**	**Direction (EW or NS)**	**EW**	**City:**	**Saskatoon**
Quadrant / Int #		**Comments**		**Analysis Date:**	**2019 Aug 27, Tue**
for Warrant Calculation Results, please hit 'Page Down'	**CHECK SHEET**			**Count Date:**	**2019 Apr 16, Tue**
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Lowe Rd	NB				1				1
Lowe Rd	SB				1				1
Ludlow St	WB				1				
Ludlow St	EB				1				

Are the Ludlow St WB right turns significantly impeded by through movements? (y/n)	n
Are the Ludlow St EB right turns significantly impeded by through movements? (y/n)	n

Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

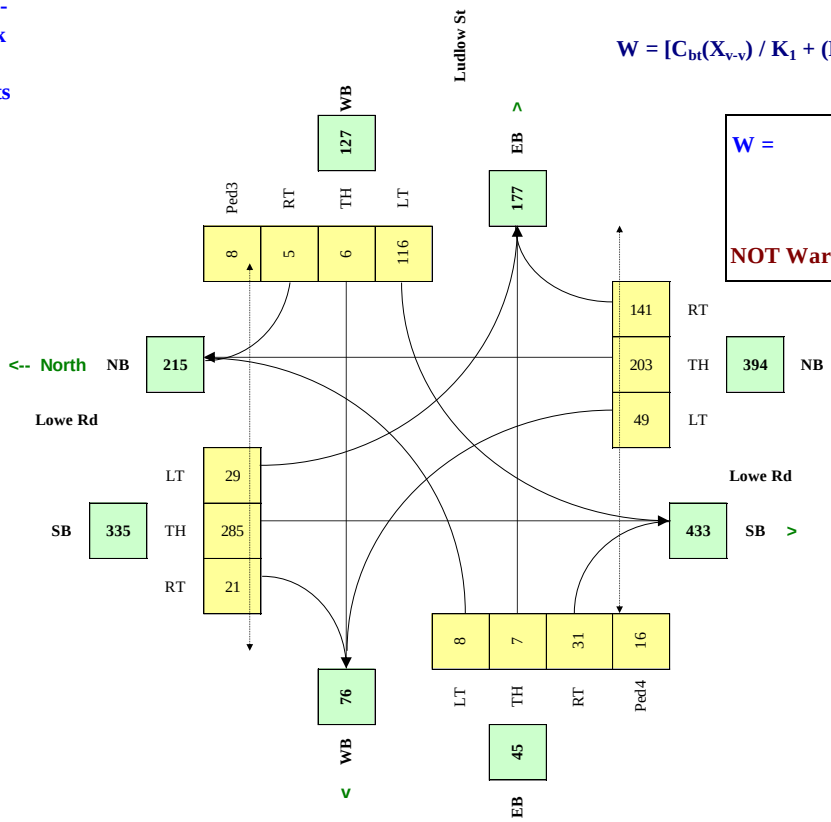
Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Lowe Rd	NS	50	10.0%	y	
Ludlow St	EW	50	2.0%	y	

Set Peak Hours

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1 NS**	**Ped2 NS**	**Ped3 EW**	**Ped4 EW**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**W Side**	**E Side**	**N Side**	**S Side**
7:00 - 8:00	11	74	84	16	301	2	48	1	0	1	1	4	3	3	1	2
8:00 - 9:00	165	185	107	19	325	56	47	4	3	2	5	43	4	2	1	6
11:30 - 12:30	17	171	156	32	252	4	143	9	8	16	6	61	15	3	11	15
12:30 - 13:30	70	173	195	42	289	47	148	18	7	13	17	37	27	10	25	67
4:00 - 5:00	11	285	170	28	263	2	180	1	4	10	5	22	21	6	6	3
5:00 - 6:00	21	331	135	39	280	15	132	4	5	4	5	20	1	8	1	2
Total (6-hour peak)	**295**	**1,219**	**847**	**176**	**1,710**	**126**	**698**	**37**	**27**	**46**	**39**	**187**	**71**	**32**	**45**	**95**
Average (6-hour peak)	**49**	**203**	**141**	**29**	**285**	**21**	**116**	**6**	**5**	**8**	**7**	**31**	**12**	**5**	**8**	**16**

Average 6-hour Peak Turning Movements

$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$



W =	**92**	**73**	**19**
		Veh	***Ped***

NOT Warranted

RESET SHEET

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	Nelson Rd	Direction (EW or NS)	EW	Road Authority:	City of Saskatoon
Side Street (name)	Shopping Centre	Direction (EW or NS)	NS	City:	Saskatoon
Quadrant / Int #		Comments		Analysis Date:	2019 Jun 14, Fri
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2019 Jun 04, Tue
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Nelson Rd	WB	1		1		1			2
Nelson Rd	EB	1		1		1			2
Shopping Centre	NB		1				1		
Shopping Centre	SB				1				

Are the Shopping Centre SB right turns significantly impeded by through movements? (y/n) y

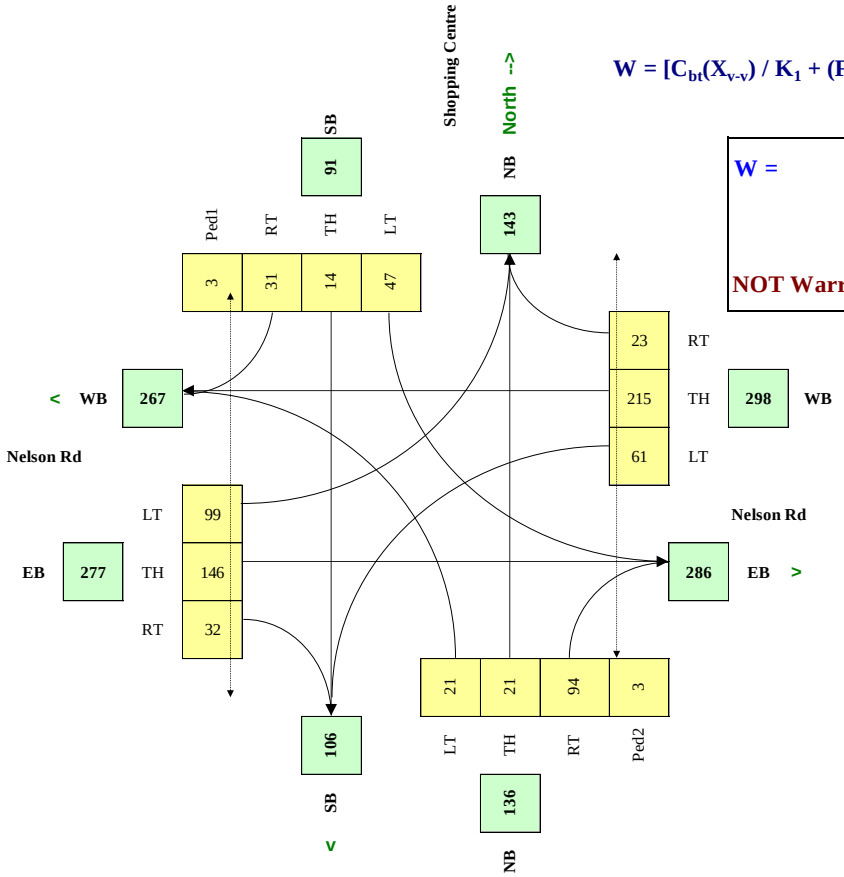
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Nelson Rd	EW	50	1.0%	y	
Shopping Centre	NS	50	1.0%	y	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	7	1	27	5		2	42	145	1	7	74	13	1		8	1
8:00 - 9:00	7	10	51	9	2	8	51	285	18	48	128	31	1	1	10	26
11:30 - 12:30	18	20	88	49	24	37	59	167	26	123	144	25	7	4	12	10
12:30 - 13:30	39	43	89	41	21	48	61	200	20	129	152	47	6	5	9	44
4:00 - 5:00	21	31	149	76	18	51	77	258	36	144	193	36	1	5	10	11
5:00 - 6:00	32	21	159	100	16	41	74	233	34	143	182	40			1	9
Total (6-hour peak)	**124**	**126**	**563**	**280**	**81**	**187**	**364**	**1,288**	**135**	**594**	**873**	**192**	**16**	**15**	**50**	**101**
Average (6-hour peak)	**21**	**21**	**94**	**47**	**14**	**31**	**61**	**215**	**23**	**99**	**146**	**32**	**3**	**3**	**8**	**17**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	56	53	3
		Veh	*Ped*

NOT Warranted

RESET SHEET

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	Nelson	Direction (EW or NS)	EW	Road Authority:	City of Saskatoon
Side Street (name)	Heal Ave	Direction (EW or NS)	NS	City:	Saskatoon
Quadrant / Int #		Comments		Analysis Date:	2019 Jun 13, Thu
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2019 Jun 04, Tue
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Nelson	WB		1			1			2
Nelson	EB		1			1			2
Heal Ave	NB		1				1		
Heal Ave	SB				1				

Are the Heal Ave SB right turns significantly impeded by through movements? (y/n) y

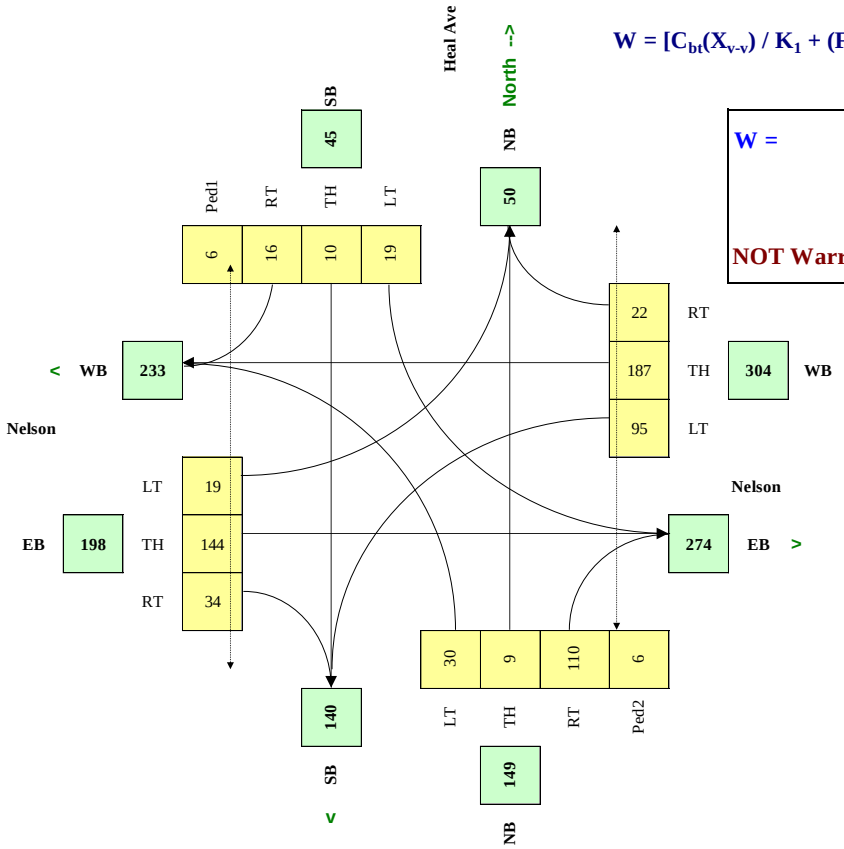
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Nelson	EW	50	1.0%	y	
Heal Ave	NS	50	1.0%	y	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	18	5	29	17	10	10	36	90	17	9	47	23	2		11	
8:00 - 9:00	26	8	69	16	11	5	75	196	23	9	123	39	3	2	14	14
11:30 - 12:30	24	6	108	20	6	18	97	162	17	19	156	47	6	5	16	9
12:30 - 13:30	40	6	139	23	12	20	112	207	21	11	166	49	14	7	52	16
4:00 - 5:00	29	15	150	14	10	17	124	235	26	34	197	22	5	11	19	4
5:00 - 6:00	44	11	167	24	13	23	126	232	30	31	177	26	5	11	35	3
Total (6-hour peak)	**181**	**51**	**662**	**114**	**62**	**93**	**570**	**1,122**	**134**	**113**	**866**	**206**	**35**	**36**	**147**	**46**
Average (6-hour peak)	**30**	**9**	**110**	**19**	**10**	**16**	**95**	**187**	**22**	**19**	**144**	**34**	**6**	**6**	**25**	**8**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	39	33	6
		Veh	*Ped*

NOT Warranted

RESET SHEET

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	**Nelson**	**Direction (EW or NS)**	**EW**	**Road Authority:**	**City of Saskatoon**
Side Street (name)	**Heath Ave**	**Direction (EW or NS)**	**NS**	**City:**	**Saskatoon**
Quadrant / Int #		**Comments**		**Analysis Date:**	**2019 Jul 02, Tue**
for Warrant Calculation Results, please hit 'Page Down'	**CHECK SHEET**			**Count Date:**	**2019 Jun 19, Wed**
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Nelson	WB				1				1
Nelson	EB				1				1
Heath Ave	NB		1				1		
Heath Ave	SB				1				
							y		
Are the Heath Ave SB right turns significantly impeded by through movements? (y/n)							n		

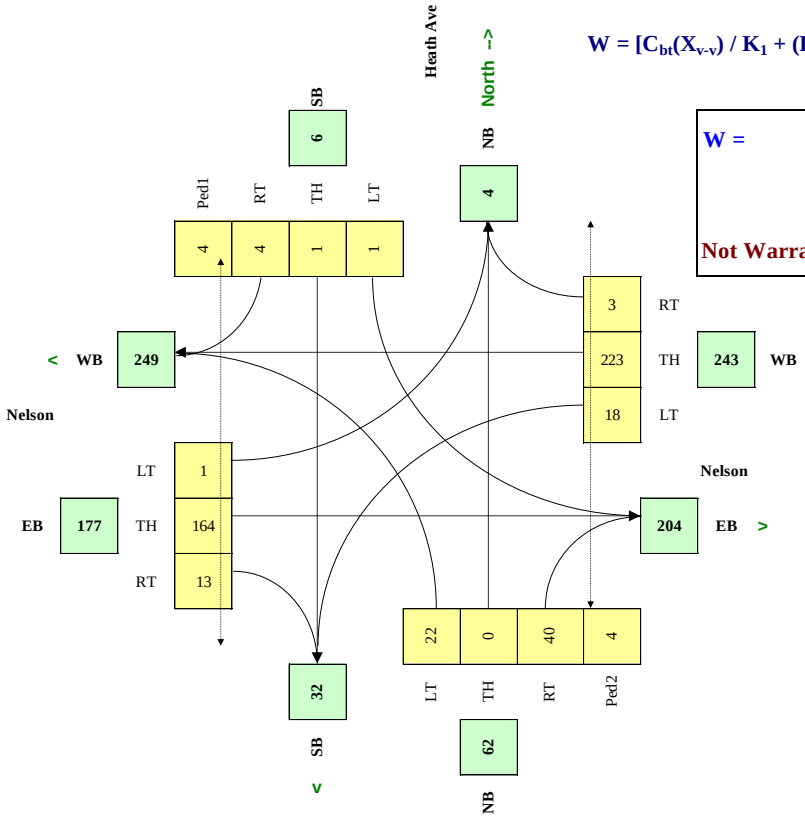
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Nelson	EW	50	1.0%	y	
Heath Ave	NS	50	1.0%	y	

Set Peak Hours

Traffic Input	**NB**			**SB**			**WB**			**EB**			**Ped1 NS**	**Ped2 NS**	**Ped3 EW**	**Ped4 EW**
	LT	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**LT**	**Th**	**RT**	**W Side**	**E Side**	**N Side**	**S Side**
7:00 - 8:00	12		12	1		5	11	95			70	6	5	5	4	4
8:00 - 9:00	22		20			3	7	286			174	12	2	6	11	19
11:30 - 12:30	17	1	42	1	1	4	24	208	3	3	190	13		2	17	7
12:30 - 13:30	28		42	4	2	6	15	213	6		195	14	8	9	17	15
4:00 - 5:00	35	1	68	1	3	3	26	220	3	2	173	17	4	2	32	10
5:00 - 6:00	19		53	1	0	2	25	313	3	3	179	13	2	2	17	9
Total (6-hour peak)	**133**	**2**	**237**	**8**	**6**	**23**	**108**	**1,335**	**15**	**8**	**981**	**75**	**21**	**26**	**98**	**64**
Average (6-hour peak)	**22**	**0**	**40**	**1**	**1**	**4**	**18**	**223**	**3**	**1**	**164**	**13**	**4**	**4**	**16**	**11**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	13	9	4
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

Appendix F

Collision Analysis

Street 1	Street 2	Ugrid	All collisions (2014-2018)	All collisions (2018)	Right Angle, Left Turn & Right Turn (2014-2018)	Right Angle, Left Turn & Right Turn (2018)	Average # of Collisions Per Year (2014-2018)
Nelson Rd	Centennial Collegiate	SKO5-30	12	5	2	1	2
Nelson Rd	St. Joes & Alice Turner Driveways	SKO5-26	19	1	5	0	4
Nelson Rd	Lowe Rd	SKP5-24	20	3	4	0	4
Nelson Rd	Heath Ave	SKP5-37	3	1	0	0	1
Nelson Rd	419	SKP5-41	10	0	0	0	2
Nelson Rd	Heal Ave	SKP5-35	12	0	3	0	2
Heal Ave	1802 Driveway	SKP5-38	14	4	3	2	3
Heal Ave	Ludlow St	SKP5-33	23	4	22	4	5
Ludlow St	419 Driveway	SKP5-27	8	2	3	1	2
Ludlow St	Co-Op Driveway	SKP5-34	1	0	0	0	0
Lowe Rd	Ludlow St	SKP5-32	29	4	20	2	6
Lowe Rd	Co-Op Driveway	SKP5-9	1	0	0	0	0
Berini Dr	Keevil Cres	SKO5-23	2	0	2	0	0
Berini Dr	115th St	SKO5-8	15	2	11	1	3
115th St	103 Driveway	SKO5-15	4	1	3	1	1
115th St	Keevil Way	SKO5-12	1	0	0	0	0
115th St	Kenderdine Rd	SKP5-5	13	2	5	1	3
Kenderdine Rd	Perehudoff to 115th St	SKP5-29	3	1	2	0	1
Kenderdine Rd	Perehudoff Cres	SKP5-8	2	1	2	1	0
McOrmond Dr	Bulk Barn Driveway	SKP5-44	14	3	1	0	3

Appendix G

Heal Avenue and Ludlow Street Intersection Review

INTERSECTION OF

HEAL AVENUE & LUDLOW STREET

TRAFFIC ANALYSIS

November 2019

City of Saskatoon

Authorization

Prepared By:

Justine Marcoux, P.Eng.,

Transportation Engineer

Checked By:

Nathalie Baudais, P.Eng.,

Senior Transportation Engineer

David LeBoutillier, P.Eng.,

Engineering Manager, Transportation

TABLE OF CONTENTS

EXHIBITS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

1.1 Background

In 2019, residents of the University Heights Suburban Centre (SC) neighbourhood participated in a neighbourhood traffic review. As part of the neighbourhood traffic review process, a meeting was held in the spring to provide residents with the opportunity to identify traffic concerns in their neighbourhood. Concerns about the intersection of Heal Avenue and Ludlow Street were raised at the meeting.

Most of the concerns received about this intersection focused on high traffic volumes (i.e. busy intersection), difficulty turning left or crossing from Ludlow Street, and pedestrian safety. Many residents requested a four-way stop to address the issues.

The Heal Avenue and Ludlow Street intersection is in the University Heights SC neighbourhood (Figure 1-1). The intersection is currently configured as a two-way stop.

Figure 1-1: Intersection of Heal Avenue & Ludlow Street

Based on the concerns expressed, the City conducted a detailed traffic analysis for the intersection.

1.2 Study Scope

The objective of the traffic study was to assess and analyze the existing and future traffic conditions, identify potential operational and safety issues, develop potential alternative solutions, evaluate alternative solutions and identify the preferred solution.

1.3 Methodology

To achieve the objective outlined above, the methodology included the following tasks:

- Collect traffic and pedestrian data at the intersection;
- Review the collision history at the intersection over the past five years (2014 to 2018);
- Review signage, bus stops and driveways;
- Complete traffic signal warrant analysis in accordance with *The Traffic Signal and Pedestrian Signal Head Warrant Handbook*, *Transportation Association of Canada, 2014*;
- Analyze the intersection considering two separate measures of performance:
    - The volume to capacity ratio, and
    - The level of service (LOS) for each turning movement, based on the average control delay per vehicle.
- Identify operational and safety issues for existing conditions;
- Develop alternative solutions to address operational and safety issues;
- Evaluate alternative solutions using multiple criteria (including traffic operations, traffic safety, costs, etc.); and
- Identify preferred solution.

2 EXISTING CONDITIONS

Heal Avenue is classified as a collector roadway with four travel lanes and an additional northbound right turn lane at the intersection. Ludlow Street is classified as a local roadway with two travel lanes and two parking lanes on the west approach. The east approach of Ludlow Street is a private driveway which leads to a number of stores, restaurants and a gas station. Each street has a posted speed limit of 50 kph.

The existing traffic control device at the intersection of Heal Avenue and Ludlow Street is a two-way stop for Ludlow Street.

2.1 Past Studies

No previous studies were identified for this intersection.

2.2 Collision Analysis

The most recent five-year collision data available from Saskatchewan Government Insurance (SGI) is from 2014 to 2018. This data was reviewed for the intersection of Heal Avenue and Ludlow Street and presented in Table 2-1.

Table 2-1: Collision History for Heal Avenue & Ludlow Street

Year	Number of Collisions	Type of Collision			
		Left Turn	Right Angle	Rear End	Other
2014	5	1	3		1
2015	3		2		1
2016	7		7		
2017	4	1	3		
2018	4	1	2		1
Total	**23**	**3**	**17**		**3**

The following was noted based on the collision history listed above:

- 74% of the collisions at this intersection were right angle collisions.
- Two collisions resulted in injuries. The remaining collisions resulted in property damage only.
- Major contributing factors included Inattentive (52%) and Fail to Yield (61%).

2.3 Existing Traffic Volumes

Traffic and pedestrian counts were collected at this intersection in June 2019 during the weekday peak hours (7:00 am to 9:00 am; 11:30 am to 1:30 pm; and 3:00 pm to 6:00 pm). The counts were used to complete the traffic signal warrant and capacity analysis for alternative solutions.

The existing weekday AM and PM peak hour traffic volumes are illustrated in Figure 2-1.

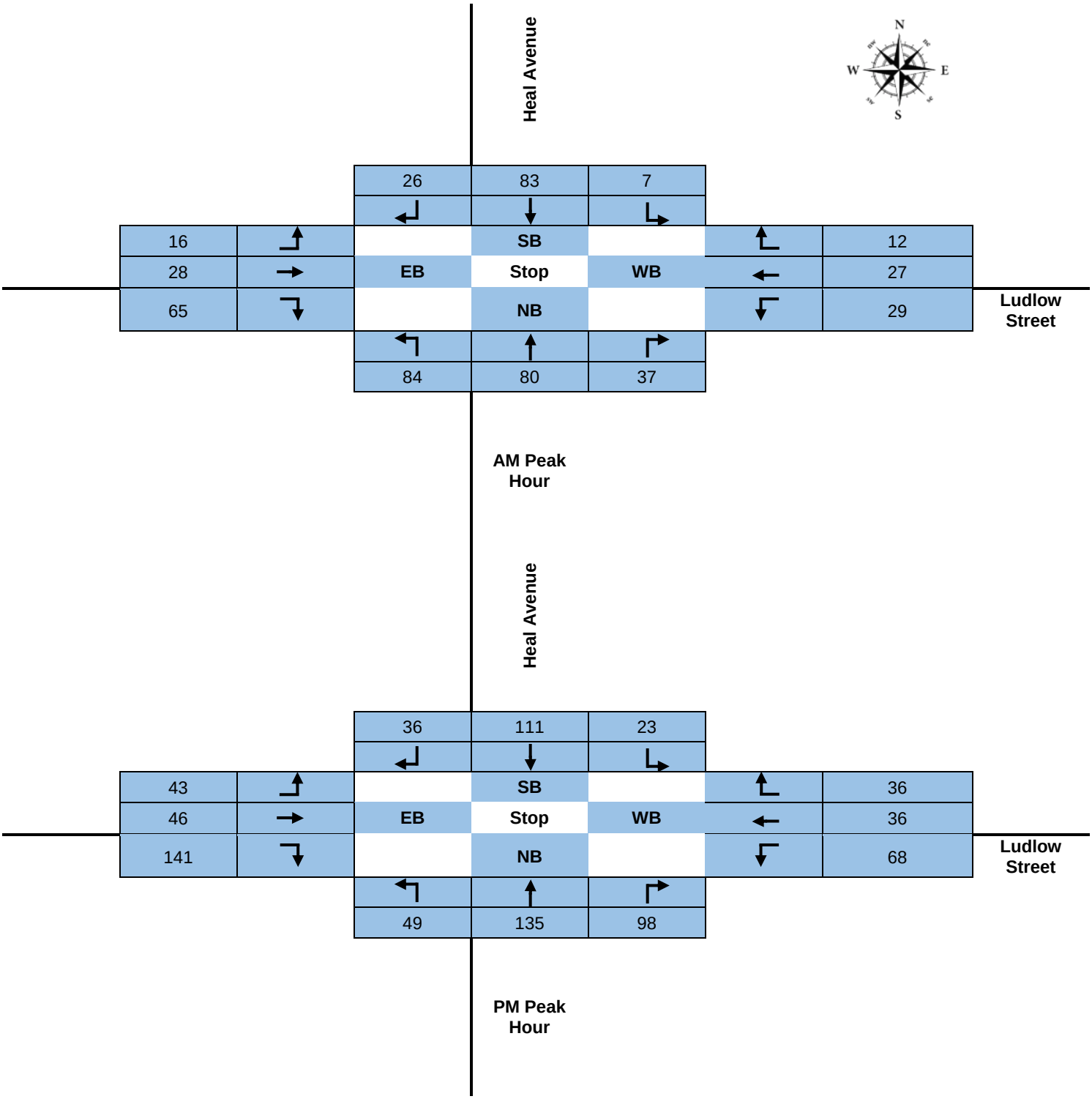


Figure 2-1: Existing Peak Hour Traffic Volumes

2.4 Intersection Capacity Analysis

Intersection capacity analysis was undertaken for the study intersection by using Synchro 9.0, a traffic analysis software package based on the methods outlined in the Highway Capacity Manual (HCM) 2000. This model uses standard procedures to determine the Volume to Capacity Ratio (v/c) and the corresponding delay-based traffic Level of Service (LOS) for movements at each intersection in the study network.

In general terms, for design purposes, the City of Saskatoon generally accepts a LOS D or better for all movements. If the LOS is worse than D, then mitigation measures may be recommended; however, individual approaches and/or turning movements experiencing LOS E may be considered acceptable depending on their respective v/c ratios, queue lengths and overall intersection LOS.

For unsignalized intersections, the LOS methodology considers intersection geometry, traffic volumes, speed limit, and type of intersection control. For signalized intersections, the LOS methodology considers intersection geometry, traffic volumes, speed limit, and signal timing plan. Delays range from LOS 'A' conditions with minimal delay to LOS 'F' representing longer delay. The LOS criteria for unsignalized and signalized intersections are summarized in Table 2-2.

Table 2-2: HCM Level of Service Summary

Level of Service (LOS)	Average Delay for Unsignalized Intersection (seconds per vehicle)	Average Delay for Signalized Intersection (seconds per vehicle)
A	0 -10	0 -10
B	> 10 - 15	> 10 - 20
C	> 15 - 25	> 20 - 35
D	> 25 - 35	> 35 - 55
E	> 35 - 50	> 55 - 80
F	> 50	> 80

The v/c ratio provides a quantitative value as to how much of the intersection's capacity is used to move traffic under the given traffic condition. If the ratio is greater than one, the available capacity has been exceeded and traffic conditions begin to break down. Typically, a v/c ratio of 0.9 or lower for all intersection movements is accepted in urban areas.

The results of the existing intersection capacity analysis for Heal Avenue and Ludlow Street are summarized in Table 2-3.

Table 2-3: Heal Avenue & Ludlow Street Intersection Capacity - Existing Conditions

Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
		v/c ratio	Delay (s)	LOS	Queue (m)	v/c ratio	Delay (s)	LOS	Queue (m)
SB	LT	0.01	0	A	0	0.02	0	A	0
	Thru	0.04	0	A	0	0.06	0	A	0
	RT	0.04	0	A	0	0.06	0	A	0
NB	LT	0.06	0	A	0	0.04	0	A	0
	Thru	0.06	0	A	0	0.06	0	A	0
	RT	0.02	0	A	0	0.06	0	A	0
EB	LT	0.10	13.1	B	2.4	0.23	15.9	C	6.6
	Thru	0.10	13.1	B	2.4	0.23	15.9	C	6.6
	RT	0.07	8.9	A	1.7	0.16	9.4	A	4.3
WB	LT	0.13	13.9	B	3.4	0.32	20.1	C	10.4
	Thru	0.13	13.9	B	3.4	0.32	20.1	C	10.4
	RT	0.01	8.6	A	0	0.04	8.9	A	1.0
Intersection Summary		**Max 0.13**	**Average 5.6**	**A**	**-**	**Max 0.32**	**Average 7.0**	**A**	**-**

The following was noted based on the Synchro analysis for existing conditions at this intersection:

- Slight delay occurs on the east and west approaches during the PM Peak Hour.
- All approaches operate at an acceptable level of service (LOS C or greater).

3 ALERNATIVE SOLUTIONS

3.1 Development of Alternatives

A number of alternatives were developed and analyzed for improvements at this intersection. These options are illustrated in **Exhibit A** and include:

- Option A: Geometric Improvements (northbound left, through, right lanes) with a Rectangular Rapid Flashing Beacons (RRFB).
- Option B: Geometric Improvements (northbound shared left/through and shared through/right lanes) with an RRFB.
- Option C: All-way stop & Geometric changes (same as Option B).

<u>Option A:</u>
Reducing the number of northbound through lanes may result in lower right angle collisions. A pedestrian warrant was completed to address the pedestrian safety concerns. With this lane configuration an RRFB is warranted. The pedestrian warrant analysis is included in **Exhibit B**.

Option B:
Reducing the overall number of northbound lanes decreases the width of the crossing distance and conflict points. It simplifies the intersection by allowing the queued eastbound/westbound drivers to only determine gaps from two approaching northbound lanes. Similar to Option A, an RRFB is warranted.

Option C:
An all-way stop could improve safety at the intersection. The all-way stop warrant analysis is included in **Exhibit C**. It should be noted that all-way stops are typically not desirable on multi-lane roadways, as it causes driver confusion (i.e. who has the right-of-way) and safety concerns for pedestrians. Therefore the all-way stop has been combined with a reduction in the northbound lanes to two lanes (i.e. shared left / through and shared through / right) similar to the configuration shown in Option B.

Although a traffic signal alternative was developed for the intersection, a traffic signal is not warranted at this location. The signal warrant analysis is included in **Exhibit D**.

The Synchro analysis results for each option is included in **Exhibit E**.

3.2 Evaluation of Alternatives

The alternatives were evaluated according to the following evaluation criteria:

- Traffic Operations;
- Pedestrian & Cyclist Accommodation;
- Traffic Safety; and
- Cost.

The relative evaluation of the alternatives can be found in **Table 3-1**. The scale for the evaluation is:

Poor	Fair	Good	Excellent
			

Table 3-1: Evaluation Matrix

Criteria	Criteria Details	Option A Geometric Changes Northbound Left, Through, Right Lanes and RRFB	Option B Geometric Changes Northbound Shared Left/ Through & Through/Right and RRFB	Option C All-Way Stop and Geometric Changes Northbound Shared Left/ Through & Through/Right
Traffic Operations	LOS, Average delay per vehicle (seconds) and v/c ratio for AM and PM peak hours	**AM:** LOS: A Delay: 5.6 v/c: 0.13 **PM:** LOS: A Delay: 7.1 v/c: 0.32	**AM:** LOS: A Delay: 5.6 v/c: 0.14 **PM:** LOS: A Delay: 7.2 v/c: 0.35	**AM:** LOS: A Delay: 7.8 v/c: 0.20 **PM:** LOS: A Delay: 9.1 v/c: 0.27
				
Pedestrian & Cyclist Accommodation	Rating of the impact on cyclists and pedestrians, and how well the alternative will accommodate cyclists and pedestrians	Pedestrian / cyclist protection only provided on side with RRFB; decreased crossing distance with median island & curb extension on north side	Pedestrian / cyclist protection only provided on side with RRFB	Stop condition provides high level of protection for all sides of the intersection
				
Traffic Safety	Crash severity and rate, number of conflict points, and speed reduction potential	May reduce number of collisions; may reduce speed	Reduces number of conflict points; may reduce number of collisions; may reduce speed	Reduces number of conflict points; reduces number/severity of right angle and left turn collisions; reduces speed
				
Costs	Construction cost	Moderate costs for permanent installation of curb extension and median islands	Moderate to significant costs for permanent installation of curb work to remove right turn bay and to install median islands	Moderate to significant costs for permanent installation of curb work to remove right turn bay and install median islands
				
Total Relative Score:		**2.0**	**2.25**	**3.5**

4 CONCLUSION AND RECOMMENDATIONS

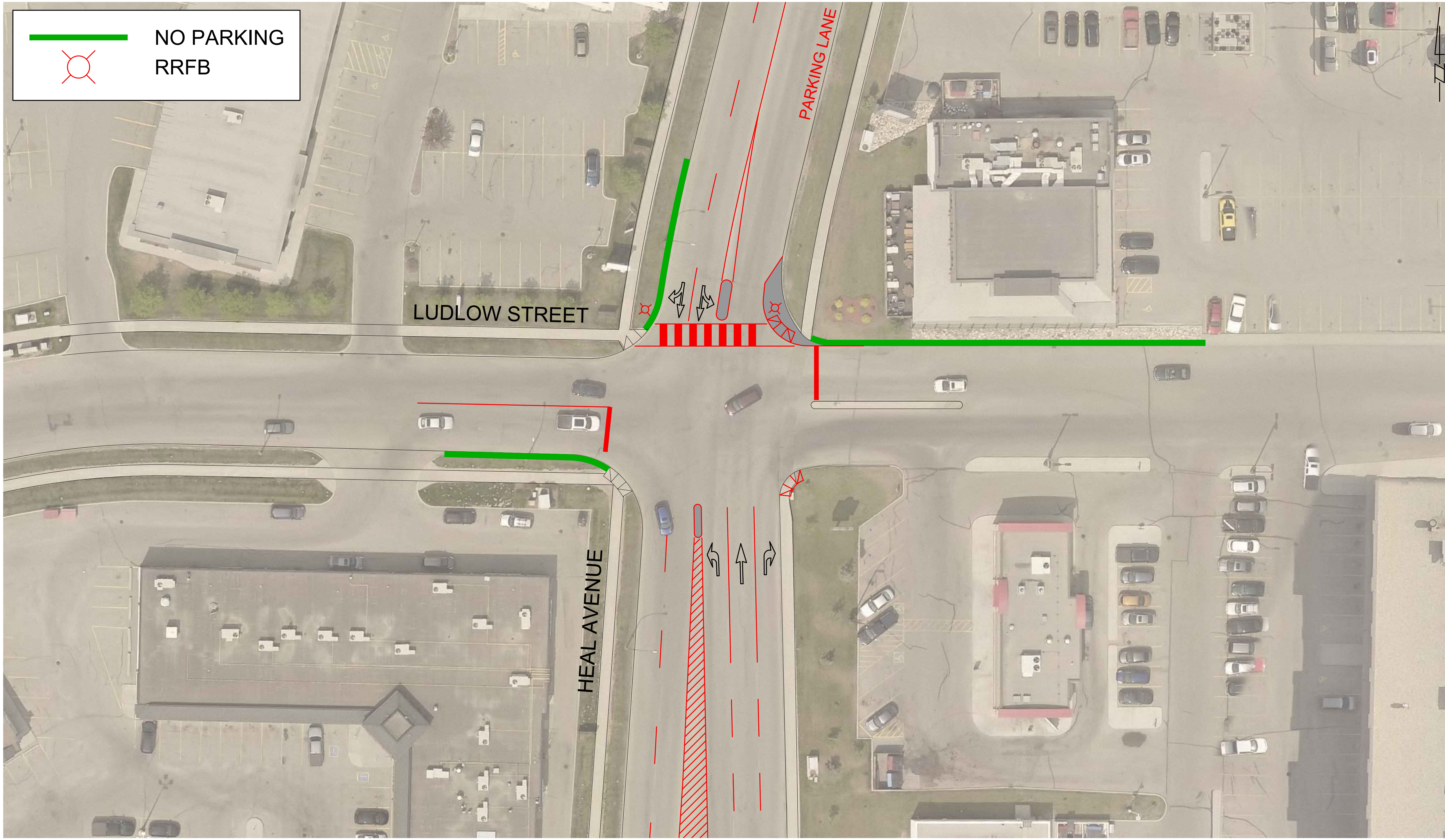
Based on the analysis, an all-way stop with geometric changes (northbound shared left/through and shared through/right) is recommended.

The installation of temporary median islands on the north and south approaches and pavement markings for the median, northbound right turn lane and lane markings is recommended as a mid-term solution.

All temporary features will be reviewed and evaluated after installation to determine its effectiveness. If proven effective, permanent median islands and curbing for the northbound right turn lane will be installed.

EXHIBIT A

ALTERNATIVE SOLUTIONS



PLAN DESCRIPTION/REVISION	DATE	BY

SEAL

CHECKED BY: DATE

CHECKED BY: DATE

DRAWN BY JMR DATE 2019-SEP-11

City of Saskatoon
Transportation

INTERSECTION IMPROVEMENTS

HEAL AVENUE & LUDLOW STREET

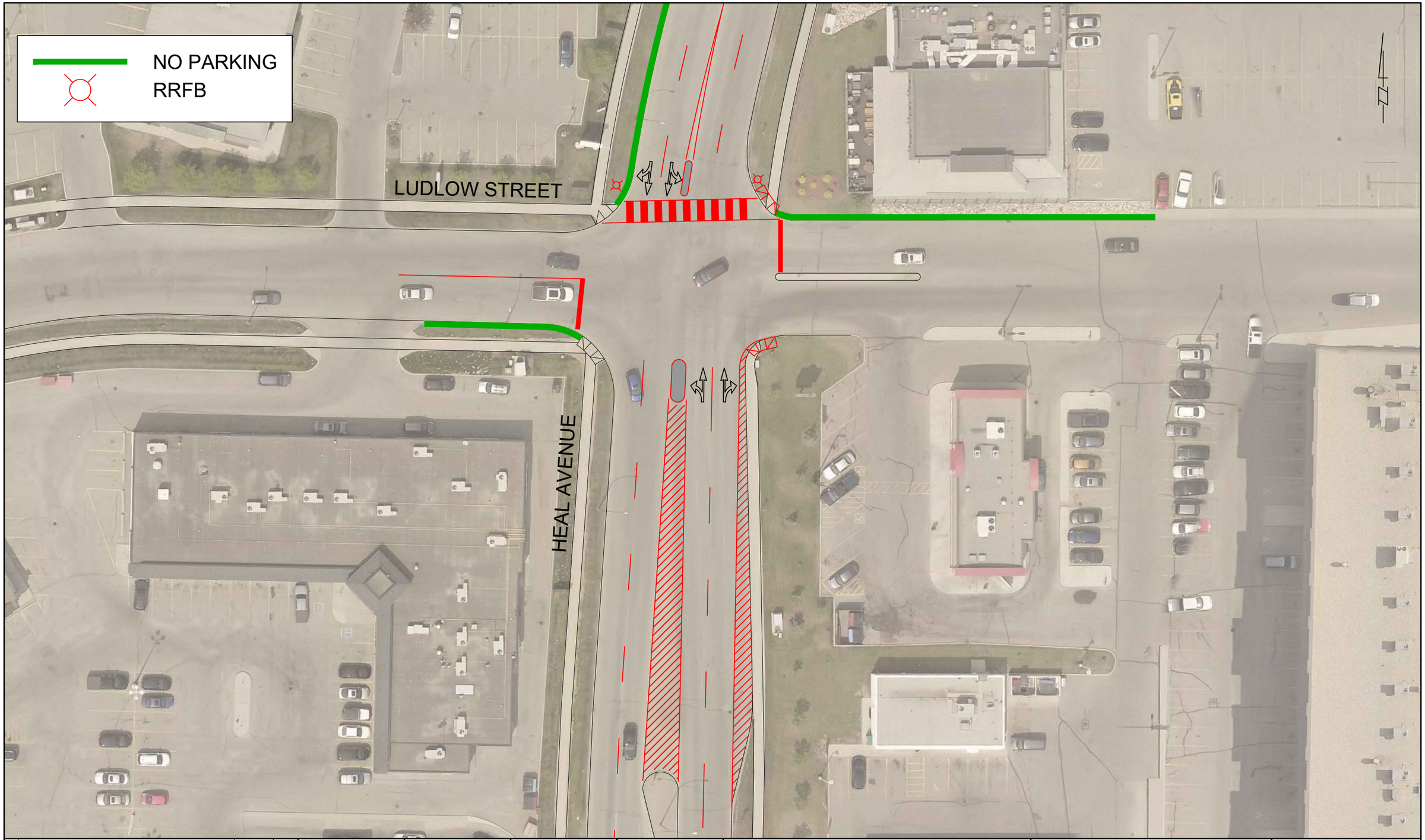
ENGINEER

SCALES : HOR. 1:500 VERT.

DATE

SHEET NO. 1 OF 1

PLAN NO. OPTION A



PLAN DESCRIPTION/REVISION	DATE	BY

SEAL

CHECKED BY: _____ DATE

CHECKED BY: _____ DATE

DRAWN BY JMR DATE 2019-SEP-11

City of Saskatoon
Transportation

INTERSECTION IMPROVEMENTS

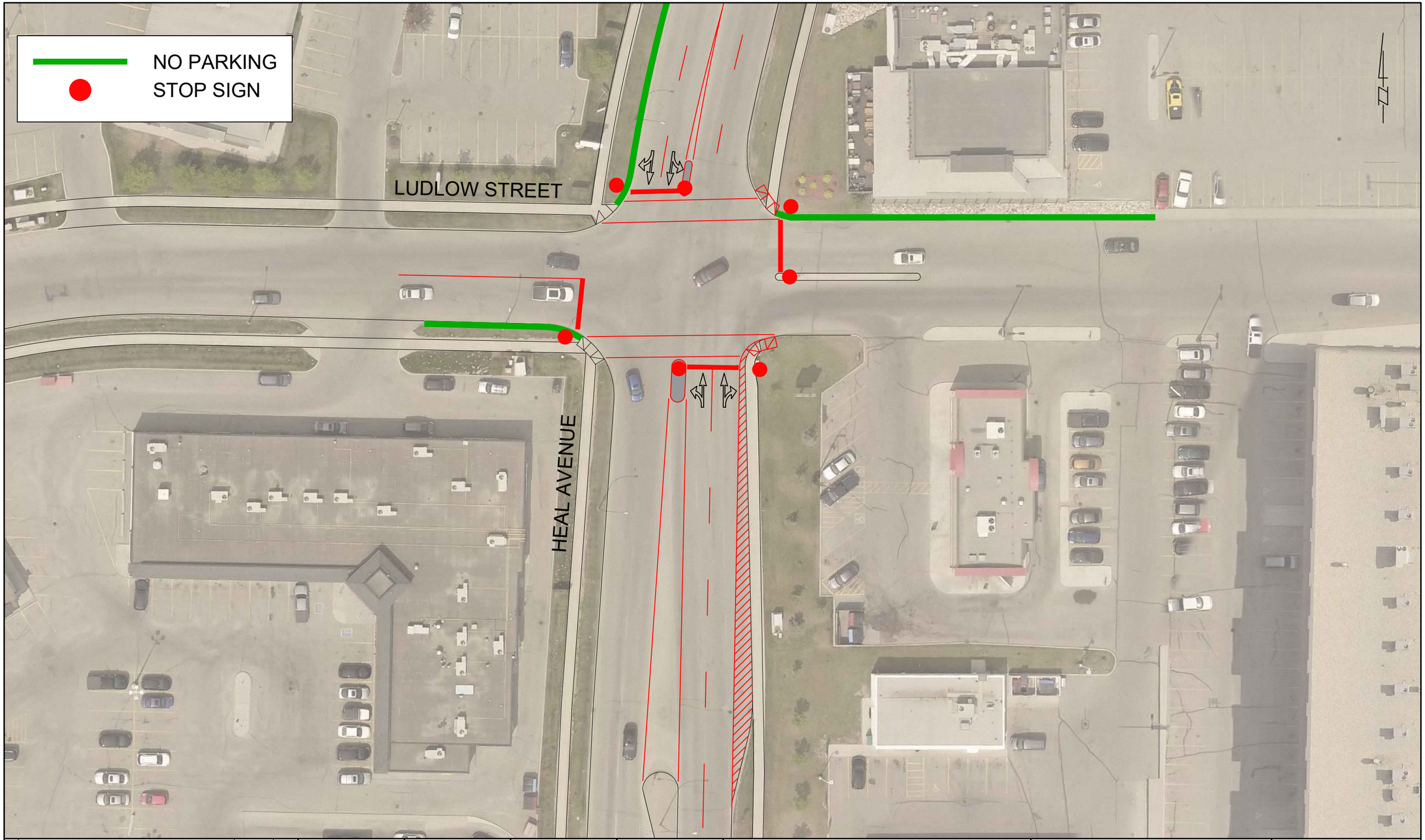
HEAL AVENUE & LUDLOW STREET

ENGINEER _____ DATE

SCALES : HOR. 1:500 VERT.

SHEET NO. 1 OF 1

PLAN NO. OPTION B



PLAN DESCRIPTION/REVISION	DATE	BY	SEAL

CHECKED BY: _____ DATE _____

CHECKED BY: _____ DATE _____

DRAWN BY JMR DATE 2019-SEP-11

City of Saskatoon
Transportation

INTERSECTION IMPROVEMENTS

HEAL AVENUE & LUDLOW STREET

ENGINEER _____ DATE _____

SCALES : HOR. 1:500 VERT. _____

SHEET NO. 1 OF 1

PLAN NO. OPTION C

EXHIBIT B

PEDESTRIAN WARRANT ANALYSIS

Ludlow Street & Heal Avenue

Preliminary Assessment Decision Point		Pedestrian Crossing
Traffic Signal Warrant	Points	41
	Warranted (Y/N)	No
Average Hourly Pedestrian Volume ≥ 15 EAU[1]s AND vehicular volume ≥1,500 veh/day?	Average Hourly Pedestrian Volume	26 EAU (worst-case scenario)
	Vehicular Volume	4,800 vehicles/day
	Answer (Y/N)	Yes
Is this site > 200 metres from the nearest traffic control device?	Distance from the nearest traffic control device	180 m
	Answer (Y/N)	No
Is average hourly latent pedestrian crossing demand ≥ 15 EAUs OR is there requirement for system connectivity?	Latent pedestrian crossing demand	Similar to existing demand
	Required connection?	School route; restaurants
	Answer (Y/N)	Yes
Treatment Selection	Table-1 in Pedestrian Crossing Guide	All-way stop is recommended

[1] EAU – Equivalent Adult Units to account for pedestrian age and physical ability. Adults – 1.0 EAU; Children ≤ 12 years – 2.0 EAUs; Older pedestrians ≥ 65 years – 1.5 EAUs; Pedestrian with impairment – 2.0 EAUs.

EXHIBIT C

ALL-WAY STOP WARRANT ANALYSIS

All-way Stop Assessment (Policy C07-007 – Traffic Control – Use of Stop & Yield Signs)

Step 1:

One of the following criteria must be met to warrant an all-way stop:

i) When five or more collisions are reported in a one-year period within the three years and are of a type susceptible to correction be an all-way stop control.
ii) When the total number of vehicles entering the intersection from all approaches averages at least 600 per hour for the peak hour OR the total intersection entering volume exceeds 6,000 vehicles per day.
iii) The average delay per vehicle to the minor street traffic must be 30 seconds or greater during the peak hour.
iv) As an interim measure to control traffic while arrangements are being made for the installation of traffic signals.
v) When an engineering study has identified a safety concern dangerous pattern of traffic that is susceptible to correction by an all-way stop control.

Location	Criteria 1: # of Collisions	Criteria 2: Peak hour is greater than 600 vehicles OR total exceeds 6,000 vpd	Criteria 3: Delay	Criteria 4: Interim Measure	Criteria 5: Safety Concern	All-Way Stop Warrant
Ludlow Street & Heal Avenue	7 – Criteria met	786 – Criteria met 8,270 – Criteria met	NA	No – Criteria NOT met	Yes - Criteria met.	Criteria met. Proceed to Step 2.

Continue to Step 2 if one of the criteria are met.

Step 2:

The following conditions must be met for all-way stop control to be considered:

i) The combined volume of traffic entering the intersection over the five peak hour periods from the minor street must be at least 25% of the total volume for a three-way stop control, and at least 35% of the total volume for a four-way stop control.

ii) There can be no all-way stop control and traffic signal within 200 metres of the proposed intersection being considered for all-way stop control on either of the intersecting streets.

Location	Condition 1: % of Traffic from minor street	Condition 2: Traffic Signals or all-way stop within 200m	All-Way Stop Warrant
Ludlow Street & Heal Avenue	42% - Condition met	Yes – Condition NOT met (traffic signals 175m south)	Additional analysis confirmed all-way stop is appropriate. Refer to Ludlow Street & Heal Avenue Analysis for more information.

EXHIBIT D

TRAFFIC SIGNAL WARRANT ANALYSIS

City of Saskatoon Canadian Matrix Traffic Signal Warrant Analysis

Main Street (name)	Heal Ave	Direction (EW or NS)	NS	Road Authority:	City of Saskatoon
Side Street (name)	Ludlow	Direction (EW or NS)	EW	City:	Saskatoon
Quadrant / Int #		Comments		Analysis Date:	2019 Jun 13, Thu
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2019 Jun 04, Tue
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	UpStream Signal (m)	# of Thru Lanes
Heal Ave	NB		1	1			1		2
Heal Ave	SB		1			1			2
Ludlow	WB		1				1		
Ludlow	EB		1				1		
							y		
							n		

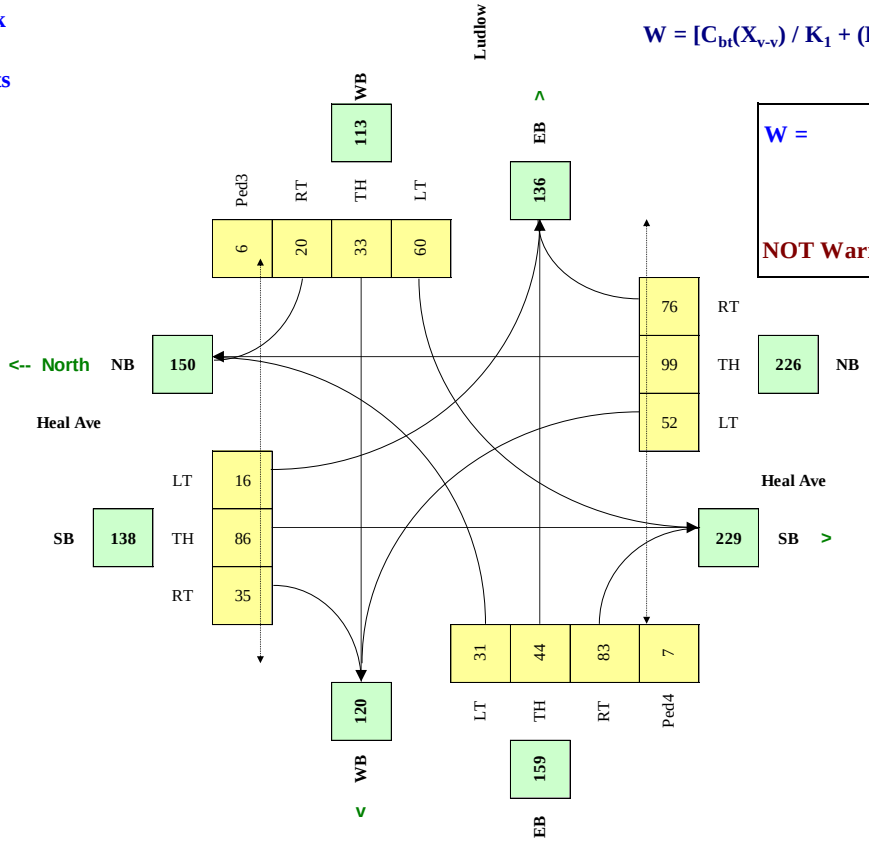
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	y
Metro Area Population	(#)	250,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Heal Ave	NS	50	1.0%	y	
Ludlow	EW	50	1.0%	y	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
7:00 - 8:00	41	44	26	2	40	19	29	10	4	8	9	31	1			
8:00 - 9:00	76	80	37	7	83	26	29	27	12	16	28	65		3	3	2
11:30 - 12:30	53	91	105	15	89	39	75	44	21	30	67	85	8	3	12	9
12:30 - 13:30	54	123	97	29	93	47	92	49	26	45	59	82	1	2	13	19
4:00 - 5:00	58	127	84	19	112	38	64	36	19	43	52	132	2	3	3	4
5:00 - 6:00	27	126	105	24	101	42	69	31	39	46	49	105		1	3	6
Total (6-hour peak)	**309**	**591**	**454**	**96**	**518**	**211**	**358**	**197**	**121**	**188**	**264**	**500**	**12**	**12**	**34**	**40**
Average (6-hour peak)	**52**	**99**	**76**	**16**	**86**	**35**	**60**	**33**	**20**	**31**	**44**	**83**	**2**	**2**	**6**	**7**

Average 6-hour Peak Turning Movements



$$W = [C_{bt}(X_{v\text{-}v}) / K_1 + (F\,(X_{v\text{-}p})\,L) / K_2] \times C_i$$

W =	41	36	5
		Veh	*Ped*

NOT Warranted

RESET SHEET

EXHIBIT E

SYNCHRO ANALYSIS RESULTS

Option 1: Geometric changes (northbound left, through, right) and RRFB (north side)

Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
		v/c ratio	Delay (s)	LOS	Queue (veh)	v/c ratio	Delay (s)	LOS	Queue (veh)
SB	LT	0.01	0	A	0	0.02	0	A	0
	Thru	0.04	0	A	0	0.06	0	A	0
	RT	0.04	0	A	0	0.06	0	A	0
NB	LT	0.06	0	A	0	0.04	7.6	A	0
	Thru	0.05	0	A	0	0.09	0	A	0
	RT	0.02	0	A	0	0.06	0	A	0
EB	LT	0.10	13.4	B	0	0.24	16.8	C	1
	Thru	0.10	13.4	B	0	0.24	16.8	C	1
	RT	0.07	8.9	A	0	0.16	9.4	A	1
WB	LT	0.13	13.9	B	0	0.32	20.1	C	1
	Thru	0.13	13.9	B	0	0.32	20.1	C	1
	RT	0.01	8.8	A	0	0.04	9.3	A	0
Intersection Summary		**Max 0.13**	**Average 5.6**	**A**	**-**	**Max 0.32**	**Average 7.1**	**A**	**-**

Option 2: Geometric changes (northbound shared left/through and shared through/right) and RRFB (north side)

Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
		v/c ratio	Delay (s)	LOS	Queue (veh)	v/c ratio	Delay (s)	LOS	Queue (veh)
SB	LT	0.01	0	A	0	0.02	0	A	0
	Thru	0.04	0	A	0	0.06	1.2	A	0
	RT	0.04	0	A	0	0.06	0	A	0
NB	LT	0.06	0	A	0	0.04	0	A	0
	Thru	0.06	2.7	A	0	0.11	1.7	A	0
	RT	0.05	0	A	0	0.11	0	A	0
EB	LT	0.10	13.2	B	0	0.23	15.9	C	1
	Thru	0.10	13.2	B	0	0.23	15.9	C	1
	RT	0.07	8.9	A	0	0.16	9.4	A	1
WB	LT	0.14	14.2	B	0	0.35	22.0	C	1
	Thru	0.14	14.2	B	0	0.35	22.0	C	1
	RT	0.01	8.7	A	0	0.04	9.2	A	0
Intersection Summary		**Max 0.14**	**Average 5.6**	**A**	**-**	**Max 0.35**	**Average 7.2**	**A**	**-**

Option 3: All-way stop and geometric changes (northbound shared left/through and shared through/right)

Movement		Weekday AM Peak Hour				Weekday PM Peak Hour			
		v/c ratio	Delay (s)	LOS	Queue (veh)	v/c ratio	Delay (s)	LOS	Queue (veh)
SB	LT	0.08	8.7	A	0	0.15	9.0	A	1
	Thru	0.10	8.0	A	0	0.16	8.8	A	1
	RT	0.10	7.2	A	0	0.16	8.6	A	1
NB	LT	0.20	7.6	A	1	0.21	9.5	A	1
	Thru	0.20	7.4	A	0	0.27	9.4	A	1
	RT	0.11	7.3	A	0	0.27	9.3	A	1
EB	LT	0.07	7.9	A	0	0.17	9.3	A	1
	Thru	0.07	7.9	A	0	0.17	9.3	A	1
	RT	0.09	7.0	A	0	0.23	8.7	A	1
WB	LT	0.10	8.2	A	0	0.20	9.9	A	1
	Thru	0.10	8.2	A	0	0.20	9.9	A	1
	RT	0.02	6.7	A	0	0.06	7.6	A	0
Intersection Summary		**Max 0.20**	**Average 7.8**	**A**	**-**	**Max 0.27**	**Average 9.1**	**A**	**-**

Appendix H

Public Meeting #2 – September 26, 2019

CITY OF SASKATOON

University Heights Suburban Centre
Neighbourhood Traffic Review Minutes

Date: Thursday, September 26, 2019

Time: 7:00 – 9:00 pm

Location: Forest Grove Community Church (502 Webster Street, Saskatoon)

Attendees:

Name	Position
Kathy Dahl	Facilitator, Great Works Consulting
Mitch Riabko	Facilitator, Great Works Consulting
Nathalie Baudais	City of Saskatoon, Senior Transportation Engineer
Carly Grassing	City of Saskatoon, Transportation Engineer
Sheliza Kelts	City of Saskatoon, Senior Transportation Engineer
Chelsea Lanning	City of Saskatoon, Transportation Engineer
David LeBoutillier	City of Saskatoon, Engineering Manager

Items:

Welcome and Introductions

Presentation from the Transportation Division

(Presented by Nathalie Baudais – Senior Transportation Engineer)

See Attachment: Presentation – September 26, 2019

Saskatoon Police Service
306-975-8300 OR 306-975-8068 to report a traffic complaint or a concern

Small Group Discussions

Residents were divided into small groups to discuss the draft traffic plan recommendations.

Group 1: Nathalie Baudais

- Nelson Road & Heal Avenue
  - Some of the participants are willing to try the RRFB and zebra crosswalk. Others preferred traffic signals or an all-way stop.
- 333 Nelson Road
  - Some would like longer parking restrictions and to have parking restrictions on the west side of the west driveway as well. Others were supportive of the suggested 7 metre restriction.
- Heal Avenue & driveway between Attridge Drive & Ludlow Street (Dairy Queen)
  - Too much activity in this area and driveway restrictions would be better.
  - The stop sign will not solve the problems but won't cause harm.
- Lowe Road & Nelson Road
  - There are concerns for pedestrian safety crossing at this intersection. The 3:30 to 4:30 p.m. time frame is especially treacherous. Parking restrictions could help improve the visibility of pedestrians wanting to cross at this intersection.
- McOrmond Drive
  - Speed limits through the swale are too slow. Engineers should select speed limits instead of lobby groups.
- Nelson Road & Safeway entrance
  - This area has a lot of activity and making left turns onto Nelson Road is challenging because of the amount of traffic and the speeds.
  - Some would like right-in / right-out restrictions at this location, others did not want turning restrictions.
- City-wide
  - Commercial developments need to be better planned. Ingress and egress should be better designed.
  - Streets in new developments are too narrow.
  - Photo enforcement should be used to address speeding rather than narrowing the streets.

Group 2: Carly Grassing

- Nelson Road & Heath Avenue
  - Tree on the north corner makes it difficult to see pedestrians.
  - The curbs should be painted yellow for no parking areas.
  - Rectangular rapid flashing beacon requested. This is a busier crossing than Nelson Road and Heal Avenue.
- 333 Nelson Road
  - High demand for parking on the northeast corner of Nelson Road and Lowe Road. 7 metres is too small to allow for visibility.
  - Potential solution would be to have an entrance only into the west driveway, exit only from the east driveway.

- Lowe Road between Ludlow Street & Nelson Road
    - Speed display boards are a temporary fix. New drivers do not see the speed display board that was installed in the previous year. Would like something more permanent.
- Heal Avenue & driveway between Attridge Drive & Ludlow Street (Dairy Queen)
    - Difficult to make left turns out of the driveway. This is a very busy location. Driveway should be closed to reduce conflicts.
- Ludlow Street & Heal Avenue (Option 7a)
    - Four-way stop requested. This location is not as busy as the Dairy Queen driveway location.
    - The RRFB is the only thing needed at this location.
- Ludlow Street & Heath Avenue
    - Zebra crosswalk and RRFP requested since this is a very busy crossing. Heath is the main route for condo residents.
    - Parking restriction on the northwest corner would improve the visibility of pedestrians.
    - This is the most difficult pedestrian crossing in the area.
- Lowe Road & Nelson Road
    - Stop sign with red flashing beacons should be installed.
- Attridge Drive & Berini Drive
    - Left turn arrow is requested for the northbound left turn.
- Perehudoff Crescent & Epp Avenue
    - Speeding concerns and difficulty crossing the street.

Group 3: Sheliza Kelts

- Nelson Road & Heal Avenue
    - People cross at driveways. Might be difficult to change this behaviour.
- Ludlow Street & Heal Avenue
    - Add parking restrictions to the SW and SE corners on Heal Avenue for both options.
    - 7b is a little preferred but either option is fine.
- Ludlow Street & Heath Avenue
    - Add centreline on Ludlow Street.
    - Add stop sign south for exiting traffic from Co-op, onto Ludlow Street.
- Lowe Road & Nelson Road
    - A traffic signal is preferred over 4-way stop. A traffic signal may stop the traffic from shortcutting on Nelson Road.
- Lowe Road & Ludlow Street
    - Prefer the RRFB on the north side because it removes the pedestrian conflict for vehicles turning eastbound to southbound and aligns with the recommendation at Heal Avenue & Ludlow Street.

- Attridge Drive & Berini Drive
  - Not enough time in north-south direction for pedestrians to cross Attridge Drive.
- Bicycles
  - There are issues with bikes speeding down the sidewalk.
  - More enforcement is needed for bike issues.
- Nelson Road
  - Stop Nelson Road from being the second Attridge Drive.
  - Maybe a three-way stop at Nelson Road & Heal Avenue instead of the traffic signal at Nelson Road & Lowe Road.

Group 4: Chelsea Lanning

- Nelson Road & Heal Avenue
  - It is difficult to cross so like the recommendation.
  - People aren't stopping at stop signs, enforcement is needed.
- Nelson Road & Heath Avenue
  - A truck always seems to park on this corner.
  - Drivers pass on the right (curb lane) at the driveway into Milano Apartment to get around left turning vehicles. Suggest a curb extension to prevent that.
  - People aren't stopping at stop signs, enforcement is needed.
- 333 Nelson Road
  - There is a curve when you look to the east, it is hard to see if a car is parked here.
- Lowe Road between Ludlow Street & Nelson Road
  - More enforcement is requested here.
- Ludlow Street & Heal Avenue
  - Request for signals or a four-way stop.
  - Option 7a will slow people more but may confuse drivers. Shorter pedestrian crossing seems positive.
  - Option 7b seems simpler. Easier to watch two lanes of traffic than three northbound lanes in Option 7a.
- Ludlow Street & Co-op Driveway
  - Like the recommended restriction.
  - There are bumps in the street that require repair. The manhole is sticking out too far and should be maintained.
  - Street parking is always filled by bank employees, etc. so there isn't turnover throughout the day. Suggest a two hour parking restriction. Off-street parking should be provided by the businesses.
- Lowe Road & Nelson Road
  - Not sure if this is going to help the situation. People are confused about who has the right-of-way.
  - Drivers gun the engine as they leave the intersection.
  - Street parking is heavily used so there may not be room to do this.

    - Suggestion that a left turn only and through / right turn lane may work better.
- Lowe Road & Ludlow Street
    - Crossing Lowe Road during non-peak hours is fine.
- There is a lack of pedestrian facilities in the shopping development.
- Cyclists on the sidewalk are an issue in the neighbourhood.
- Suggest a speed display board further north on Lowe Road (north of intersection with Nelson Road).
- The neighbourhood needs more advance notice or signs when there are special events (e.g. Sikh Parade)
- Enforcement is needed on McOrmond Drive between 11:00 pm and 3:00 am
- Enforcement is needed for the Centennial Collegiate parking lot.
- The pedestrian audible signal at Lowe Road & Attridge Drive is not working.

Group 5: David LeBoutillier

- Nelson Road & Heal Avenue
    - Make sure there is a pedestrian button on the median pole.
- Nelson Road & Heath Avenue
    - Check if there is enough street lighting.
    - Make sure that the zebra crosswalk is painted.
- Ludlow Street & Heal Avenue
    - Sidewalk requested for the east side of the intersection (both north and south sides).
    - Option 7a had more support than 7b.
- Lowe Road & Nelson Road
    - Parking restrictions are needed on SE corner of the intersection.
- Roundabout on Nelson Road does not operate well during peak times. Pick-up and drop-off queues from the school block the roundabout circulation.
- Forestry Farm Drive & Attridge Drive
    - It is almost impossible to make the southbound left turn at certain times of the day.
- The new street lighting on College Drive is a bit dim.
- Cyclists on park pathways need to warn pedestrians of their approach.

Next Steps

1. Mail-in or email comments no later than October 19th, 2019.
2. Additional public input via City Engage Page no later than October 19th, 2019.
3. Additional consultation if required.
4. Present traffic plan to Standing Policy Committee on Transportation as information.
5. If City Council approval is required for a recommendation (e.g. road closure), a recommendation will be included in the report for City Council approval.
6. What if I don't agree?

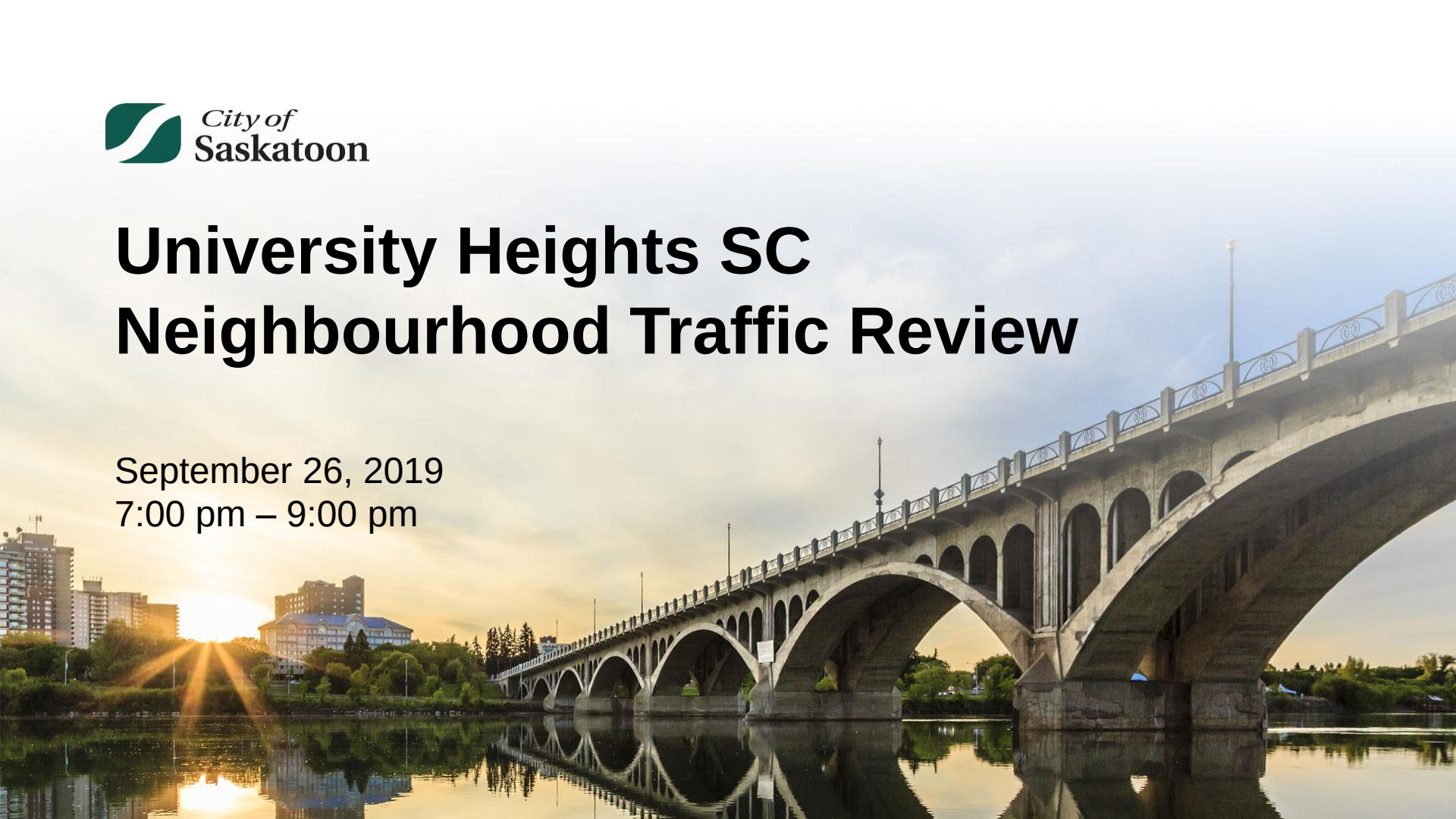
Question and Answer

Q: More police presence is requested to deal with traffic infractions like speeding and non-compliance at stop signs.

City of Saskatoon

University Heights SC Neighbourhood Traffic Review

September 26, 2019
7:00 pm – 9:00 pm



Agenda

1. Welcome & Introductions
2. Traffic Management Presentation
3. Draft Neighbourhood Traffic Plan Discussion - Seeking Your Input
4. Next Steps - Where From Here?
5. Question/Answers

City of Saskatoon

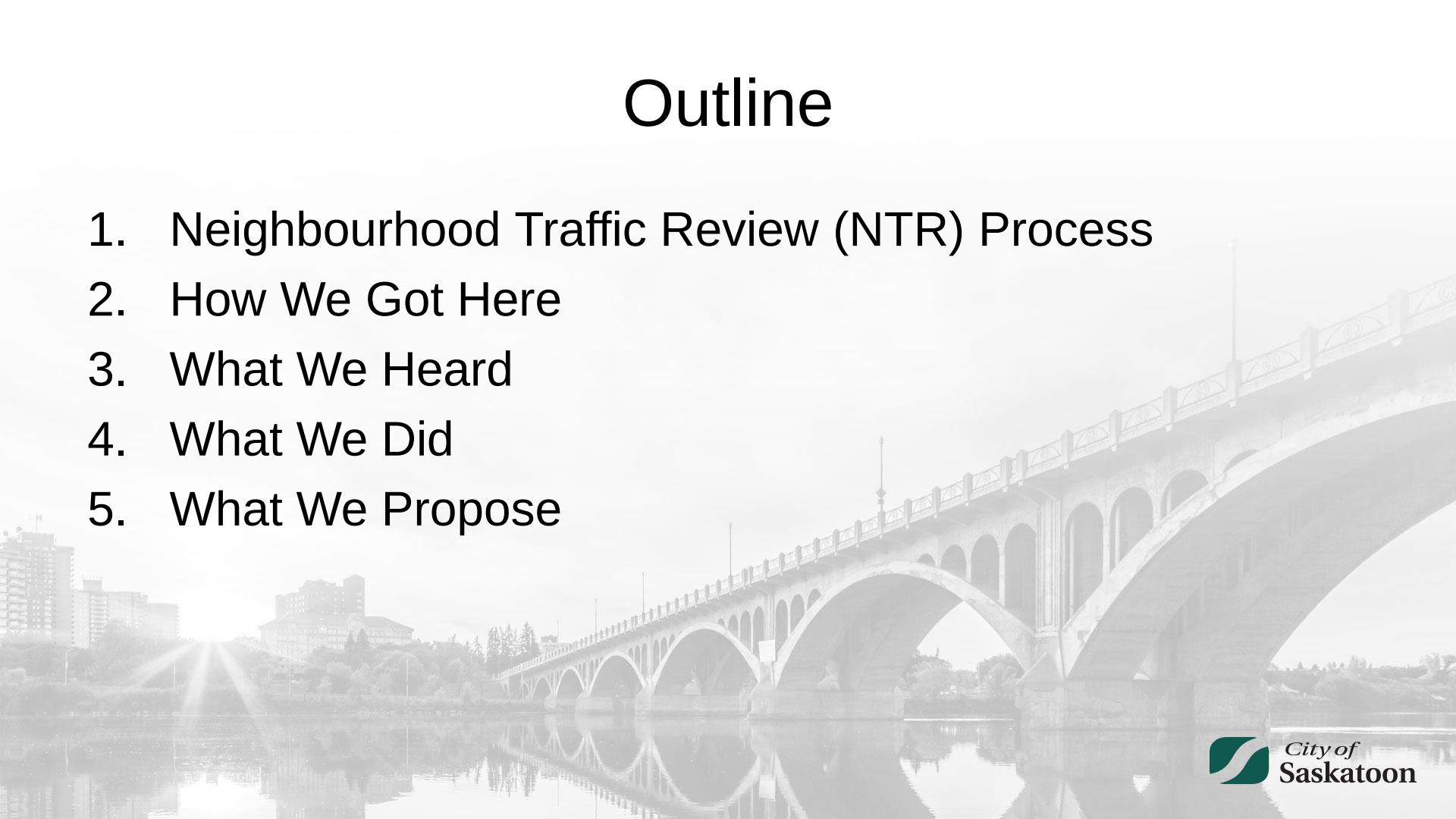
Having a Productive Discussion

- A Chance to Listen to Others and Share Your Ideas
- Respectful
- Orderly Participation
- Limit Repetitive Discussion

City of Saskatoon

Outline

1. Neighbourhood Traffic Review (NTR) Process
2. How We Got Here
3. What We Heard
4. What We Did
5. What We Propose



City of Saskatoon

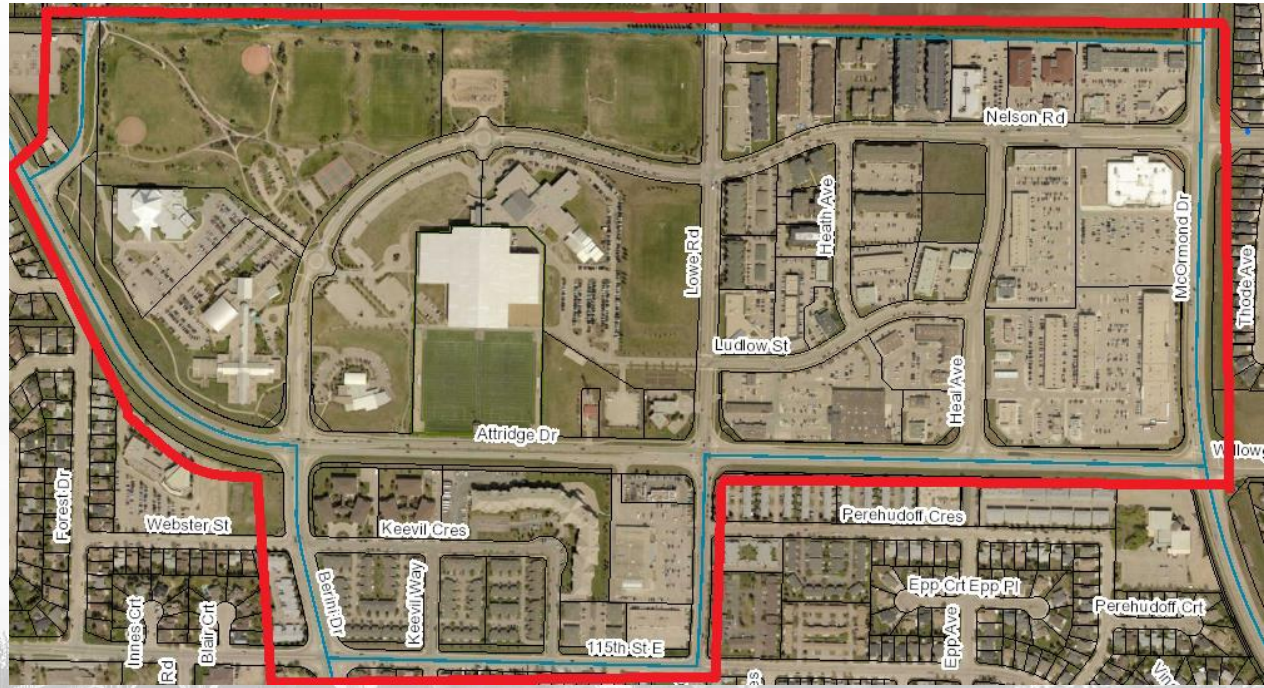
Neighbourhood Traffic Review Process

- Address neighbourhood traffic issues on local and collector streets:
  - Speeding concerns
  - Short-cutting concerns
  - Pedestrian safety
  - Intersection safety

City of Saskatoon

University Heights SC Study Area

- Study Limits
  - Attridge Drive, Berini Drive, 115th Street, Kenderdine Road, McOrmond Drive, north of Nelson Road
  - Local and collector streets



City of Saskatoon

Neighbourhood Traffic Review Process

City of Saskatoon

Neighbourhood Traffic Review Schedule

Stage 1
Identify Problems

- Spring 2019
- Public meeting
- Collect input via calls, emails, letters, Engage Page etc.

Stage 2
Develop Traffic Plan

- Spring / Summer 2019
- Data collection
- Field observation
- Prepare Traffic Plan

Stage 3
Review and Approval

- Fall 2019
- Public meeting
- Collect feedback via calls, emails, Engage Page etc.
- Prepare report
- Committee meeting

Stage 4
Implementation

- Beginning Spring 2020
- Prepare plans
- Installation of Traffic Plan
- Traffic calming measures will be installed temporarily

Stage 5
Evaluation

- 2021 and beyond
- Follow up assessments
- Permanent installation for measures that are deemed effective (budget permitting)

City of Saskatoon

What We Heard

A. Speeding / Short-cutting Concerns:

- Nelson Road
- Lowe Road

What We Heard

B. Pedestrian Safety Concerns:

- Lowe Road & Nelson Road
- Lowe Road & Ludlow Street
- Nelson Road & Heath Avenue
- Nelson Road & Heal Avenue

What We Heard

C. Intersection Safety and Delay Concerns:

- Lowe Road & Nelson Road
- Lowe Road & Ludlow Street
- Nelson Road & Heath Avenue
- Nelson Road & Heal Avenue
- Nelson Road & University Heights Shopping Centre
- Ludlow Street & Heal Avenue
- 115th Street & Kenderdine Road
- Ludlow Street @ Co-Op Driveways
- Attridge Drive & Nelson Road

City of Saskatoon

What We Heard

D. Other Concerns:

- Parking
- Trucks
- Sidewalks
- Transit
- Pavement markings

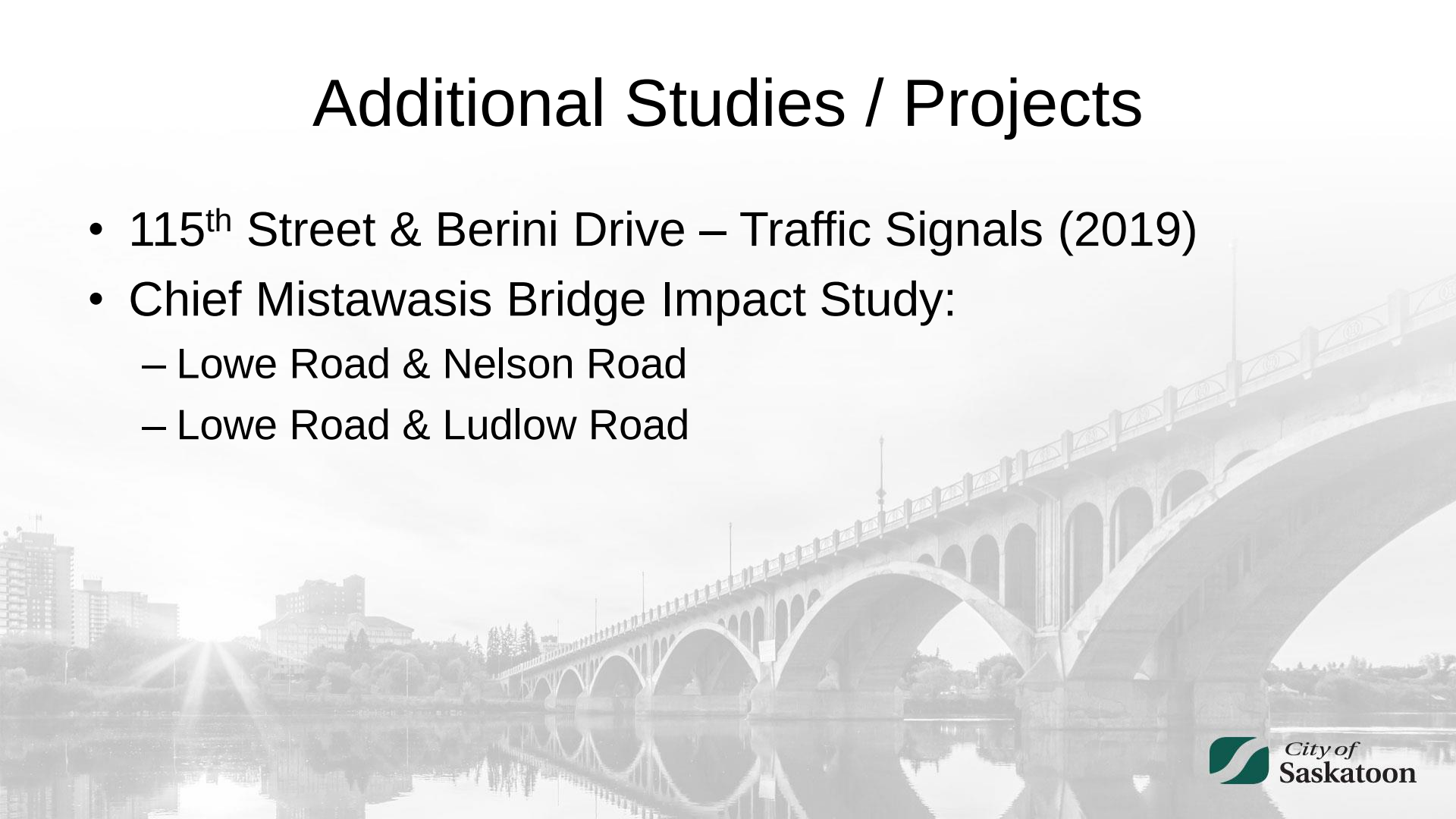
What We Did

- Field observations
- Data collection:
  - 6 pedestrian counts
  - 5 intersection counts
  - 3 traffic volume / speed studies
- Collision Analysis
- Forwarded comments to Saskatoon Police Service to consider enforcement

City of Saskatoon

Additional Studies / Projects

- 115th Street & Berini Drive – Traffic Signals (2019)
- Chief Mistawasis Bridge Impact Study:
  - Lowe Road & Nelson Road
  - Lowe Road & Ludlow Road



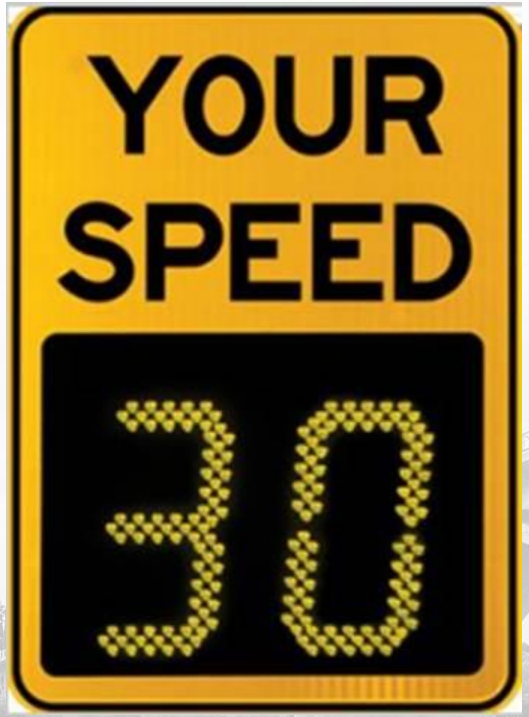
City of Saskatoon

What We Propose

- Speed display boards
- Zebra crosswalks
- Stop signs
- RRFB’s
- Parking restrictions
- Lane designation changes
- Geometric changes

City of Saskatoon

Speed Display Devices



City of Saskatoon

Zebra Crosswalks

City of Saskatoon

Rectangular Rapid Flashing Beacon (RRFB)

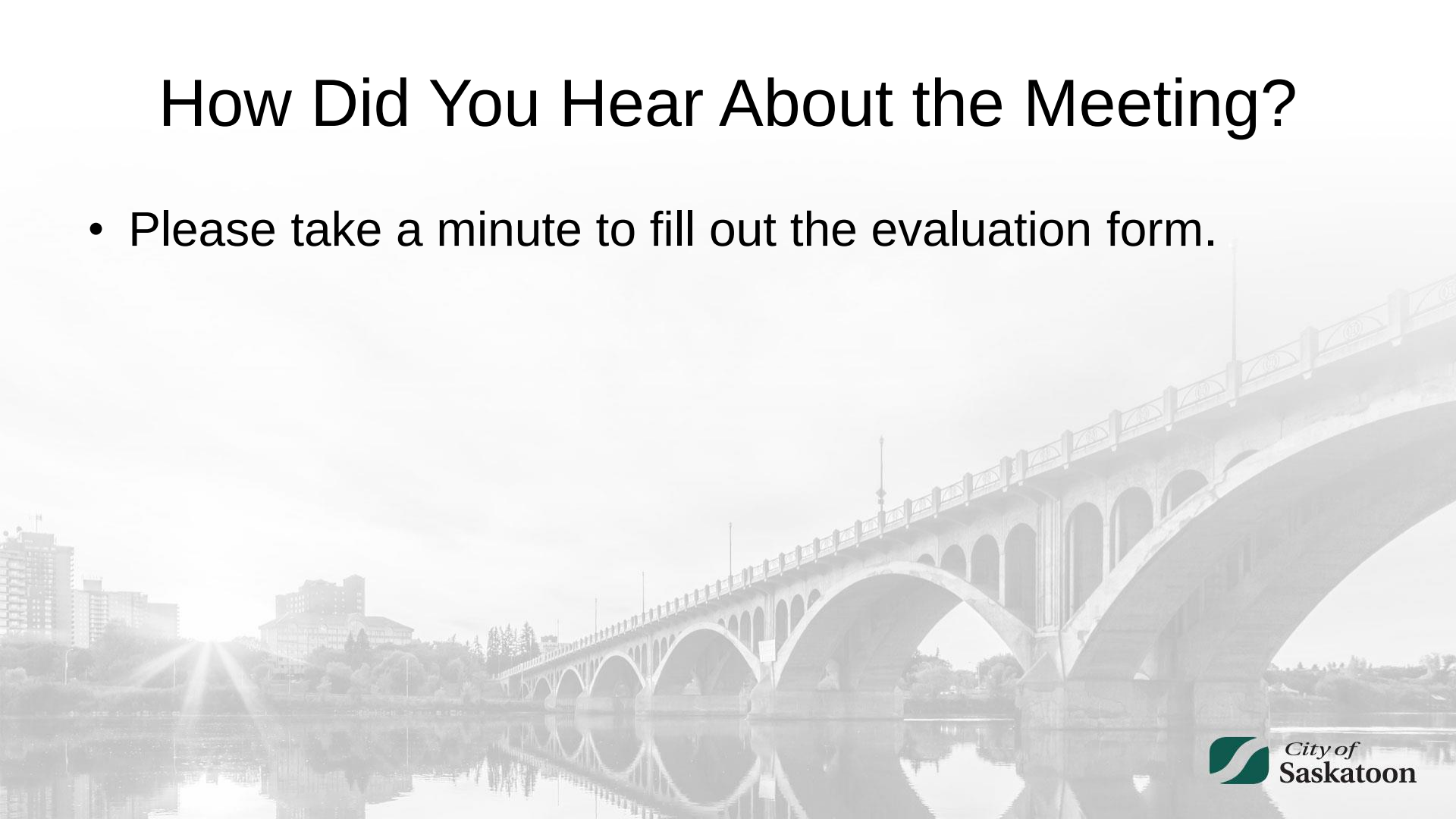
City of Saskatoon

SMALL GROUP DISCUSSIONS

City of Saskatoon

How Did You Hear About the Meeting?

- Please take a minute to fill out the evaluation form.



City of Saskatoon

Next Steps

Stage 1
Identify Problems

- **Spring 2019**
- Public meeting
- Collect input via calls, emails, letters, Engage Page etc

Stage 2
Develop Traffic Plan

- **Spring / Summer 2019**
- Data collection
- Field observation
- Prepare Traffic Plan

Stage 3
Review and Approval

- **Fall 2019**
- Public meeting
- Collect feedback via calls, emails Engage Page etc.
- Prepare report
- Committee meeting

Stage 4
Implementation

- **Beginning Spring 2020**
- Prepare plans
- Installation of Traffic Plan
- Traffic calming measures will be installed temporarily

Stage 5
Evaluation

- **2021 and beyond**
- Follow up assessments
- Permanent installation for measures that are deemed effective

City of Saskatoon

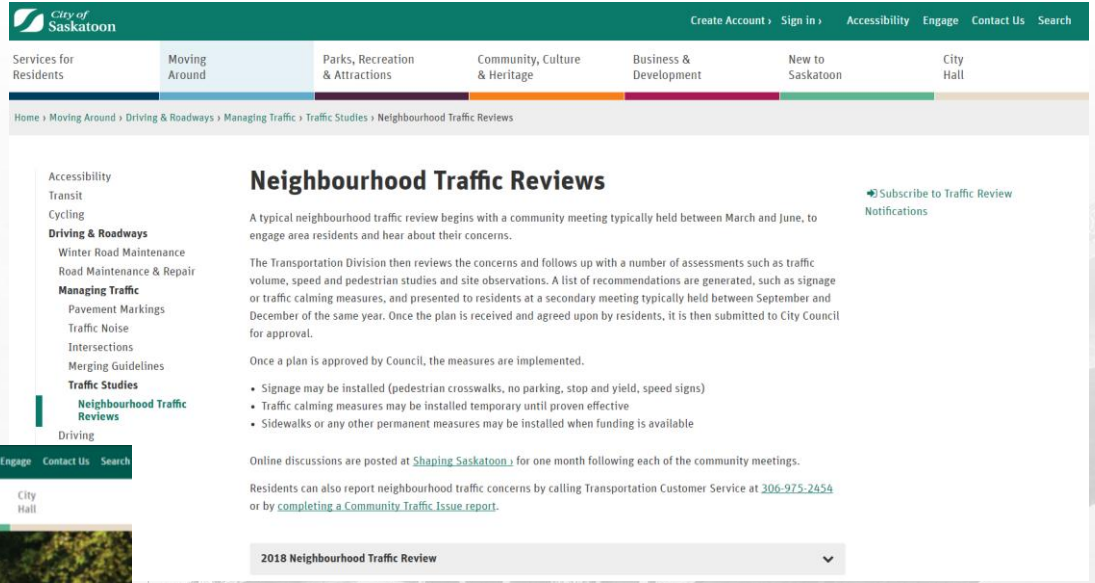
Next Steps

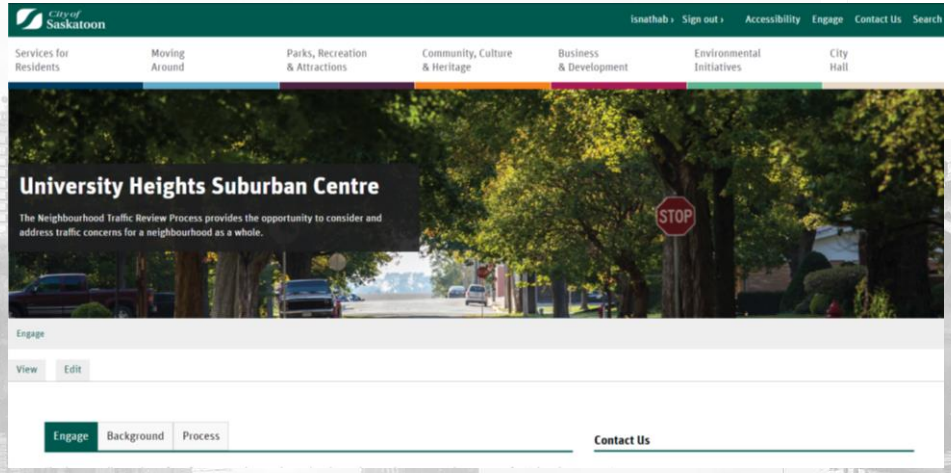
1. Send comments no later than October 26, 2019
2. Additional consultation if required
3. Present traffic plan to City Council as information
4. If City Council approval is required, an additional recommendation will be included in the report to City Council.
5. What if I don’t agree?

City of Saskatoon

Stay Engaged

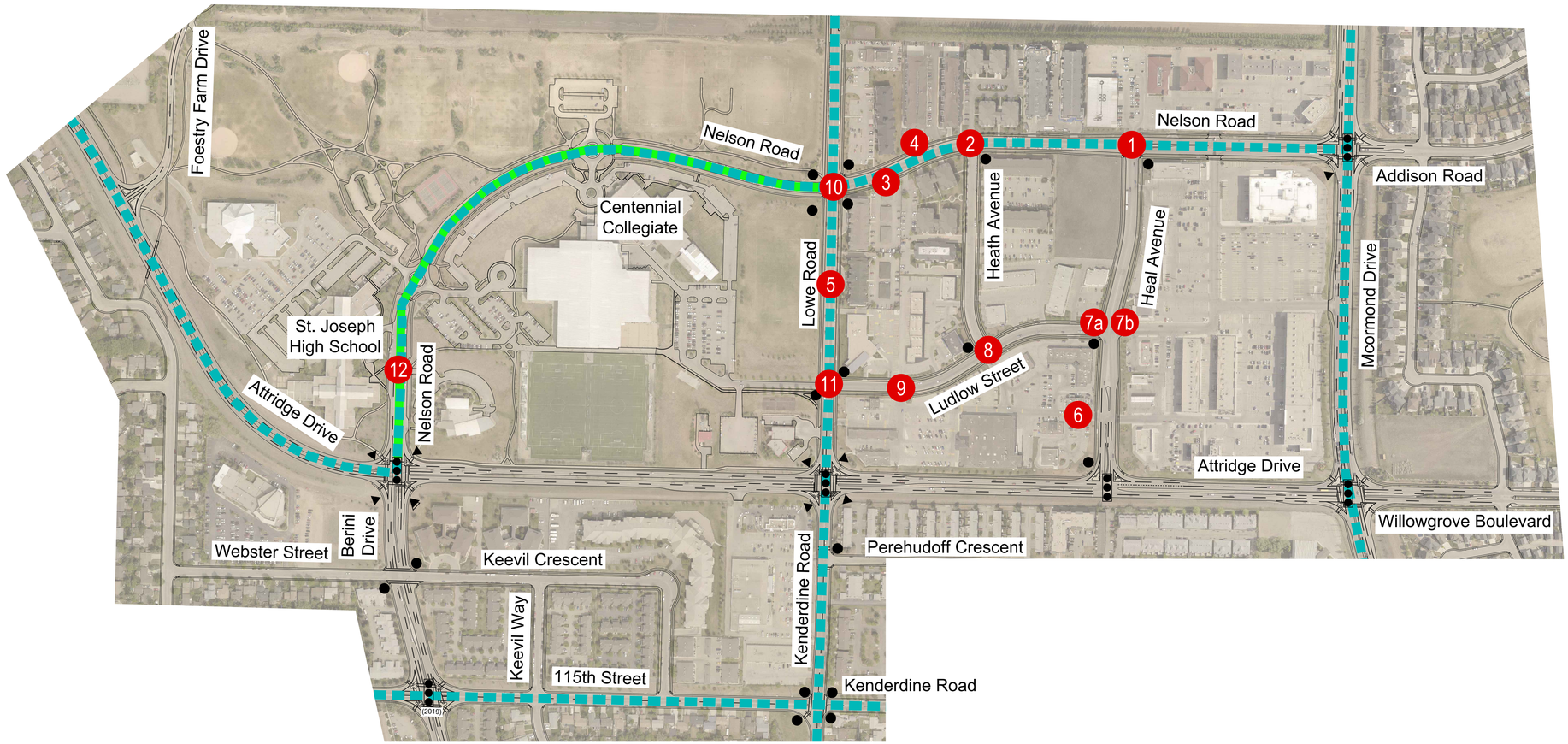
- Subscribe for updates at www.saskatoon.ca/NTR
- Post comments at www.saskatoon.ca/engage





City of Saskatoon


thank you
danke
рахмат
謝謝
ngiyabonga
شكراً جزيلاً
teşekkür ederim
gracias
merci
obrigado
bedankt
dziękuję
спасибо
Баярлалаа
faafetai lava
mersi
barka
welalin
tack
spas
arigatô
kia ora
vinaka
спасибі
blagodaram
dank je
misaotra
matondo
paldies
grazzi
mahalo
tapadh leat
хвала
asante
manana
obrigada
tenki
murakoze
kiitos
dankie
nanni
nandri
dhanyavad
bayarlalaa
gràçie
hvala
mauruuru
köszönöm
enkosi
dankon
akun
djiere dieuf
tau
mochchakkeram
дякую
mamnun
kop khun krap
chokrane
chnorakaloutioun
gratias ago
gràcies
sulpáy
taiku
go raibh maith agat
sobodi
dĕkuji
sukriya
philámayaye
mèsi
didi madloba
sagolun
najis tuke
ありがとう
tanemirt
rahmet
grazie
ευχαριστώ
mársi
takk
dakujem
trugarez
shukriya
mercé
мерси
diolch
dhanyavadagalu
teniki
তোমাকে ধন্যবাদ
kam sah hamnida
rahmat
terima kasih
pidamayaye ye
감사합니다
xièxie



LEGEND

- EXISTING STOP SIGN
- EXISTING YIELD SIGN
- BUS ROUTE
- SCHOOL ZONE
- EXISTING TRAFFIC SIGNAL
- EXISTING PEDESTRIAN ACTUATED SIGNAL LOCATION
- EXISTING ACTIVE PEDESTRIAN CORRIDOR SIGNAL LOCATION
- # RECOMMENDATIONS

FOR COMMENTS & INFORMATION VISIT:

www.saskatoon.ca/NTR

www.saskatoon.ca/engage/university-heights-SC

UNIVERSITY HEIGHTS SUBURBAN CENTER

City of Saskatoon

Item	Location	Recommendation	Reason
1	Nelson Rd & Heal Ave	Extend median, RRFB & zebra crosswalk on east side	Improve pedestrian safety
2	Nelson Rd & Heath Ave	Parking restriction 30m on southwest corner (up to first driveway)	Enhance visibility of pedestrians crossing
3	302 Nelson Rd	Parking restrictions 10m west of first driveway to the edge of east property line	Enhance sightlines for exiting driveways
4	333 Nelson Rd	Parking restriction 7m east of west driveway	Enhance sightlines for exiting driveways
5	Lowe Rd between Ludlow St & Nelson Rd	Speed boards (facing northbound & southbound)	Reduce speed
6	Heal Ave & driveway between Attridge Dr & Ludlow St (Dairy Queen)	Stop sign	Improve safety from driveway
7a	Ludlow St & Heal Ave	Geometric Changes (northbound Left, Through & Right) & RRFB (on north side)	Improve intersection & pedestrian safety
7b	Ludlow St & Heal Ave	Geometric Changes (northbound Shared Left/Through & Shared/Right) & RRFB (on north side)	Improve intersection & pedestrian safety
8	Ludlow St & Heath Ave	Parking restrictions on northeast, southeast, southwest corners at 15m & stop sign (on south side)	Enhance sightlines for exiting driveway & pedestrians crossing; improve intersection safety
9	Ludlow St & Co-Op Driveway	Parking restrictions on either side of driveway at 15m & stop sign	Enhance sightlines for existing driveway; improve safety from driveway
10	Lowe Rd & Nelson Rd	Lane Designation Changes (northbound & westbound Shared Left Turn/Through & Right Turn) & Additional Stop Signs	Improve intersection capacity & enhance visibility of 4-way stop signs
11	Lowe Rd & Ludlow St	RRFB on south side	Improve pedestrian safety
12	Nelson Rd & Alice Turner Driveway	Stop sign	Improve safety from driveway

Appendix I

Decision Matrix

Item	Location	Recommendation	Reason	Dave's Group	Sheliza's Group	Chelsea's Group	Carly's Group	Nathalie's Group	Other	Decision
1	Nelson Road & Heal Avenue	Extend median, RRFB & zebra crosswalk on east side	Improve pedestrian safety	Make sure button is on median pole		Drivers aren't stopping at stop signs. Need enforcement.		Willing to try. Traffic signals or all-way stop would be better alternative.		Carried. Median pole button isn't recommended as the median is not intended to be a waiting area for pedestrians. Flashing light timing will provide adequate time for pedestrians to cross the entire intersection. Comments for enforcement forwarded to Saskatoon Police Service for consideration.
2	Nelson Road & Heath Avenue	Parking restriction 30m on southwest corner (up to first driveway)	Enhance visibility of pedestrians crossing	Check if enough street lighting; make sure zebra is painted		Truck is always parked here. Driveway to Milano Apartments has cars passing on the right in the curb lane to get past left turners. Suggest curb extension.	Tree on north corner makes it hard to see pedestrians. RRFB wanted. Busier crossing than Nelson & Heal. Use yellow paint to show No Parking.			Carried. Site check confirmed that tree trimming isn't required. Leave are above vehicle height. Will ensure all signs are not blocked by trees. Parking restrictions aren't needed on the southeast corner as there is an existing bus stop. Comments regarding street lighting forwarded to Saskatoon Light & Power. No pedestrian devices are warranted as per Traffic Control at Pedestrian Crossings Policy. Curb extension recommended for the southwest corner to improve visibility of pedestrians wanting to cross.
3	302 Nelson Road	Parking restrictions 10m west of first driveway to the edge of east property line	Enhance sightlines for exiting driveways							Carried
4	333 Nelson Road	Parking restriction 7m east of west driveway	Enhance sightlines for exiting driveways			Curve when you look east, hard to see if a car is parked.	High demand for parking on NE corner of Nelson & Lowe. 7m is too small to allow visibility. Enter only west driveway. Exit only east driveway.	Would like longer restriction and west side of west driveway too. Some want to keep visitor parking.		Carried. Sight triangle reviewed to determine parking restriction requirements (as outlined in Transportation Association of Canada Guidelines). A 25 m parking restriction west of the driveway has been added to the recommendations.
5	Lowe Road between Ludlow Street and Nelson Road	Speed boards (facing northbound & southbound)	Reduce speed			More enforcement.	Temporary fix. Drivers don't see display board from previous year.		Speed board suggested further north from Nelson Rd	Carried. Speed data on Lowe Road north of Nelson Road will be collected as part of the Evergreen Neighbourhood Traffic Review to determine if a speed board or enforcement is required. Peak hour information provided to Saskatoon Police Service to consider for enforcement.
6	Heal Avenue & driveway between Attridge Drive & Ludlow Street (Dairy Queen)	Stop sign	Improve safety from driveway				Difficult to make left turn out of driveway. Very busy location. Want to close driveway to reduce conflicts.	Would like driveway restrictions. Won't solve pedestrian problem.	Make it right turn only on both sides. No cross traffic.	This is private property therefore all comments will be forwarded to the property owners for further consideration. City will correspond with property owners to discuss driveway access & safety issues.
7a	Ludlow Street & Heal Avenue	Geometric Changes (northbound Left, Through & Right) & RRFB (on north side)	Improve intersection & pedestrian safety	Sidewalks needed on east side. 2 neutral, 1 no, 3 yes	Add No Parking SW of Heal & SE of Heal (for both)	Will slow people more. May confuse drivers. Shorter pedestrian crossing seems positive. Prefer traffic signal or 4-way stop.	Four-way stop wanted. This location is more difficult and busy #6 location. RRFB is the only thing needed.	Support RRFB		Recommendation revised to a 4-way stop with Geometric changes (northbound Shared Left/Through and Shared Through/Right). Typically, no more than 2 lanes of traffic per direction are recommended for an all-way stop; therefore the layout provided in option 7b was selected.
7b	Ludlow Street & Heal Avenue	Geometric Changes (northbound Shared Left/Through & Shared/Right) & RRFB (on north side)	Improve intersection & pedestrian safety	Sidewalks needed on west side. 2 no, 2 neutral	Few preferred this option.	Seems simpler. Easier to watch 2 lanes than 3.		Support RRFB		
8	Ludlow Street & Heath Avenue	Parking restrictions on northeast, southeast, southwest corners at 15m & stop sign (on south side)	Enhance sightlines for exiting driveway & pedestrians crossing; improve intersection safety		Add centerline on Ludlow. Add stop sign south out of Co-Op		Zebra crosswalk wanted. Very busy crossing. Heath Ave is main route for condo residents. RRFB wanted. Parking restriction NW corner wanted. Most difficult crossing in area.			Carried. Added 15m restriction on NW corner. A painted centreline on Ludlow Street is not recommended as it is a local street. No additional pedestrian upgrades necessary as per Traffic Control at Pedestrian Crossings Policy. Co-Op will be contacted about stop sign for the driveway as this is private property.
9	Ludlow Street & Co-Op Driveway	Parking restrictions on either side of driveway at 15m & stop sign	Enhance sightlines for existing driveway; improve safety from driveway			Bumps on street need repair. Manhole is sticking out far. Needs maintenance. Street parking is always full from bank employees etc. so there isn't turnover. Suggest 2hr parking maybe, parking should be provided.				Carried. Stop sign request will be removed from recommendations as this is private property. Request to install stop sign has been forwarded to property owner. Comments for street repair forwarded to Roadways Division for further consideration.

Item	Location	Recommendation	Reason	Dave's Group	Sheliza's Group	Chelsea's Group	Carly's Group	Nathalie's Group	Other	Decision
10	Lowe Road & Nelson Road	Lane Designation Changes (northbound & westbound Shared Left Turn/Through & Right Turn) & Additional Stop Signs	Improve intersection capacity & enhance visibility of 4-way stop signs	Parking restriction WB	Install Traffic Signal	Not sure if it's going to help. People are confused (pedestrians & cars) about who's turn it is. People leaving the intersection gun it. Street parking is heavily used. May not be room to do this.	Stop sign with red flashing lights	SW corner (3:30-4:30pm) pedestrian activity. Concerned with pedestrians in the afternoon. Add parking restrictions.		Carried. Lane designation changes will require parking restrictions. East leg - on north side of Nelson Rd and South leg - east side of Lowe Road. Location will be added to the priority list for Traffic Signals.
11	Lowe Road & Ludlow Street	RRFB on south side	Improve pedestrian safety	Parking restrictions needed between driveway & intersection on south leg	Prefer north side because it's more likely to be used and lines up.	Wondered about left turn only. Not bad to cross at non-peak.				Carried. Pedestrian study showed more crossing on south side (during 6 peak hours: North crosswalk=45, South crosswalk=95). In addition, the pathway connection west of Lowe Road is on the north side of Ludlow Street.
12	Nelson Road & Alice Turner Driveway	Stop sign	Improve safety from driveway							Carried.

Appendix J

Additional Concerns Received
After Presentation of Draft Plan

Location	Comments	Decision
NA	Need education on how to use roundabouts.	Comments documented for consideration.
NA	Educate cyclists. They deserve the right to be pedestrians or vehicles whenever it suits the particular situation. Bikes are speeding down neighbourhood sidewalks. More enforcement is needed on bike usage.	Comments forwarded to Active Transportation Coordinator for consideration.
NA	City continues to plan for 10 years ago vs 10-20 years in the future.	Comment noted.
Attridge Drive & Berini Drive	Going north should have left turn arrow. North/South does not enough pedestrian crossing time.	Northbound left turn arrow installed Fall 2019. Comments regarding pedestrian crossing time forwarded to Traffic Signal Specialist for further consideration.
Perehudoff Crescent & Epp Avenue	Speeding concerns and difficulty crossing Perehudoff Crescent.	Speed Study and Pedestrian Crossing Study to be completed in Spring 2020.
Safeway Entrance & Nelson Road	Ingress/egress need to be better designed. Right in/Right out restrictions possibly.	Comments forwarded to property owners for consideration.
Shopping centre	Lack of pedestrian facilities.	Comments forwarded to property owners for consideration.
Nelson Road	Speed Board requested.	Speed study indicated 85th percentile speed was 51 kph. No traffic calming measures are recommended.
Various	Special Events (i.e. Sikh Parade). Neighbourhood needs more advance notice or signs.	Comments forwarded to the detours/events group for further consideration.
McOrmond Drive	Enforcement needed between 11:00 pm and 3:00 am.	Comments forwarded to Saskatoon Police Service for further consideration.
Roundabout north of Centennial Collegiate	Review roundabout for operation at peak times (school pick-up and drop-off). Traffic queues block roundabout.	Site check confirmed existing signage is adequate. Queuing during pick-up and drop-off time is expected due to the number of students at the high schools.
Forestry Farm Park Drive & Attridge Drive	Southbound left turn is impossible at certain times of day. Needs an alternative.	Location is being reviewed as part of the Intersection Improvement Studies.
College Drive	New street lighting is a bit dim.	Comments forwarded to Saskatoon Light & Power for further consideration.
Park paths	Cyclists need to warn pedestrians when approaching or passing.	Comments forwarded to Active Transportation Coordinator for consideration.

Appendix K

Public Feedback

Marcoux, Justine

From: Web E-mail - Walking
Sent: Tuesday, March 20, 2018 11:50 AM
To:
Subject: RE: Request for 4 Way Stop

Hello

Thank you for bringing forward your concerns regarding pedestrian safety at the intersection of Nelson Road & Heal Avenue. A review of the intersection was undertaken in 2016 and a summary is included below. Although the pedestrian and vehicle volumes may have changed from the 2016 analysis, the warrant analysis completed would not be likely to result in a different outcome.

An all-way stop is not warranted for the intersection of Nelson Road & Heal Avenue.

To warrant the installation of an all-way stop, the intersection must meet certain minimum criteria specified in the City Policy No. C07-007 – Use of Stop and Yield Signs.

A traffic volume study was conducted at Nelson Rd and Heal Ave in January 2016 during the five peak hours (7:00-9:00am, 12:00-1:00pm, 4:00-6:00pm). The data was used to calculate the Average Daily Traffic (ADT), the Peak Hour Traffic Total, and the traffic split between the major and minor roadway. The warrant analysis indicates that an all-way stop is not warranted at this location because:

- There are less than 5 collisions occurred in the most current twelve month period, therefore, the collision trend does not meet the all-way stop warrant criteria.
- The combined volume of traffic entering the intersection over the five peak hour periods from the minor street is 28% (28% of traffic is entering from Heal Ave). This does not meet the all-way stop warrant criteria of 35%.

A pedestrian actuated device is not warranted for the intersection of Nelson Road & Heal Avenue.

The installation of pedestrian crossing devices must comply with City Policy No. C07-018 – Traffic Control – at Pedestrian Crossings.

A pedestrian study was completed in Jan 2016 at the intersection of Nelson Rd and Heal Ave to determine if pedestrian actuated crossings are warranted. The review included site visits and a collection of traffic and pedestrian data.

Pedestrian counts were conducted in December 2015 during peak hours (8:00 AM – 9:00 AM; 11:30 AM – 1:30 PM; 3:00 PM – 5:00 PM). It was found that 15 pedestrians crossed Nelson Rd. at Heal Ave. (on both east and west side of the intersection). Based on the pedestrian warrant analysis for this location:

- A value of 24 points was yielded for a pedestrian actuated signal, less than the minimum of 100 points required to warrant installation.
- A value of 0 points was yielded for an active pedestrian corridor (i.e. overhead flashing yellow lights), less than the minimum of 3 points required to warrant installation.

Recommendations

Although a pedestrian actuated crossing is not warranted, we are recommending that a standard pedestrian crosswalk be installed on the east side of the intersection. This includes pedestrian crosswalk pavement markings and signs. This will provide drivers with a better indication of the potential presence of pedestrians.

The University Heights Suburban Centre is on the list of neighbourhoods to be scheduled for a Neighbourhood Traffic Review. A follow-up review of this intersection (with new counts) will be completed as part of the Neighbourhood Traffic Review. The list of neighbourhoods to undergo the Neighbourhood Traffic Review have been selected for 2018. The remaining neighbourhoods will be prioritized and presented to Council in the fall for consideration for 2019.

Regards,

Danae C. Balogun, MCIP RPP | tel. 306.986.0834
Active Transportation Program Manager | Transportation

From:
Sent: Thursday, March 15, 2018 11:54 AM
To: Web E-mail - Walking <walking@saskatoon.ca>
Subject: RE: Request for 4 Way Stop

Hello,
I just wanted to follow up from my email sent last Friday as I had not received a reply. The original email is below. Thank you.

Best Regards,

M &

From:
Sent: Friday, March 09, 2018 6:58 PM
To: 'walking@saskatoon.ca'
Subject: Request for 4 Way Stop

Hello,
I'm emailing, representing location is located at the intersection of Nelson Road and Heal Avenue.

(eceived numerous complaints about the this intersection as it is also the exit from our parking lot.

. often park on Heal Ave and cross Nelson Road to get to the gym, and the issues w it all times of the day.

There have been numerous pedestrian concerns with cars failing to yield to persons crossing, either leaving the person to stop mid-way across till the oncoming car passes, or cross as oncoming cars fail to yield and come dangerously close to hitting pedestrians. Most commonly, people report crossing Nelson Road as cars first yield, only to inch across the intersection towards to person crossing, leaving only a couple feet between car and person, making people uncomfortable and feeling both vulnerable and angry.

in hopes that further action can be taken before something else more serious occurs. It is our hope that either a 4 way stop or a pedestrian crossing light can be installed to reduce these concerns and improve public safety.

You can reply to me directly and certainly should you have any questions you are welcome to call my office.

Best Regards,

Sa

Marcoux, Justine

From: Kelts, Sheliza (TU - Transportation)
Sent: Monday, April 16, 2018 2:23 PM
To:
Subject: FW: Traffic concerns

Hello .

Thank you for providing your comments regarding neighbourhood traffic in the Forest Grove neighbourhood. Your comments have been noted and added to the project file. We will continue to receive comments through emails, phone calls, and Facebook posts and at the upcoming public meeting on May 1st, 2018. All comments received will be compiled and used to identify locations for data collection such as traffic volume, speed and pedestrian studies and site observations. A second meeting will then be held to discuss the draft traffic plan for the neighbourhood.

If you would like to stay involved in this project throughout the process you can do so by following the online Facebook group, or subscribing for Neighbourhood Traffic Review updates at Saskatoon.ca/NTR. Instructions on how to join the Facebook group are below:

1. Login to Facebook
2. Enter this in the Facebook search field: Neighbourhood Traffic Review – Forest Grove
3. Choose Groups from menu choices across top
4. Click Join beside our Group

I also wanted to let you know that the intersection of Ludlow Street and Lowe Road is within the neighbourhood of University Heights SC, I will ensure that your comments for that intersection are captured for that neighbourhood traffic review.

Thank you again for your email,

Sheliza Kelts, P. Eng. | tel 306.986.3141
Transportation Engineer
City of Saskatoon

From:
Sent: Wednesday, April 11, 2018 1:00 PM
To: City of Saskatoon - Neighbourhood Traffic Reviews <NTR@Saskatoon.ca>
Subject: Traffic concerns

Hello, and thanks for providing input regarding traffic flow concerns in Saskatoon.

I moved here last November, and I can point out the following issues in my neighbour hood.

The intersection of Central Avenue, Reid Road, and Rossmo Road: Very dodgy. Bus stops, poor sight lines due to buses obstructing views, and pedestrians crossing Central, walking to or from bus stops. Large traffic flow from the north especially. Turning north onto Central Avenue from Reid Road is an accident waiting to happen. It definitely should be controlled. I think bus stops should be set back farther from this intersection as well.

The intersection of Ludlow and Lowe:
Very difficult when attempting to turn left from Ludlow onto Lowe.

.

I've also wondered about having the green light on, after the flashing green arrow stops, where there is no off-set turning lane provided.

For example on Attridge. When attempting to turn left onto Kenderdine when travelling west, or turning left onto Lowe when travelling east, it presents issues with oncoming traffic that is often difficult to see, when higher built vehicles are waiting to turn.
Saskatoon is a nice city! I hope something can be done vis-a-vis these traffic flow concerns.

Sent from my BlackBerry 10 smartphone on the SaskTel network.

Marcoux, Justine

From: Lanning, Chelsea (TU - Transportation)
Sent: Friday, April 20, 2018 1:28 PM
To: Lanning, Chelsea (TU - Transportation)
Subject: RE: River Heights NTR - comments on FB ad

/ Crossing Nelson Road from Heal Ave. For a pedestrian is very challenging to cross the road. It is very busy with all traffic coming out of that area a liquor store, exercise outlet, a dollarama ,BP restaurant. Also many other store outlets. Is there any reason a walk light couldn't be put up in that area?

From: Cameron, Colleen (CP - Communications)
Sent: Wednesday, April 18, 2018 9:19 AM
To: Lanning, Chelsea (TU - Transportation) <Chelsea.Lanning@Saskatoon.ca>
Subject: River Heights NTR - comments on FB ad

Hello,

Just FYI - following are the comments that were left on the Facebook ad promoting the first meeting and Facebook Group Discussion Forum.

There may or may not be comments of note.

C.

City of Saskatoon News

River Heights NTR

Do you have traffic concerns in your neighbourhood? This is your chance to be heard!

Join the in-person discussion on Wednesday, April 11, 2018, at St. Anne School between 7:00 and 9:00 p.m. or join our online discussion page https://www.facebook.com/groups/1752893598076167.

I'm writing to ask for an assessment to be done at the corner of Lowe and Nelson Road. Currently the intersection is controlled by a 4 way stop. This used to be sufficient. I feel that is no longer the case. With the increased traffic coming from the Evergreen neighborhood the stop signs are not enough..

I take transit every day to and from work. I have to cross the street in order to get to the stop. I no longer feel safe doing so. At peak times, when Centennial Collegiate is let out, and during times when the soccer fields are in use the intersection is dangerous for pedestrians. Drivers are too inattentive and aggressive in their attempts to get through the four way stop. I've lost count of the number of time myself, my wife, or a fellow pediatrician has been sped up to or almost hit by cars coming through the intersection. I now look through the bus windows when it turns into Lowe Road to see who is encroaching the intersection.at the same time.

With the changes to transit putting far more bus traffic through this intersection and the continued heavy traffic flow coming and going from Evergreen, the time has come for some form of traffic lights to be installed. It is a matter of time before a pedestrian is seriously hurt crossing the street.

Thank you,

Sent from my Samsung Galaxy smartphone.

Marcoux, Justine

From: Simpson, Tom (TU - Transportation)
Sent: Wednesday, November 7, 2018 12:12 PM
To:
Cc: Web E-mail - Transportation
Subject: RE: Parking lot needs signs

Good morning

Thanks for the email and apologies on the late reply. I will forward your suggestion along to our engineering section for review. I will update you with any new information I receive on this one.

Have a great day,

Thomas Simpson | tel 306.975-2811
Customer Service Manager, Transportation
City of Saskatoon | 222 3rd Avenue North | Saskatoon, SK S7K 0J5
tom.simpson@saskatoon.ca
www.saskatoon.ca

-----Original Message-----
From:
Sent: Saturday, October 27, 2018 3:04 PM
To: Web E-mail - Parking Services <Parking.Services@Saskatoon.ca>
Subject: Parking lot needs signs

Submitted on Saturday, October 27, 2018 - 15:03
Submitted by user: Anonymous
Submitted values are:

First Name:
Last Name:
Email:
Confirm Email:
Neighbourhood where you live: River Heights
Phone Number:
==Your Message==
Service category: Parking Related Issues
Subject: Parking lot needs signs
Message: The parking lot across from Centennial High school needs no parking signs along the front road. People park right when hey come in and it is difficult to get around, especially when multiple people park. I do have a picture for reference but I'm not able to attach it.
Attachment:

Submitted values are:

First Name:
Last Name:
Email:
Confirm
Neighbourhood where you live: University Heights Suburban Centre
Phone Number:
==Your Message==
Service category: General or All Other Inquiries
Address:
Subject: Pedestrian Crossing
Message:
To whom it may concern
I would like to respectfully request that the City evaluate the opportunity for the construction of a "controlled pedestrian crossing" across Nelson Road where it intersects either Heath or Heal Avenues. Currently their are signed pedestrian crossing at both of these locations.
As I am sure the City is well aware the demographics in our neighborhood consists of a large population of elderly citizens living in one of the many condominiums located in our area. Nelson Road is a very busy street with vehicle traffic at almost any time of the day. This is compounded by the fact that we have 2 High Schools located just to the west across Lowe Road.
With the major shopping areas located both south and north of Nelson Road many of the local residents walk to their shopping destinations which in most cases requires the crossing of Nelson Road. With the high traffic volumes and at least one of those intersections with limited visibility coming from the west there are many occasions that near misses have occurred between pedestrians and motor vehicles. It is only a matter of time before an accident will occur at one or both of those intersections.
I look forward to your response to this request and thank you very much for your time in this matter.

respectfully

Attachment:

Would you like to receive a short survey to provide your feedback on our customer service? The information you share will be used to improve the service we provide to you and all of our customers.: Yes

For internal use only :

Marcoux, Justine

From:
Sent: Thursday, April 18, 2019 10:18 AM
To: City of Saskatoon - Neighbourhood Traffic Reviews
Subject: Traffic concerns

Sent from my iPad
The intersection at Lowe and Nelson is extremely busy, especially from September through June. I have had to run for my life on more than one occasion. I try to avoid that intersection early mornings, noon, and from 3:30-4:00 pm.
I would like to see traffic lights installed at that intersection before someone gets hurt or killed.

Marcoux, Justine

From:
Sent: Thursday, April 18, 2019 1:32 PM
To: City of Saskatoon - Neighbourhood Traffic Reviews
Subject: re Nelson RD.

Crossing the streets in this area is going to eventually cause an accident to a pedestrian. You take your life in your hands. Drivers will not stop--in fact they speed up if you are either waiting to cross or if you are half way through the intersection. The drivers are young , old, male or female . Please put a slow down-- or better a stop light--about halfway between the 4-way stop and McCormand. seniors need to walk! Thanks.

Marcoux, Justine

From:
Sent: Thursday, May 2, 2019 1:10 PM
To: City of Saskatoon - Neighbourhood Traffic Reviews
Subject: ENGAGE

Thanks for this opportunity.
My main concern , which I know I share with many others is the access/exit to the University Heights Shopping Centre and Nelson Road.
The problem is made worse by the access opposite from the other mall.
Traffic lights are required
Thanks

Sent from Mail for Windows 10

Marcoux, Justine

From:
Sent: Tuesday, May 7, 2019 11:24 AM
To: City of Saskatoon - Neighbourhood Traffic Reviews
Subject: Pedestrian crossing and speeding

I have concerns In relation to the amount of people who are exceeding the speed limit on Nelson road,I would say the average speed is probably around 60 km hour, this issue is a concern as seldom do any of the drivers stop for you at the pedestrian crosswalks at Heath and Nelson they would rather hit you than stop. Many times I feel like I am taking my life in my own hands to cross the street. The drivers are reluctant to stop or they just drive around you.! Maybe pedestrian flashing lights may need to be set up and something to deter the speeders. Thank you

Sent from my iPad

Marcoux, Justine

From: Simpson, Tom
Sent: Friday, October 11, 2019 12:21 PM
To: Baudais, Nathalie
Subject: FW: Lowe Rd & Ludlow St (Thread:30456)

Which ntr was this one?

From: City of Saskatoon - Customer Care Centre [mailto:customercare@saskatoon.ca]
Sent: Thursday, October 10, 2019 1:24 PM
To: Web E-mail - Transportation <Transportation@Saskatoon.ca>
Subject: Lowe Rd & Ludlow St (Thread:30456)

Good Afternoon,

ould like to request that the intersection of Lowe and Ludlow be looking at. She has called before and was told that we wouldn't put lights here but she wonders if something else can be done to make it easier to turn left off Ludlow St. Maybe two left hand turning lanes? Currently it is very difficult to turn left onto Lowe Rd from Ludlow St (vehicles waiting to turn are waiting for over 10 minutes) forcing vehicles to turn right last minute instead and then doing a u-turn further down the street.

Berini and 115th there are 4 way stops there which work well but she is wondering if they are putting lights there? She has noticed some digging and cement there.

Customer Care Agent | tel 306.975.2476
Service Saskatoon Customer Care Centre
City of Saskatoon | 222 3rd Avenue North | Saskatoon, SK S7K 0J5
customercare@saskatoon.ca
www.saskatoon.ca

Marcoux, Justine

From: Marcoux, Justine
Sent: Monday, March 25, 2019 11:06 AM
To:
Subject: RE: University Heights Traffic Review

Hello

Thank you for providing your comments regarding traffic in the University Heights area. The purpose of the Neighbourhood Traffic Review is to focus on areas within the neighbourhood boundaries. Our arterial streets (ie. Attridge Dr, 115th St, Lowe Rd etc) are reviewed under our other programs; therefore your comments will be filed under our other programs for further consideration.

We will continue to receive comments through emails, phone calls, and Engage page and at the upcoming public meeting on May 9, 2019. All comments received will be compiled and used to identify locations for data collection such as traffic volume, speed and pedestrian studies and site observations. A second meeting will then be held to discuss the draft traffic plan for the neighbourhood.

If you would like to stay involved in this project throughout the process you can do so by following the online Saskatoon.ca/engage page, or subscribing for Neighbourhood Traffic Review updates at Saskatoon.ca/NTR.

Thank you again for your email.

Regards,

Justine Marcoux, P.Eng. | **tel 306.975.7846**
Transportation Engineer
Transportation Division, Transportation & Utilities
City of Saskatoon | 222 3rd Avenue North | Saskatoon, SK S7K 0J5
justine.marcoux@saskatoon.ca
www.saskatoon.ca

From:
Sent: Saturday, March 23, 2019 8:44 PM
To: Marcoux, Justine <Justine.Marcoux@Saskatoon.ca>
Subject: Re: University Heights Traffic Review

Sorry I realized after I sent my email there was an error:

#3 should read Southbound on Kenderdine from Attridge to 115th Street.

On Sat, Mar 23, 2019 at 2:57 PM wrote:

> Good Afternoon
> I have lived in University Heights for 10 years and I have several concerns about the traffic in our area.
>
> 1) Traffic lights at Attridge Drive and Berini Drive:

- Because there is a specific left hand turn lane, and the right lane must exit onto Attridge, it is *assumed* the centre lane goes straight ahead. However, that is not what is happening.
- Many vehicles in the middle lane try to turn left along with the left hand turn vehicles.
- There is no lane signage at this intersection and that may help this situation.

2) 4-way stop at Berini and 115th Street and 115th Street & Kenderdine:
   - Both of these intersections East West bound, there is one lane, however many cars create a second lane to the right to dart through the intersection ahead of the line up. As there is only one lane on the other side of the intersection, they have to quickly merge back into the main lane, speeding through the intersection.
   - Both intersections have many pedestrians whether from Forest Grove elementary school, the high schools, the bus stops or coming from the local shopping on Kenderdine.
   - I'm not sure what the solution is, a barrier in the right hand lane?
   - (the northbound and southbound traffic actually have two traffic lanes).

3) Southbound from Attridge to 115th Street
   - The lane markings are for two lanes but only for 1/2 block from Attridge to Perehudoff and then it changes to one lane mid block.
   - There are usually two lanes of traffic travelling from Attridge to the four way stop at 115th Street.
   - Could they mark both lanes through this entire block?

4) Intersection of Lowe Road and Ludlow
   - This intersection becomes very congested with traffic when the high school it getting out and/or commute traffic times.
   - It is difficult to turn left off Ludlow during these times.
   - One solution may be to move the exit from the High school parking lot to Nelson Road only, closing off this exit for use only to the Recycling Depot or the Community Garden.

I hope I have explained these well enough and they will be considered in the Traffic Review for University Heights.

Thank you for this opportunity.

Comments Community Login

♡ Recommend Tweet Share Sort by Best

• 2 months ago

Hi, a suggestion that I have is, on item #6 Heal Ave & driveway between Attridge Dr & Ludlow St (Dairy Queen) make as a right turn only on both sides. No cross traffic.

^ | v • Share ›

Nathalie Baudais, Transp. Eng. Mod

• a month ago

Thanks for letting us know about your concern at this location. Other residents requested this at the meeting as well. We'll take a look at this location before we finalize the traffic plan.

^ | v • Share ›

Nathalie Baudais, Transp. Eng. Mod • 8 months ago

We are collecting comments through emails, phone calls, Engage page discussion and through the upcoming public meeting. All comments received will be compiled and used to identify locations for data collection such as traffic volume, speed and pedestrian studies and site observations. A second meeting will then be held to discuss the draft traffic plan for the neighbourhood.

^ | v • Share ›

ALSO ON **CITY OF SASKATOON**

Lawson Heights and Lawson Heights

Briarwood

15 comments • 8 months ago

• O

Spring 2020

Begin Implementation

Related Pages

Neighbourhood Management Guideline

The scope of the Neighbourhood Traffic Review is for the local and collector streets in the neighbourhood. Concerns regarding arterial streets will be addressed through a separate process. Please identify the location you have concerns about specific to the neighbourhood identified above using an intersection, street name, address or other indicator.	Please help us understand why you selected the answer above. Add a description of your concern.
1. Nelson Rd. I believe the speed limit should be lowered 10/km 2. There is an intersection where Nelson Rd. intersects with a street that doesn't have a city street name. It is between the intersections at Nelson Rd and Heal Ave, and Nelson Rd and McOrmond. It leads into the Safeway shopping area on the south and the Boston Pizza shopping area on the north. It is always crowded with pedestrians and traffic and it is unregulated. It's a nightmare. A stop sign might help, but a traffic light would be better. 3. At the west entrance to my building (333 Nelson) it is nearly impossible to safely pull out onto Nelson when there is a car parked right next to the entrance. You cannot see down the street to the east if a pickup or SUV us there. The angle of the street going by and the height of these types of vehicles make it so you have to pull out on to Nelson Road in order to see if cars are coming in the oncoming lane. A "no parking to corner" sign placed one car length east of the entrance would solve this problem.	NA
All roads. Traffic in entire area is really congested because all neighborhoods don't have enough main arterials to Hwy 5, Cr Drive, or Warman Road.	Way too many vehicles forced onto Lowe Rd, Nelson Rd and Attridge Dr. If Willowdale, Evergreen, Aspen Ridge had proper access, with very few if any traffic lights to main arterials, then less traffic would be required on main residential streets. Way to congested traffic volumes.
333 Nelson Road	Cars and trucks parked on the north side of Nelson road obscure visibility when entering traffic on Nelson from 333 exit, also cars speed along Nelson road; obscure sight lines when exiting from underground parking
Lowe road, between Ludlow street and Nelson road.	Please make it more clear if going south on Lowe road after nelson road if there are two lanes or 1 lane and a parking lane. Many times I have had people double that section of the road.
Nelson Rd at Heal Ave. Traffic lights needed especially for pedestrians. Too much at this corner. Re: liquor store, gym, dollarama, restaurants. Dangerous to cross street at this corner when busy and usually is.	See above
Nelson Rd in front of Centennial Collegiate and St. Joseph's High School.	This roadway was not built to accomodate the volume of traffic associated with high schools. The round-abouts are too small and contribute to the congestion and safety concerns. Having transit go on this road puts them behind schedule which is incredibly frustrating as a transit user. Really poor road design.
Corner of Nelson Road and Lowe Road needs a traffic signal. The 4 way stop is not appropriate for the volume of traffic at this intersection, especially when school is in. I know of at least 2 instances where pedestrians have been struck at this intersection. Signals are needed now, not later!	A 4 way stop is totally inappropriate for this intersection.
There is huge congestion every morning and afternoon around St. Joes and Centennial Highschool. Some days it takes 15 minutes to just get out of the area. Two things could help the flow of traffic in this area. One is having traffic lights at Lowe and Nelson instead of a 4 way stop sign. The other is having a left arrow at the lights on Attridge and Nelson when cars are turning left onto Attridge from Nelson. With the amount of kids crossing the street it is very difficult to have multiple cars turn left in one traffic light and this just adds to the congestion.	There is huge congestion every morning and afternoon around St. Joes and Centennial Highschool. Some days it takes 15 minutes to just get out of the area. Two things could help the flow of traffic in this area. One is having traffic lights at Lowe and Nelson instead of a 4 way stop sign. The other is having a left arrow at the lights on Attridge and Nelson when cars are turning left onto Attridge from Nelson. With the amount of kids crossing the street it is very difficult to have multiple cars turn left in one traffic light and this just adds to the congestion.
Nelson Road.	Work on Nelson and parking is bad leading to bad driving and unsafe parking. The Nelson and Lowe four way stop is dangerous to cross as a pedestrian as cars don't stop. People dropping kids off at the schools also cause issues. More parking would get cars off the road. Library needs more parking. Needs a light at Nelson and Lowe.
Intersection of Nelson Rd and Heal Ave	When attempting to turn from Heal Ave on to Nelson Rd to the west (a left turn), the traffic on Nelson Rd in both directions is very difficult to judge. Almost every time I use that intersection I'm worried about a collision
Intersection of Lowe and Nelson as well as the intersection of Lowe and Ludlow and exiting the Coop parking lot onto Ludlow	Lowe/Nelson: Drivers constantly running stop signs. Congestion of traffic. Pedestrians stepping out in front of drivers and cars not stopping for pedestrians. At Lowe/Ludlow TOO MUCH CONGESTION! Drivers making left turns/pedestrians just stepping out in front of traffic. Just too busy of an intersection so close to Attridge/Kenderdine/Lowe. Coop has no signage to have their customers "stop" and the curve in the street on Ludlow makes it very difficult to see vehicles coming when people are parking along the curbs.
Speed of drivers on Lowe Road (between Attridge & Nelson Road). Drivers not coming to a complete stop at the intersection of Lowe Road & Nelson Road.	The speed of drivers on Lowe Road between Attridge & Nelson Road increase risk for safety of other vehicles and pedestrians. When drivers do not come to a complete stop at intersection of Lowe Road & Nelson Road, there does not allow enough time for drivers coming out of the parking lot of condo at 215 Lowe Road.
Nelson Road	With the large number of Condominiums on/near Nelson Road and with the elderly population in the area, crossing Nelson Road at uncontrolled crosswalks is extremely dangerous. The extensive shopping located on both the North and South side of Nelson Road requires that many of the residents in the area must cross that street numerous time in a day quite often. There are marked crosswalks at both, Heath and Heal where they meet Nelson Road but few if any motorists heed the crosswalk signs setting the situation up for what could be deadly consequences at some point in time. I personally have seen numerous close calls including having one myself while trying to cross Nelson Road at Heal. The City touts itself as trying to create accessibility for the senior residents and by constructing a "Light Controlled" crosswalk at either Heal or Heath would go a long way towards demonstrating that to the elderly residents of our neighbourhood.