CITY OF SASKATOON 2015 NEIGHBOURHOOD TRAFFIC REVIEWS

Mount Royal

February 9, 2016

Mount Royal Neighbourhood Traffic Review

February 9, 2016

Authorization





Justine Nyen, P.Eng., **Transportation Engineer**

Checked By:



Shirley Matt, P.Eng.,

Senior Transportation Engineer

Acknowledgements

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

- Mount Royal residents
- Mount Royal Community Association
- Saskatoon Police Service
- Saskatoon Light & Power
- Saskatoon Fire Department
- City of Saskatoon Environmental Services
- City of Saskatoon Transit
- City of Saskatoon Planning & Development
- City of Saskatoon Public Works
- City of Saskatoon Community Standards
- City of Saskatoon Transportation
- Great Works Consulting
- Councillor Troy Davies

Cover Photograph Kara Toews

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 revised program involves additional community and stakeholder consultation that provides the environment for neighbourhood residents and City staff to work together in developing solutions that address traffic concerns. The process is outlined in the *Traffic Calming Guidelines and Tools*, City of Saskatoon, 2013.

A public meeting was held in June of 2015 to identify traffic concerns and potential solutions within the Mount Royal 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 Management Plan was developed and presented to the community at a follow-up meeting held in November 2015.

A summary of recommended improvements for the Mount Royal neighbourhood are included in **Table ES-1.** The summary identifies the locations, the recommended improvement, and a schedule for implementation. The schedule to implement the Traffic Management Plan can vary depending on the complexity of the proposed improvement. According to the *Traffic Calming Guidelines and Tools* document, 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 specific time frame to implement the improvements for these neighbourhoods ranges from 1 to 5 years.

The resulting proposed Mount Royal Traffic Management Plan is illustrated in Exhibit ES-1.

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Exhibit ES-1



Item	Location	Recommendation	Reason
1	Avenue W & 29 th Street	Four-way Stop Signs	Improve driver & pedestrian safety
2	Avenue W & Rylston Road	Curb Extensions & Zebra Crosswalk on south side; parking restrictions on southwest corner	Reduce speed, improve pedestrian safety & improve sightlines
3	Avenue W & 23 rd Street	Hazard Boards	Enhance visibility of stop signs
4	29 th Street - intersections along bus route (Avenue Q, Avenue R, Avenue X, Avenue Y)	Stop Signs	Improve safety along bus route (as per Policy C07-007, stop signs are warranted along a transit route)
5	Avenue T & Rylston Road	Zebra Crosswalks	Improve pedestrian safety in front of school
6	Avenue P & 23 rd Street	Hazard Boards	Enhance visibility of stop signs
7	23 rd Street & Avenue R	Stop Signs	Improve intersection safety
8	23 rd Street & Avenue T	Four-way Stop Signs	Improve intersection & pedestrian safety
9	Back lane south of Circle Drive between 31 st Street to pedestrian tunnel	20kph Speed Signs	Reduce speed
10	Edmonton Ave near 31 st Street	Speed Display Board	Reduce Speed
11	23 rd Street & Montreal Avenue	Remove all temporary traffic calming	Direction of yield signs were changed in 2013 as part of the Blairmore Bikeway. Traffic calming not needed.
12	Avenue W - 22 nd Street to 23 rd Street	Sidewalk on west side	Improve pedestrian safety & connectivity(connects to grocery store)
13	23 rd Street - Avenue P to Avenue Q	Sidewalk on both sides	Improve pedestrian safety & connectivity (connects to school)
14	23 rd Street between Avenue Q & Avenue W	Sidewalk on south side	Improve pedestrian safety & connectivity
15	Bedford Road between Avenue W & Avenue T	Sidewalk on north side	Improve pedestrian safety & connectivity (school route)

Table ES-1: Mount Royal Neighbourhood Recommended Improvements

- APPENDIX A- PUBLIC MEETINGS INFORMATION
- APPENDIX B TRAFFIC DATA COLLECTION
- APPENDIX C ALL-WAY STOP ASSESSMENTS
- APPENDIX D PEDESTRIAN DEVICE ASSESSMENTS
- APPENDIX E COLLISION ANALYSIS
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1 INTRODUCTION

As the City of Saskatoon continues to grow many neighbourhoods face growing issues such as pedestrian safety, cut-through traffic, and increased speeds on local roads within neighbourhoods. In August 2013, City Council adopted the *City of Saskatoon Traffic Guidelines and Tools* that outlined 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 that were developed by the Administration and residents in collaborative fashion. Accordingly, this report provides the traffic management plan for Mount Royal.

The Mount Royal neighbourhood is located on the west side of the South Saskatchewan River and is bound by Circle Drive to the west, Avenue P & McMillan Avenue to the east, 31st Street to the north, and 22nd Street to the south. The area use is mostly residential, with a few schools (Mount Royal Collegiate, Howard Coad School, St. Gerard School, Royal West Campus, Saskatoon Trades and Skills Centre) and parks; as well as existing commercial land use along 22nd Street.

The development and implementation of the traffic management plan includes four stages:

- **Stage 1** Identify existing problems, concerns and possible solutions through the initial neighbourhood consultation and the Shaping Saskatoon Website.
- **Stage 2** Develop a draft traffic plan based on resident's 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 City Council for approval.
- **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 present the study findings and recommendations.

2 IDENTIFYING ISSUES, CONCERNS, AND POSSIBLE SOLUTIONS

A public meeting was held in June of 2015 to identify traffic concerns within the neighbourhood. At the meeting, residents were given the opportunity to express their concerns and suggest possible solutions. Meeting minutes are provided in **Appendix A**.

The following pages summarize the concerns and suggested solutions identified during the initial consultation with the neighbourhood residents.

2.1 Concern 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). In the case of Mount Royal, the bordering arterial streets (22nd Street and Avenue W) are designated to accommodate larger traffic volumes.

As speeding often accompanies shortcutting, these concerns have been grouped into one category.

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

- 29th Street
- Avenue W (especially near daycare south of 29th Street)
- 23rd Street
- Edmonton Avenue
- Avenue T (in front of Howard Coad School)
- Montreal Avenue (between Rylston Road & Bedford Road)

Proposed solutions identified by residents:

- Enforcement
- Reduce the speed limit
- Introduce or increase area of school speed zone
- Four-way stop signs
- Stop signs
- Traffic calming devices (ie. curb extensions, speed humps)
- Speed display board
- Photo radar
- Reduce speed limit

2.2 Concern 2 – Pedestrian Safety

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

Pedestrian crosswalks need to adhere to the City of Saskatoon Council Policy C07-018 *Traffic Control at Pedestrian Crossings*, November 15, 2004 which states the following:

"The installation of appropriate traffic controls at pedestrian crossings shall be based on warrants listed in the document entitled "Traffic Control at Pedestrian Crossings – 2004" approved by City Council in 2004."

Neighbourhood concerns regarding pedestrian safety were at the following locations:

- 29th Street & Avenue W
- 29th Street & Avenue R
- 29th Street & Avenue T
- 29th Street & Avenue X
- 23rd Street & Avenue X (near grocery store)
- Avenue W & 23rd Street
- Avenue W & Rylston Road

Proposed solutions identified by residents:

- Narrow the roadway with traffic calming devices to improve pedestrian safety
- Install zebra crosswalks
- Remove temporary traffic calming
- Install pedestrian activated device (i.e. Pedestrian Actuated Signals or Active Pedestrian Corridor)
- Move schools away from main roads

2.3 Concern 3 – Traffic Control

Traffic control signs are used in order to assign the right-of-way. City of Saskatoon Council Policy C07-007 *Traffic Control – Use of Stop and Yield Signs*, April 26, 2009 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 volume, collision history, and must have a balanced volume from each leg to operate sufficiently.

Neighbourhood concerns regarding traffic controls were at the following locations:

- 29th Street & Avenue W
- 29th Street & Avenue R
- 23rd Street & Witney Avenue
- 23rd Street & Avenue T
- 23rd Street & Avenue W

Proposed solutions identified by residents:

- Stop signs
- Four-way stop
- Enforcement for rolling through stop signs

2.4 Concern 4 – Parking

Parking is allowed on all city streets unless signage is posted. According to City of Saskatoon Bylaw 7200, *The Traffic Bylaw*, December 16, 2013, vehicles are restricted from parking within 10 metres of an intersection and one metre of a driveway crossing.

Neighbourhood concerns regarding parking were at the following locations:

- 29th Street & Avenue W
- Avenue W south of 29th Street (in front of daycare)
- Witney Avenue near Rylston Road (Royal West Campus)
- Avenue W & Rusholme Road
- Avenue W & Rylston Road
- Avenue T (in front of Howard Coad School)

Proposed solutions identified by residents:

- Parking restrictions
- Parking enforcement
- Implement pick-up/drop-off zone
- Install curb extensions to restrict parking

2.5 Concern 5 – Maintenance

Condition of the streets in Mount Royal was identified as a concern (i.e. snow clearing, potholes, tree trimming, and temporary traffic calming devices).

Neighbourhood concerns regarding maintenance were:

• Trees blocking driver's view on side streets

2.6 Concern 6 – Major Intersections

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

Neighbourhood concerns regarding major intersections:

- 22nd Street & Avenue P
- 22nd Street & Witney Avenue
- 22nd Street & Avenue W

Proposed solutions identified by residents:

- 22nd St & Witney Ave:
 - Improvements needed for eastbound left turn
- 22nd St & Ave W:
 - Left turn arrow needed heading north
 - Advanced green light needed for eastbound and westbound left turns
 - More crossing time for pedestrians
- 22nd Street & Avenue P:
 - Implement left-turn arrow phases

3 ASSESSMENT

3.1 Methodology

Stage 2 of the plan development included developing a draft traffic management 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:
 - Intersection turning moving counts
 - o Pedestrian counts
 - Daily and weekly traffic counts
 - o Average speed measurements
- 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 volumes (peak hours, daily, and weekly), travel speed, and pedestrian movements. A map of the traffic data collection is shown in **Appendix B**.

3.2 Travel Volumes and Travel Speeds

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**.

	Classifications					
Characteristics	Back Lanes		Locals		Collectors	
	Residential	Commercial	Residential	Commercial	Residential	Commercial
Traffic function	fic function only (traffic rfic function movement not a consideration)		Access primary function (traffic movement secondary consideration)		Traffic movement and land access of equal importance	
Average Daily Traffic (vehicles per day)	<500	<1,000	<1,000	<5,000	<5,000	8,000-10,000
Typical Speed Limits (kph)	20		50		50	
Transit Service	Not pe	ermitted	Generally avoided		Peri	nitted
Cyclist	Cyclist No restrictions or special facilities		No restrictions or special facilities		No restrictions or special facilities	
Pedestrians	Permitted, no	special facilities	Sidewalks on one or both sides	Sidewalks provided where required	Typically sidewalks provided both sides	Sidewalks provided where required
Parking	Parking Some restrictions		No restrictions or restriction on one side only		Few restricti pea	ons other than k hour

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

Travel 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 Mount Royal neighbourhood is 50kph, except for school zones where the speed limit is 30kph from September and June, 8:00am to 5:00pm, excluding weekends.

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

Street	Between	Speed (kph)	Average Daily Traffic (vpd)	Class
Avenue T	Ryston Road & 29th Street	43.8	360	
Witney Avenue	Rusholme Road & Rylston Road	school=48.6; regular=52.3	1,369	
23rd Street	Avenue X to Avenue Y	45.2	1,128	
23rd Street	Montreal Avenue & Ottawa Avenue	school=40.6; regular=46.8	854	local
23rd Street	Avenue S to Avenue V	47.9	1,301	
Montreal Avenue	Bedford Road to Rusholme Road	35.5	102	
29th Street	Witney Avenue & east of curve to Vancouver Ave	50.4	414	
29th Street	Avenue R & Avenue T	54.1	1,966	collector
Edmonton Ave - north of 31st St	31st Street & curve near Riversdale Kiwanis Park	60.6	5,740	
Avenue W	Rylston Road & 29th Street (school zone)	school=47.3; regular=55.4	4,937	major collector
Avenue W	29th Street & 30th Street	56.5	5,094	

Table 3-2: Speed Studies and Average Daily Traffic Counts (2015)

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*, January 26, 2009.

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 or an ADT greater than 6,000 vehicles per day or when five or more collisions are reported in the last twelve month period 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. Traffic entering the intersection from the minor street must be at least 35% for a four-way stop and 25% for a three-way stop.
- 2. No other all-way stop or traffic signals within 200m.

Results of the studies are shown in **Table 3-3**.

Location	Peak Hour Count	Average Daily Traffic (vpd)	# of Collisions within most recent 12 months	% of Traffic from minor street	Traffic Signals or all-way stop within 200m	All-Way Stop Warranted
29 th Street & Avenue T	278	3080	1	12%	no	All-way stop not warranted.
Bedford Road & Avenue T	53	640	4	29%	no	High collisions. Yield signs were installed in October 2014 (after collision analysis 2009-2013 data); therefore no further review needed.
23 rd Street & Avenue R	167	1700	3	15%	no	Collision analysis indicated three reported collisions within most recent 12 months. Two- way stop recommended.
23 rd Street & Avenue T	185	2060	5	41%	no	All-way stop warranted.
Avenue W & 29 th Street	714	7300	4	29%	no	High collisions. Additional Review.

Table 3-3: All-Way Stop Assessments

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

3.4 Pedestrian Assessments

Pedestrian assessments are conducted to determine the need for pedestrian actuated signalized crosswalks which, in adherence to the City of Saskatoon Council Policy C07-018 *Traffic Control at Pedestrian Crossings*, November 15, 2004, are typically active pedestrian corridor (flashing yellow lights) or pedestrian-actuated signals. A warrant system assigns points for a variety of conditions that exist at the crossing location, including:

- The number of traffic lanes to be crossed;
- the presence of a physical median;
- the posted speed limit of the street;
- the distance the crossing point is to the nearest protected crosswalk point; and
- the number of pedestrian and vehicles at the location.

Pedestrian and traffic data is collected during the five peak hours of: 8:00am to 9:00am, 11:30am to 1:30pm, and 3:00pm to 5:00pm.

In addition, if a pedestrian actuated crosswalk is not warranted, a standard marked pedestrian crosswalk, or a zebra crosswalk (i.e. striped) may be considered. A summary of the pedestrian studies are provided in **Table 3-4**.

Table 3-4: Pedestrian Assessment

Location	Number of Pedestrians Crossing During Peak Hours	Results	
Avenue W & 29 th Street	29		
29 th Street & Avenue T	20		
Bedford Road & Avenue T	7	Pedestrian Device Not Warranted	
29 th Street & Avenue R	13		
Avenue W & Rylston Road	120		
29 th Street & Avenue X	18		

Details of the pedestrian actuated signal and active pedestrian corridor assessments are provided in **Appendix D**.

3.5 Collision Analysis

The most recently available five year collision statistics (2009 to 2013) were provided by SGI. High-collision locations, typically noted as the locations with an average of two or more collisions per year, were reviewed in more depth to identify trends. These include:

- Avenue P & 23rd Street
- Avenue W & 29th Street
- Avenue P & 29th Street
- Avenue P & Rusholme Road
- Avenue W & Rusholme Road
- Bedford Road & Avenue T
- 23rd Street & Avenue Q
- 23rd Street & Avenue T
- Avenue P & Bedford Road
- Avenue W & 23rd Street

Details of the collision analysis are provided Appendix E.

4 PLAN DEVELOPMENT

4.1 Methodology

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

- Based on the assessments, prepare a plan that illustrates the appropriate recommended improvement
- 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 recommended plan and project process

The tables in the following sections provide the details of the recommended traffic management plan, including the location, recommended improvement, and the 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, January 26, 2009, "stop signs are <u>not</u> 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 Speeding and Shortcutting Improvements

Location	Recommended Improvement	Justification
Avenue W & Rylston Road	Curb Extensions on south side	Reduce speed & improve pedestrian safety
Back lane south of Circle Drive between 31 st Street to pedestrian tunnel	20kph Speed Signs	Reduce speed
Edmonton Ave near 31 st Street	Speed Display Board	Reduce Speed
23 rd Street & Montreal Avenue	Remove all temporary traffic calming	Direction of yield signs were changed in 2013 as part of the Blairmore Bikeway. Traffic calming not needed.

4.3 Pedestrian Safety

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

Table 4-2: Recommended Pedestrian Safety Improvements

Location	Recommended Improvement	Justification
Avenue W & Rylston Road	Zebra Crosswalk on south side	Improve pedestrian safety near schools
Avenue T & Rylston Road	Zebra Crosswalks	Improve pedestrian safety in front of school
Avenue W - 22 nd Street to 23 rd Street	Sidewalk on west side	Improve pedestrian safety & connectivity (connects to grocery store)
23 rd Street - Avenue P to Avenue Q	Sidewalk on both sides	Improve pedestrian safety & connectivity (school route)
23 rd St between Avenue Q & Avenue W	Sidewalk on south side	Improve pedestrian safety & connectivity
Bedford Road between Avenue W & Avenue T	Sidewalk on north side	Improve pedestrian safety & connectivity (school route)

4.4 Traffic Control

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**.

Location	Recommended Improvement	Justification
Avenue W & 29 th Street	Four-way Stop Signs	Improve driver & pedestrian safety
29 th Street - intersections along bus route(Avenue Q, Avenue R, Avenue X, Avenue Y)	Stop Signs	Improve safety along bus route (as per Policy C07-007, stop signs are warranted along a transit route)
23 rd Street & Avenue R	Stop Signs	Improve intersection safety (as per Policy C07-007, stop signs are warranted when three or more collisions are reported within most recent 12 months)
23 rd Street & Avenue T	Four-way Stop Signs	Improve intersection safety (as per Policy C07-007, an all-way stop is warranted when five or more collisions are reported within most recent 12 months)
Avenue W & 23 rd Street	Hazard Boards	Enhance visibility of stop signs
Avenue P & 23 rd Street	Hazard Boards	Enhance visibility of stop signs

Table 4-3: Recommended Traffic Control Improvements

4.5 Parking Improvements

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

Table 4-4: Recommended Parking Improvements

Location	Recommended Improvement	Justification
Avenue W & Rylston Road	Parking restrictions on southwest corner	Improve sightlines

4.6 Follow Up Consultation – Presentation of Traffic Management Plan

The initial recommended improvements were presented at a follow-up public meeting in November 2015 (for the meeting minutes refer to **Appendix A**). Recommended improvements that were not supported by the residents were eliminated or altered accordingly. A decision matrix detailing the list of recommended improvements presented at the follow-up meeting are included in **Appendix F**. A decision matrix for additional comments received after the draft traffic plan is also included in **Appendix F**.

The recommendations were circulated to the Civic Divisions (including Saskatoon Police Service, Saskatoon Light & Power, Saskatoon Fire Department, Environmental Services, and Transit) to gather comments and concerns. General support was received.

4.7 Major Intersection Reviews and Corridor Studies

The mandate for the Neighbourhood Traffic Management Reviews is to focus on neighbourhood streets such as local roads and collector roads. As almost all neighbourhoods are bound by arterial streets, such as 22nd Street, it is not uncommon to have residents raise issues regarding these streets. However, arterial streets are much more complex than local or collector streets due to larger traffic volumes, different types of drivers (commuters), coordinated traffic signals, transit accommodation, and potentially many commercial accesses. To properly address these, the typical transportation engineering approach would require a corridor study or a major intersection review, both of which are expensive and require significant resources. Through the Neighbourhood Traffic Reviews, the City is compiling a list of issues on arterial streets. The Transportation Division is working to prioritize the issues, identify the work requirements, and secure funding to complete these types of assessments.

5 RECOMMENDED PLAN & COST ESTIMATES

Stage 4, the last stage of the process, is to install the recommended improvements for the Mount Royal neighbourhood within the specified timeframe. The timeframe 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 signage will be completed short-term (1 to 2 years).

Major intersection reviews are based on the number of other locations to be reviewed citywide and the availability of funding. The timeline for review will be medium-term (3 to 5 years).

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

- **Table 5-1**: Traffic Calming Devices Cost Estimate
- Table 5-2: Traffic Control Signs Cost Estimate
- **Table 5-3**: Pedestrian Safety Signs Cost Estimate
- Table 5-4: Miscellaneous Signs Cost Estimate
- **Table 5-5**: Sidewalk Cost Estimate Total Cost Estimate
- Table 5-6: Total Cost Estimate

Location	Device	Cost Estimate		Time Frame
Location		Temporary	Permanent	Time Frame
Avenue W & Rylston Road	Curb Extensions on south side	\$500	\$90,000	1 to 5 years (traffic
23 rd Street & Montreal Avenue	Remove all temporary traffic calming	\$250	NA	calming devices will be installed
Edmonton Avenue near 31 st Street	Speed Display Board	\$0	\$5,000	temporarily until proven effective)
	Totals	\$750	\$95,000	, ,

Table 5-1: Traffic Calming Devices Cost Estimate

Table 5-2: Traffic Control Signs Cost Estimate

Location	Device	Number of Signs	Cost Estimate	Time Frame
Avenue W & 29 th Street	Stop Signs	4	\$1,000	
29 th Street - intersections along bus route (Avenue Q, Avenue R, Avenue X, Avenue Y)	Stop Signs	8	\$2,000	
23 rd Street & Avenue R	Stop Signs	2	\$500	1 to 2 years
23 rd Street & Avenue T	Stop Signs	4	\$1,000	
	Totals	18	\$4,500	

Table 5-3: Pedestrian Safety Signs Cost Estimate

Location	Device	Cost Estimate	Time Frame
Avenue W & Rylston Road	Zebra Crosswalk	\$500	
Avenue T & Rylston Road	Zebra Crosswalks	\$500	1 to 2 years
	Total	\$1,000	

Table 5-4: Miscellaneous Signs Cost Estimate

Location	Device	Number of Signs	Cost Estimate	Time Frame
Avenue W & Rylston Road "No Parking" sign		1	\$250	
Back lane south of Circle Drive between 31st Street to pedestrian tunnel	20kph Speed Signs	2	\$500	
Avenue W & 23rd Street	Hazard Boards	2	\$500	1 to 2 years
Avenue P & 23rd Street	Hazard Boards	2	\$500	
Totals		7	\$1,750	

Location	Between	Length (metres)	Cost Estimate	Time Frame
Avenue W	22 nd Street to 23 rd Street (west side only)	82	\$28,700	
23 rd Street	Avenue P to Avenue Q	222	\$77,700	
23 rd Street	Avenue Q & Avenue W (south side only)	600	\$210,000	5 years plus
Bedford Road	Avenue W & Avenue T (north side only)	300	\$105,000	
	Totals	1,204	\$421,400	

Table 5-5: Sidewalk Cost Estimate Total Cost Estimate

Table 5-6: Total Cost Estimate

Category	Signing & Temporary Traffic Calming (2016)	Permanent (Beyond 2016)	
Traffic Calming	\$750	\$95,000	
Traffic Control Signs	\$4,500	\$0	
Pedestrian Safety	\$1,000	\$0	
Miscellaneous	\$1,750	\$0	
Sidewalk	\$0	\$421,400	
Totals	\$8,000	\$516,400	

The total cost estimate for the signage and temporary traffic calming to be installed in 2016 is **\$8,000**. The total cost estimate for the installation of future permanent devices, including the active pedestrian corridor, and sidewalks, is **\$516,400**.

Resulting from the plan development process, the recommended improvements, including the location, type of improvement, and schedule for implementation are summarized in **Exhibit 5-1**. The resulting recommended Mount Royal Neighbourhood Traffic Management Plan is illustrated in **Table 5-7**.





Exhibit 5-1



Item	Location	Recommendation	Reason
1	Avenue W & 29 th Street	Four-way Stop Signs	Improve driver & pedestrian safety
2	Avenue W & Rylston Road	Curb Extensions & Zebra Crosswalk on south side; parking restrictions on southwest corner	Reduce speed, improve pedestrian safety & improve sightlines
3	Avenue W & 23 rd Street	Hazard Boards	Enhance visibility of stop signs
4	29 th Street - intersections along bus route (Avenue Q, Avenue R, Avenue X, Avenue Y)	Stop Signs	Improve safety along bus route (as per Policy C07-007, stop signs are warranted along a transit route)
5	Avenue T & Rylston Road	Zebra Crosswalks	Improve pedestrian safety in front of school
6	Avenue P & 23 rd Street	Hazard Boards	Enhance visibility of stop signs
7	23 rd Street & Avenue R	Stop Signs	Improve intersection safety
8	23 rd Street & Avenue T	Four-way Stop Signs	Improve intersection & pedestrian safety
9	Back lane south of Circle Drive between 31 st Street to pedestrian tunnel	20kph Speed Signs	Reduce speed
10	Edmonton Ave near 31 st Street	Speed Display Board	Reduce Speed
11	23 rd Street & Montreal Avenue	Remove all temporary traffic calming	Direction of yield signs were changed in 2013 as part of the Blairmore Bikeway. Traffic calming not needed.
12	Avenue W - 22 nd Street to 23 rd Street	Sidewalk on west side	Improve pedestrian safety & connectivity(connects to grocery store)
13	23 rd Street - Avenue P to Avenue Q	Sidewalk on both sides	Improve pedestrian safety & connectivity (connects to school)
14	23 rd Street between Avenue Q & Avenue W	Sidewalk on south side	Improve pedestrian safety & connectivity
15	Bedford Road between Avenue W & Avenue T	Sidewalk on north side	Improve pedestrian safety & connectivity (school route)

Table 5-7: Mount Royal Neighbourhood Recommended Improvements

APPENDIX A: PUBLIC CONSULTATION

Mount Royal Neighbourhood Traffic Review Thursday, June 4, 2015, 7:00 – 9:00 P.M. Mount Royal Collegiate

Facilitators:

• Mitch Riabko & Kathy Dahl (Great Works Consulting)

<u>Agenda</u>

- Welcome & introductions
- Presentation from the Transportation Division
- Small group discussions
- Small group discussion report back to large group
- Next Steps
- Question / Answers

Councillor Davies sends his regrets.

<u>Presentation from Transportation Division – Mount Royal Neighbourhood Traffic Review</u> (Presented by Justine Nyen – Traffic Engineer)

Presentation Outline:

- Neighbourhood Review Process
- Timeline for Mount Royal Review
- Sources of Information
- Concerns Received/Past Studies
- Description of Traffic Calming & Pedestrian Safety Devices

Neighbourhood Review Process:

- August 2013 New process; neighbourhood review vs issue by issue; eight neighbourhoods reviewed per year
- Mandate Reduce & calm traffic, improve safety within neighbourhoods
- **2014 –** Varsity View, Nutana, Brevoort Park, Haultain, Holliston, City Park, Westmount, Hudson Bay Park, Caswell Hill
- **2015** Mount Royal, Meadowgreen, Adelaide-Churchill, Montgomery Place, Confederation Park, Avalon, Greystone Heights, Lakeview

Timeline for Mount Royal Review:

- Stage 1 Identify issues & possible solutions through community consultation (June to fall 2015)
- Stage 2 Develop a draft traffic plan (fall 2015)
- Stage 3 Present draft traffic plan to community for feedback (fall 2015)
- Stage 4 Implement the changes over time

Sources of Information:

Mount Royal Neighbourhood Traffic Review Minutes – June 4, 2015

- Past Studies (speed studies, traffic volumes counts, intersection reviews, pedestrian crossings)
- Collision Analysis
- Feedback from Public Consultation
- Traffic Counts & Assessments

Concerns Received/Past Studies:

- Stop & Yield Retrofit Stop & Yield Retrofit program began as a pilot project in City Park. Favourable results were indicated with an overall reduction in collisions therefore the program was expanded to other neighbourhoods. Yield signs installed (in an alternating pattern so a thoroughfare isn't created) in fall 2014 at all uncontrolled intersections.
- 22nd Street currently being reviewed to address pedestrian crossing safety; pedestrian activated crossings installed at Ave R and Ave M; assess to determine effectiveness and next steps
- 29th Street & Avenue W- speeding on Avenue W north & south of 29th St; dropping off kids at daycare (sometimes after 5pm so 30kph limit is not in effect) nearly getting hit by cars speeding by; hit & runs; skewed intersection; dangerous; parking is obstructing view; children walking to and from school; pedestrians crossing to access bus stops.
 - Possible solutions: make the area a reduced speed zone; road narrowing; speed bumps; close off Edmonton Ave; install four-way stop at 29th Street or traffic signals; install three-way stop at 31st Street
 - Four-way stop (last study was in 2012; didn't warrant four-way stop); stop signs aren't to be used as speed control devices;
 - Speed study on Avenue W between 29th St & 30th St in June 2013 indicated acceptable range; traffic calming not recommended; peak time info sent to police for enforcement; temporary speed display board was installed
 - Expanded school zone to include Ave W & 29th St intersection; implement parking restrictions to improve visibility
 - Installed 50kph further north where it turns into Edmonton Ave to ensure motorists are aware of speed limit
- 29th Street speeding around curve where it turns into Vancouver Ave
- 29th Street & Avenue R collision occurred; speeding on 29th Street; change yield signs to stop; enforcement; installed crosswalk
- 29th St & Ave T speeding; ignoring yield signs; collisions; install four-way stop or speed bumps; or four-way stop a block or two away to slow down traffic on that stretch
- 23rd Street Blairmore Bikeway installed in 2013 currently being assessed; speeding between Avenue P & Witney Avenue; beside No Frills parking lot and Shopper's Drug Mart; many elderly walking to and from area; install speed humps; reduce speed limit; enforcement
- 23rd Street & Witney Avenue Four-way stop
- 23rd Street speeding in front of St. Gerard School (between Ottawa & Montreal Avenue)
- Witney Avenue parking issues across from Royal West Campus (near Rylston Road); students taking up on-street parking & blocking driveways; speeding

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Traffic Calming Devices (Examples of devices used in Saskatoon):

- 1. Speed Display Boards
- 2. Raised Median Island narrows road; provides center refuge for pedestrians
- 3. Curb Extensions narrows road
- 4. Roundabouts
- 5. Diverter used to address high traffic volumes
- 6. Right-in/right-out island used to address high traffic volumes
- 7. Directional Closure restrict movements onto the street from one direction
- 8. Raised median through intersection restrict movements
- 9. Full closure

Pedestrian Devices:

- 1. Standard crosswalk
- 2. Zebra crosswalk (striped pavement markings)
- 3. Active pedestrian corridor (flashing yellow lights)
- 4. Pedestrian-activated signals

Presentation from Saskatoon Police Services

- Saskatoon is growing; more enforcement
- Tools allow us to judge speeds radar, laser. However there are limits, trees blocking etc.
- Important to keep speeds down in residential area. In Mount Royal lots of times it's taking a drive through the area, because it's difficult to set up. Most calls we get are on 22nd Street and Avenue P.
- Goal is to reduce accidents, NOT give out tickets.
- Issues with residents contesting tickets in court. Have to make sure we have all the information.
- Saskatoon Police Services: 306-975-8300 <u>OR</u> 306-975-8068 to report a traffic complaint or a concern.

Q&A for Saskatoon Police Services:

Resident: Avenue W is no parking zone. Who's responsible for parking enforcement?

SPS: Commissionaires will provide parking enforcement (306-975-8344).

Resident: Collision stats. Who has those?

City: We're provided collision stats through SGI. These are reported collisions only. This information will be provided at the follow-up meeting.

Resident: Is daycare a challenge for enforcement? 7:30-8:30am and 5pm there should be enforcement for speeding.

SPS: Need to find a good place to set up, can be a challenge. If car is visible people slow down.

Resident: Park on 30th Street to set up for enforcement on Avenue W.

Resident: Police used to sit further down on Avenue W, before Edmonton Avenue.

Resident: I walk to with my kid to daycare. 29th Street & Avenue W is dangerous to cross.

Small Group Discussions

Breakout into small groups to discuss traffic concerns in Mount Royal and potential solutions

Group 1: Justine Nyen (City facilitator)

- 23rd Street & Avenue T not in favour of yield signs that were changed due to Blairmore Bikeway; change back to east-west stop; Avenue T is a main road so direction of the signs should be changed.
- 23rd Street bike route not satisfied with signs changed (direction); no bikes use the route in the winter; issues with graders and temporary curbing; Avenue P traffic calming narrows the road and restricts to one lane, blocking traffic that's coming northbound from 22nd Street; sign on the median is always getting hit
- Witney Avenue the driveway at Shoppers Drug Mart is too close to 22nd Street; drivers have to cross 4 lanes of traffic in a short distance to get back onto 22nd Street
- Avenue P the 7-11 driveway is too close to 22nd Street; drivers have to cross 4 lanes of traffic in a short distance to get back onto 22nd Street
- 29th Street & Avenue W skewed; visibility issues; parking in restricted areas and not enforced; no one stops for pedestrians; gets backed up on 29th Street (westbound) because when driver at front takes up entire lane (no space to go right); trees obstruct driver's view; should be a pickup and drop off area for the daycare; install flashing lights for the school zone; solutions (if four-way stop isn't warranted): trim trees to improve visibility, install curb extension on northeast corner of Ave W to restrict parking, improve sightlines, and narrow road to reduce speeds. This also won't restrict northbound movements.
- Avenue W & Rylston Road install pedestrian device and curb extensions to help with parking
- Avenue W & Rusholme Road install curb extensions to restrict parking; bus is parked in no parking zone on Ave W north of Rusholme
- Trees obstructing driver's view:
 - \circ Ave T & 23rd St
 - Ave T & Bedford Rd
 - $\circ~$ Ave P & 31 st St
- Edmonton Avenue speeding; enforcement would help

- Increase in traffic 33rd Street->Ave W->22nd Street to avoid 22nd Street and Circle Drive intersection because there's no access to downtown.
- In favour of pedestrian flashing lights instead of full stop (pedestrian activated signal)

Group 2: Mariniel Flores (City facilitator)

- 29th Street & Avenue W restrict parking at northeast corner; skewed intersection so it's difficult to see; four-way stop needed; zebra crosswalks (north and south)
- 23rd Street & Avenue W Median keep getting hit; zebra crosswalk; improvements for pedestrian safety (many pedestrians)
- Ave W & Rylston Rd daycare or active pedestrian corridor/signals
- Hedge trimming obstructs sidewalk on west side of Ave W between Rusholme Rd & Bedford Rd
- Tree blocking stop signs
- 22nd St & Ave W advance green light for westbound and eastbound left; many pedestrians there as well
- Witney Ave & 23rd St median keeps getting hit
- Edmonton Ave speeding concerns around curve
- 29th St between Ave W & Ave X paving needed; big gravel hole being dug up
- Ave W, as a whole, should be studied. Perhaps active transportation corridor
- 23rd St & Ave M remove mini roundabout

Group 3: Jay Magus (City facilitator)

- 1. Why are schools too close to the main road?
- 2. Montreal Avenue between Bedford Rd & Rylston Rd speeding
- 3. 29th Street & Avenue T Pedestrian crossing safety at intersection
- 4. 29th Street & Avenue T Change yield to stop signs
- 5. 22nd St & Avenue P Why are there not left turn arrows?
- 6. 29th Street west of Avenue W speeding; buses
- 7. Avenue W north of 29th Street on east side Expand no parking further to north
- 8. Avenue W & 29th St Continue of pavement
- 9. 22nd St & Witney Avenue Eastbound left turn, into the queue of folks turning right
- 10. Avenue W & Rylston Rd (in front of school) Parent pickup and drop off zone with the skills training center
- 11.Avenue W & 29th St four-way stop
- 12. Avenue W & Avenue X Zebra stripes
- 13. Avenue W & 30th Street Raised median is not a solution
- 14. Avenue W & 29th St Volume of traffic
- 15. Avenue W to 30th Street Shortcutting
- 16. Eliminate school zone
- 17. Avenue W in front of Mount Royal Collegiate Can't see
- 18. Avenue W & 29th St Pedestrian safety
- 19.22nd St between Avenue S & Avenue T Pedestrian close to travel zone
- 20. Ave C & 29th St

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21. Speed reader was placed too close to school zone last fall

Next Steps

- 1. Continue monitoring traffic issues in your neighbourhood
- 2. Mail-in or email comments no later than July 4/15
- 3. Additional public input via City on-line Community Engagement webpage no later than July 4/15

http://shapingsaskatoon.ca/discussions/mount-royal-neighbourhood-traffic-reviewmeeting

- 4. Traffic count data collection spring/summer 2015
- 5. City review of public input and data collected from traffic studies and prepare draft Traffic Plan
- 6. Follow-up public input meeting to provide input on draft
- 7. Determine revisions and finalize Traffic Plan
- 8. Present Traffic Plan to City Council for approval

Question & Answer

Resident: It's approximately a year to implementing?

City: Must be approved by City Council. We've began implementing recommendations from last year's reviews. Those round 2 meetings wrapped up last December. We're hoping for the same timeline.

Resident: Cycling. Is this included in this review?

City: Our group looks at cycling issues. There's also the Active Transportation Plan coming soon. It looks at the entire cycling network – connections, new neighbourhoods, retrofitting in established neighbourhoods.

Resident: Who pays for this? Will taxes go up?

City: Goes through budget process.

Resident: Are cyclists being counted on 23rd Street?

City: This is currently being assessed. Cyclists will be counted.

Resident: It's not safe to bike to downtown. Even on 23rd Street.

City: Go to Shaping Saskatoon, search "Active Transportation" and share those comments (<u>http://shapingsaskatoon.ca/projects/active-transportation-plan</u>)

List of Representatives

Mitch Riabko, Kathy Dahl – Great Works Consulting, Facilitators

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Jay Magus – City of Saskatoon, Transportation & Utilities, Engineering Manager Justine Nyen – City of Saskatoon, Transportation & Utilities, Transportation Engineer Mariniel Flores – City of Saskatoon, Transportation & Utilities, Transportation Engineer Mark Emmons – City of Saskatoon, Planning & Development, Planner – Neighbourhood Planning

Mount Royal Neighbourhood Traffic Review Tuesday, November 17, 2015, 7:00 – 9:00 P.M. Mount Royal Collegiate

Facilitators:

• Mitch Riabko & Kathy Dahl (Great Works Consulting)

<u>Agenda</u>

- Welcome & introductions
- Presentation from the Transportation Division
- Small group discussions
- Small group discussion report back to large group
- Next Steps
- Question / Answers

<u>Presentation from Transportation Division – Mount Royal Neighbourhood Traffic Review</u> (Presented by Justine Nyen – Transportation Engineer)

Presentation Outline:

- Neighbourhood Traffic Management Program
- How We Got Here
- What We Heard
- What We Did
- What We Propose

Neighbourhood Traffic Management Program:

- Address neighbourhood traffic issues:
 - Speeding concerns
 - Short-cutting concerns
 - Pedestrian safety
 - Intersection safety
- August 2013 changes to program
 - Neighbourhood-wide review
 - More community / stakeholder feedback
 - Efficient use of staff resources

How We Got Here:

- June 2015 Initial Traffic Meeting
- June to November 2015 gather feedback, conduct traffic studies, collect data, develop traffic plan
- November 2015 Follow Up Traffic Meeting display proposed traffic plan and gather feedback

What We Heard:

- A. Speeding/Traffic Volumes:
- 29th St
- Avenue W
- 23rd Street

- Edmonton Ave
- Avenue T (in front of school)
- B. Pedestrian Safety:
 - Avenue W & 29th St
 - Avenue W & Rylston Rd
 - 23rd St
- C. Intersection Safety:
 - Avenue W & 29th St difficult to cross or turn left from 29th St, visibility issues, skewed intersection
 - Avenue W & 23rd St
 - Witney Ave & 23rd St
 - Ave T & 23rd St
 - 22nd St at the signalized intersections (Ave W, Ave P & Witney Ave) request for left turn arrow phase
- D. Parking:
 - Witney Ave (Royal West Campus) blocking driveways, parking too close to intersections
 - Avenue W parents picking up/dropping off children at daycare

What We Did:

- Collected Data:
 - Past studies
 - Comments from initial meeting
 - Resident responses (phone calls, emails, letters)
 - Recorded comments from Shaping Saskatoon discussions
 - 6 Intersection / Pedestrian counts
 - 11 7 day traffic count (24 hour) & Average Speed measurements
 - Collision history
- Field Reviews
- Assessed the Issues
- Generated proposed recommendations

What We Propose:

- Zebra Crosswalks
- Hazard Boards
- Stop Signs (and four-way stops)
- Parking Restrictions
- Curb Extensions
- Raised Median Islands
- Sidewalks
- Enforcement (speeding)
- Saskatoon Police Services: 306-975-8300 <u>OR</u> 306-975-8068 to report a traffic complaint or a concern.

Small Group Discussions

Breakout into small groups to discuss traffic concerns in Mount Royal and potential solutions

Group 1: Mariniel Flores (City facilitator)

- Item #1 Median islands at Edmonton Ave & 31st St group was in neutral support; potential for photo radar or speed board
- 23rd St & Ave T bushes obstructing driver's view and parking; install four-way stop or change orientation of stop signs
- Item #12 Curb extensions on 23rd St in front of St. Gerard School group was in neutral support
- Item #13 Sidewalks on 23rd St install on one side along entire section between Ave P and Ave W
- 23rd St collisions at Ave R; speeding concerns
- Ave W near Rylston Rd disabled parking needs to be reviewed
- Bedford Rd between Ave W and Ave T no sidewalks at all; need sidewalk at least on one side
- Tree trimming needed along alleys and at Rylston Rd and Ave S
- Potholes along Witney Ave (Ave P is good) and Ave T need to repair/repave and Ave X, Ave H

Group 2: Shirley Matt (City facilitator)

- Item #1 Median islands at Edmonton Ave Edmonton Ave is not wide enough; issues with younger drivers; ok as long as there is enough space for big trucks; maintenance issues with islands (during winter); drivers fly around corner; install four-way stop
- Item #2 Four-way stop with median islands at Ave W & 29th St median islands are more of a hazard
- Item #3 Ave W & Rylston Rd median islands, zebra crosswalk & parking restrictions – not in support of islands; may have issues with daycare; prefer curb extensions at corner instead (on school side)
- Item #8 zebra crosswalk, curb extension & median island at 29th St & Ave T not in support of curbs or islands
- Item #11 median island & crosswalk at Ave T & 23rd St not in support of median island; hedges blocking view
- Item #12 curb extension on 23rd St in front of St. Gerard School split opinion
- General comments about traffic calming (ie. median island & curb extensions):
 - Maintenance issues
 - Level of service snow removal, street sweeping
- Ave W & Rusholme Rd remove pedestrian actuated signal and replace with active pedestrian corridor (ie. flashing yellow light) or four-way stop; move pedestrian actuated signal to Ave W & Rylston Rd for daycare

Group 3: Justine Nyen (City facilitator)

 Item #1 – median island at Edmonton Ave & 31st St – not sure if this will work; likely not enough to reduce speed

- Item #8 curb extension & median island at 29th St & Ave T devices might not be necessary; concerns with turning movements (most people turn here)
- Item #9 stop signs at 29th St & Ave T not necessary; most drivers are turning/slowing down anyways
- Item #10 stop signs at Ave T & Bedford Rd change direction of yield signs instead
- Item #11 median island & crosswalk at 23rd St & Ave T –signs not necessary; change to yield signs stop (direction of signs changed in 2012 for bike route)
- Back lane south of Circle Dr between 31st St to pedestrian tunnel speeding & increased traffic volumes; install 20kph speed signs, police enforcement needed
- General comments about traffic calming:
 - Locations might not be necessary. Consider pros & cons
 - Focus on school sites and walking routes to schools

Next Steps

- 1. Mail-in or email comments no later than Dec 17/15
- 2. Additional public input via City on-line Community Engagement webpage no later than Dec 17/15

http://shapingsaskatoon.ca/discussions/mount-royal-neighbourhood-traffic-review-meeting

- 3. Additional consultation if required
- 4. Present traffic plan to City Council for approval
- 5. What if City Council approves? Implementation begins. Signs and temporary traffic calming will be installed as early as next spring (2016)
- 6. What if I don't agree? Request time to speak at City Council meeting

<u>Q&A</u>

No questions received.

List of Representatives

Mitch Riabko, Kathy Dahl – Great Works Consulting, Facilitators Justine Nyen, Shirley Matt, Mariniel Flores – City of Saskatoon, Transportation & Utilities

APPENDIX B: TRAFFIC DATA COLLECTION



APPENDIX C: ALL WAY STOP ASSESSMENTS

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

Step 1:

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
29 th Street & Avenue T	12% (no)	no	
Bedford Road & Avenue T	29% (no)	no	Conditions NOT met.
23 rd Street & Avenue R	15% (no)	no	
23 rd Street & Avenue T	41% (yes)	no	Conditions met.
Avenue W & 29 th Street	29% (no)	no	Conditions NOT met. However, high collisions requires further review.

Step 2:

Provided the above criteria are met, the following conditions, singly or in combination, may warrant the installation of all-way stop signs:

i) When five or more collisions are reported in the last twelve month period and are of a type susceptible to correction by 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.

Location	Criteria 1: 5 or more collisions in most recent 12 months	Criteria 2: total number of vehicles entering the intersection from all approaches averages at least 600 per hour for the peak hour	Criteria 3: total intersection entering volume exceeds 6,000 vehicles per day	Results
23 rd Street & Avenue T	5 – Condition met	185 – Condition NOT met	2,060 – Condition NOT met	Four-way stop warranted based on collisions.
Avenue W & 29 th Street	4 - Condition NOT met	714 - Condition met	7,300 - Condition met	Further consideration due to high collisions.

Traffic volume criteria meets the warrant requirements for a four-way stop. As previously identified, traffic from the minor street is slightly below the requirement (i.e. 35%). However, based on requests received during the public consultation, collision analysis, and traffic volumes a four-way stop at Avenue W & 29th Street is recommended. Installation of an unwarranted all-way stop may lead to issues such as queuing traffic on the major roadway, or driver non-compliance. The location will be monitored after installation of the four-way stop to determine effectiveness.

APPENDIX D: PEDESTRIAN DEVICE ASSESSMENTS

Active Pedestrian Corridor Warrant:

29th St & Ave X:

(15 mii	nute inte	ervals)" P.C.	Vehicle Period	e Counts s Points	of		Pedest	trian Co	unts			
	Warrar	nt	Total B Wrnt'd	Both Side I Wrnt'o	es d				Factor	ed Counts		
	15 mir Points	n. 30 min (1=Yes)	n.Child) Period	Teen s	Adult	Senior	/ Impaii	red	Total	15 min.	30 n	nin.
7:00												
7:15												
7:30												
7:45												
8:00	114	114										
8:15	138	252	3				3	3	3	756		
8:30	157	295	4				4	4	7	2,065		
8:45	148	305	3				3	3	7	2,135		
9:00		148							3	444		
9:15												
9:30												
9:45												
AM To	tals	557		10				10				
11:30	95		3				3	3				
11:45	106	201							3	603		
12:00	121	227	1				1	1	1	227		
12:15	127	248	2				2	2	3	744		
12:30	114	241							2	482		

12:45	97	211	5		5	5	5	1,055
13:00	110	207					5	1,035
13:15	107	217						
Noon T	otals	877		11		11		
14:00								
14:15								
14:30								
14:45								
15:00	166	166	2		2	2	2	332
15:15	214	380	1		1	1	3	1,140
15:30	217	431	1		1	1	2	862
15:45	205	422	3		3	3	4	1,688
16:00	188	393					3	1,179
16:15	187	375	1		1	1	1	375
16:30	163	350					1	350
16:45	176	339						
17:00		176						
17:15								
17:30								
17:45								
18:00								
18:15								
18:30								
18:45								
19:00								

19:15								
19:30								
19:45								
20:00								
20:15								
20:30								
20:45								
PM Totals	1,516		8		8			
Totals 2,	950	29		29				
		100%		100%				
				North Crosswalk =		10		
on this sid	le of the int.			South Crosswalk =		19	<<< install cros	swalk
SUMMAR	Y							
				Total Warranted PC Poin	nts:		or	/ period
				Highest PC point value:	2,135	at		
				Average PC point value:	1,031			
				No. of periods warranted	d:			

Ave W & Rylston Rd:

(15 minute intervals)" P.C.		ervals)" P.C.	Vehicle Counts Periods Points of				Pedest	rian Cou	nts		
	Warrar	nt	Total B Wrnt'd	oth Side Wrnt'd	S				Factore	ed Counts	
	15 mir Points	n. 30 min (1=Yes)	.Child Periods	Teen	Adult	Senior	/ Impair	ed	Total	15 min.	30 min.
7:00											
7:15											
7:30											
7:45											
8:00	73	73			3		3	1.5	1.5	110	
8:15	107	180			5		5	2.5	4	720	
8:30	137	244	5		11		16	10.5	13	3,172	
8:45	107	244	2	2	5		9	5.84	16.34	3,987	
9:00		107							5.84	625	
9:15											
9:30											
9:45											
AM Tot	tals	424		7	2	24		33			
11:30	75				1		1	0.5			
11:45	65	140			5	2	7	4.5	5	700	
12:00	77	142	1		8	1	10	6	10.5	1,491	
12:15	88	165			11		11	5.5	11.5	1,898	
12:30	84	172			3		3	1.5	7	1,204	
12:45	60	144			5		5	2.5	4	576	
13:00	80	140			6		6	3	5.5	770	
13:15	78	158			3		3	1.5	4.5	711	

Noon T	otals	607	1		42	3	46		
14:00									
14:15									
14:30									
14:45									
15:00	97	97		2		2	1	1	97
15:15	100	197		9		9	4.5	5.5	1,084
15:30	134	234	7	14		21	11.69	16.19	3,788
15:45	127	261		1		1	0.5	12.19	3,182
16:00	106	233		2		2	1	1.5	350
16:15	115	221		4		4	2	3	663
16:30	123	238		1		1	0.5	2.5	595
16:45	122	245		1		1	0.5	1	245
17:00		122						0.5	61
17:15									
17:30									
17:45									
18:00									
18:15									
18:30									
18:45									
19:00									
19:15									
19:30									
19:45									

20:00								
20:15								
20:30								
20:45								
PM Totals 9	24		7	34		41		
Totals 1,955	8	9	100	3	120			
	7%	8%	83%	3%	100%			
			North (Crosswa	lk =		65	<<< install crosswalk
on this side of the	e int.							
			South (Crosswa	lk =		55	

SUMMARY

Total Warranted PC Points:		or	/ period
Highest PC point value: 3,987	at		
Average PC point value: 1,735			
No. of periods warranted:			

29th St & Ave R:

(15 minute intervals)" P.C.	Vehicle Counts Periods Points of	Pedestrian Counts
Warrant	Total Both Sides Wrnt'd Wrnt'd	Factored Counts

	15 mir Points	n. 30 mir (1=Yes)	n.Child) Periods	Teen s	Adult	Senior / Impa	aired	Total	15 min.	30 min.
7:00										
7:15										
7:30										
7:45										
8:00	57	57								
8:15	62	119	2			2	2	2	238	
8:30	70	132	2			2	2	4	528	
8:45	65	135						2	270	
9:00		65								
9:15										
9:30										
9:45										
AM To	tals	254		4			4			
11:30	46		1			1	1			
11:45	40	86						1	86	
12:00	44	84								
12:15	33	77								
12:30	63	96								
12:45	61	124								
13:00	38	99								
13:15	41	79								
Noon 1	otals	366		1			1			
14:00										
14:15										

14:30								
14:45								
15:00	55	55						
15:15	77	132	3		3	3	3	396
15:30	86	163	1		1	1	4	652
15:45	77	163	1		1	1	2	326
16:00	75	152					1	152
16:15	65	140	2		2	2	2	280
16:30	64	129					2	258
16:45	87	151	1		1	1	1	151
17:00		87					1	87
17:15								
17:30								
17:45								
18:00								
18:15								
18:30								
18:45								
19:00								
19:15								
19:30								
19:45								
20:00								
20:15								
20:30								

20:45							
PM Totals	586		8	8			
Totals 1,20	6	13		13			
		100%		100%			
on this side o	of the int.			West Crosswalk =	8	<<< install c	rosswalk
				East Crosswalk =	5		
SUMMARY							
				Total Warranted PC Points:		or	/ period
				Highest PC point value: 652	at		
				Average PC point value: 228			
				No. of periods warranted:			

Avenue W & 29th St:

(15 minute intervals)"	Counts	5	Pedestrian	Counts			
P.C. Periods Points of							
Warrant	Total B Wrnt'd	oth Side Wrnt'o	es d		Factore	d Counts	
15 min. 30 mir	n.Child	Teen	Adult	Senior / Impaired	Total	15 min.	30 min.
Points (1=Yes) Periods							

7:15								
7:30								
7:45								
8:00	114	114						
8:15	138	252	3		3	3	3	756
8:30	157	295	4		4	4	7	2,065
8:45	148	305	3		3	3	7	2,135
9:00		148					3	444
9:15								
9:30								
9:45								
AM To	tals	557		10		10		
11:30	95		3		3	3		
11:45	106	201					3	603
12:00	121	227	1		1	1	1	227
12:15	127	248	2		2	2	3	744
12:30	114	241					2	482
12:45	97	211	5		5	5	5	1,055
13:00	110	207					5	1,035
13:15	107	217						
Noon T	otals	877		11		11		
14:00								
14:15								
14:30								
14:45								

15:00	166	166	2		2	2	2	332
15:15	214	380	1		1	1	3	1,140
15:30	217	431	1		1	1	2	862
15:45	205	422	3		3	3	4	1,688
16:00	188	393					3	1,179
16:15	187	375	1		1	1	1	375
16:30	163	350					1	350
16:45	176	339						
17:00		176						
17:15								
17:30								
17:45								
18:00								
18:15								
18:30								
18:45								
19:00								
19:15								
19:30								
19:45								
20:00								
20:15								
20:30								
20:45								
PM Tot	als	1,516		8		8		

Totals	2,950	29		29			
		100%		100%			
			North Crosswal	k =	10		
on this	side of the int.		South Crosswal	k =	19	<<< install cros	sswalk
SUMM	ARY						
			Total Warrante	d PC Points:		or	/ period
			Highest PC poir	nt value: 2,135	at		
			Average PC poin	nt value: 1,031			
			No. of periods v	warranted:			

Ave T & Bedford Rd:

(15 minute interval P.C	s)" Vehicle Cour C. Periods Poin	nts ts of	Pedestriar	n Counts		
Warrant	Total Both S Wrnt'd Wrn	ides t'd				
15 min. 30 Points (1=	min.Child Teer Yes) Periods	n Adult	Senior / Impaired	Total	15 min.	30 min.
7:00						
7:15						
7:30						

7:45									
8:00	4	4							
8:15	8	12							
8:30	4	12							
8:45	10	14							
9:00		10							
9:15									
9:30									
9:45									
AM Tot	tals	26							
11:30	6								
11:45	10	16	1			1	1	1	16
12:00	9	19						1	19
12:15	12	21	1			1	1	1	21
12:30	11	23						1	23
12:45	18	29	1			1	1	1	29
13:00	13	31						1	31
13:15	12	25							
Noon T	otals	91		3			3		
14:00									
14:15									
14:30									
14:45									
15:00	15	15							
15:15	14	29	2			2	2	2	58

15:30	17	31					2	62
15:45	12	29	1		1	1	1	29
16:00	11	23					1	23
16:15	9	20	1		1	1	1	20
16:30	13	22					1	22
16:45	19	32						
17:00		19						
17:15								
17:30								
17:45								
18:00								
18:15								
18:30								
18:45								
19:00								
19:15								
19:30								
19:45								
20:00								
20:15								
20:30								
20:45								
PM Tot	als	110		4		4		
Totals	227		7		7			
			100%		100%			

			West C	Crosswalk =	1				
on this	side of the int.		East Cr	rosswalk =	6	<<< install cros	sswalk		
SUMM	ARY								
			Total V	Varranted PC Points:		or	/ period		
			Highes	t PC point value: 62	at				
			Averag	ge PC point value: 24					
			No. of periods warranted:						
29 th St	& Ave T:								
"Time									
(15 mir	nute intervals)" P.C.	Vehicle Counts Periods Points	of	Pedestrian Co	unts				
	Warrant	Total Both Side Wrnt'd Wrnt'd	2S		Factore	ed Counts			
	15 min. 30 mir Points (1=Yes	n.Child Teen) Periods	Adult	Senior / Impaired	Total	15 min.	30 min.		
7:00									
7:15									
7:30									

7:45

8:00 59 59 1 1 1 59

8:15	69	128	4		4	4	5	640
8:30	86	155	3		3	3	7	1,085
8:45	64	150					3	450
9:00		64						
9:15								
9:30								
9:45								
AM To	tals	278		8		8		
11:30	37		3		3	3		
11:45	46	83					3	249
12:00	60	106						
12:15	66	126						
12:30	36	102						
12:45	49	85	2		2	2	2	170
13:00	36	85					2	170
13:15	42	78						
Noon 1	otals	372		5		5		
14:00								
14:15								
14:30								
14:45								
15:00	69	69						
15:15	69	138	1		1	1	1	138
15:30	58	127					1	127
15:45	59	117	4		4	4	4	468

16:00	63	122	1				1	1	5	610
16:15	55	118	1				1	1	2	236
16:30	64	119							1	119
16:45	69	133								
17:00		69								
17:15										
17:30										
17:45										
18:00										
18:15										
18:30										
18:45										
19:00										
19:15										
19:30										
19:45										
20:00										
20:15										
20:30										
20:45										
PM Tot	als	506		7				7		
Totals	1,156		20				20			
			100%				100%			
on this	side of t	he int			West Cro	sswalk	:=		14	<<< install crosswalk
ULL LINE	JIGC OF L	ine inti								

SUMMARY

Total Warranted PC Points:		or	/ period
Highest PC point value: 1,085	at		
Average PC point value: 301			
No. of periods warranted:			

6

Pedestrian Actuated Signal Warrant:

29th St & Ave X:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.

2. Median Priority Points:

MEDF = 6.0 points = indicating there is no physical median here.

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D = 400 m = distance from study location to nearest protected crosswalk.

LOCF = 15.0 points = (D-200) / 13.3 to a maximum of 15 points.

Actual value = 15.03759398 points.

5. Pedestrian/Vehicle Volume Priority Points:

	H =	5.0	= (hours) duration of counting period.
counted.	Ps =	29.0	= total number of children, teenagers, seniors and/or impaired
	Pa =	0.0	= total number of adults counted.
	Pw =	43.5	 weighted average of pedestrians crossing the main street.
main street.	Pcm =	8.7	 weighted average hourly pedestrian volume crossing the
	V =	2950.0	= volume of traffic passing through the crossing(s).
crossing(s).	Vam = 590.0		 average hourly volume of traffic passing through the
	VOLF =	= 10.3 points	= Vam x Pcm / 500

6. Satisfaction of Installation Criteria:

SUMF = 38 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

Ave W & Rylston Rd:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.

2. Median Priority Points:

MEDF = 6.0 points = indicating there is no physical median here.

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D = 190 m = distance from study location to nearest protected crosswalk.

LOCF = 0.0 points = (D-200) / 13.3 to a maximum of 15 points.

5. Pedestrian/Vehicle Volume Priority Points:

H = 5.0 = (hours) duration of counting period.

Ps = 20.0 = total number of children, teenagers, seniors and/or impaired d.

counted.

	Pa =	100.0	= 1	total number of adults counted.
	Pw =	130.0	= \	weighted average of pedestrians crossing the main street.
main street.	Pcm =	26.0	= \	weighted average hourly pedestrian volume crossing the
	V =	1955.0	= \	volume of traffic passing through the crossing(s).
crossing(s).	Vam =	391.0	= 6	average hourly volume of traffic passing through the
	VOLF =	20.3 points	= \	Vam x Pcm / 500

6. Satisfaction of Installation Criteria:

SUMF = (LANF + MEDF + SPDF + LOCF + VOLF)

SUMF = 33 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

29th St & Ave R:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.

2. Median Priority Points:

MEDF = 6.0 points = indicating there is no physical median here.

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D = 230 m = distance from study location to nearest protected crosswalk.

LOCF = 2.3 points = (D-200) / 13.3 to a maximum of 15 points.

5. Pedestrian/Vehicle Volume Priority Points:

H = 5.0 = (hours) duration of counting period.

Ps = 13.0 = total number of children, teenagers, seniors and/or impaired counted.

Pa = 0.0 = total number of adults counted.

Pcm = 3.9 = weighted average hourly pedestrian volume crossing the main street.

V = 1206.0 = volume of traffic passing through the crossing(s).

Vam = 241.2 = average hourly volume of traffic passing through the

crossing(s).

- 6. Satisfaction of Installation Criteria:
 - SUMF = (LANF + MEDF + SPDF + LOCF + VOLF)

SUMF = 17 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

Ave W & 29th St:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.
2. Median Priority Points:

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D = 400 m = distance from study location to nearest protected cross	walk.
---	-------

LOCF = 15.0 points = (D-200) / 13.3 to a maximum of 15 points.

Actual value =	15.03759398	points.

5. Pedestrian/Vehicle Volume Priority Points:

H = 5.0 = (hours) duration of counting period.

Ps = 29.0 = total number of children, teenagers, seniors and/or impaired counted.

Pa = 0.0 = total number of adults counted.

Pw = 43.5 = weighted average of pedestrians crossing the main street.

Pcm = 8.7 = weighted average hourly pedestrian volume crossing the main street.

V = 2950.0 = volume of traffic passing through the crossing(s).

Vam = 590.0 = average hourly volume of traffic passing through the crossing(s).

6. Satisfaction of Installation Criteria:

SUMF = (LANF + MEDF + SPDF + LOCF + VOLF)

SUMF = 38 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

Ave T & Bedford Rd:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.

2. Median Priority Points:

MEDF = 6.0 points = indicating there is no physical median here.

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D =	1,000	m	 distance from study location to nearest protected crosswalk. 	•

LOCF = 15.0 points = (D-200) / 13.3 to a maximum of 15 points.

Actual value = 60.15037594 points.

5. Pedestrian/Vehicle Volume Priority Points:

H = 5.0 = (hours) duration of counting period.

Ps = 7.0 = total number of children, teenagers, seniors and/or impaired

counted.

Pa =	0.0	total number of adults counted.

Pw = 10.5 = weighted average of pedestrians crossing the main street.

	Pcm = 2.1	 weighted average hourly pedestrian volume crossing the
main street.		

V = 227.0 = volume of traffic passing through the crossing(s).

Vam = 45.4 = average hourly volume of traffic passing through the crossing(s).

6. Satisfaction of Installation Criteria:

SUMF = (LANF + MEDF + SPDF + LOCF + VOLF)

SUMF = 28 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

29th St & Ave T:

1. Lanes Priority Points:

L = 2 lanes = number of lanes.

LANF = 0.0 points = $(L-2) \times 3.6$ to a max of 15 points, urban x-section only.

2. Median Priority Points:

MEDF = 6.0 points = indicating there is no physical median here.

3. Speed Priority Points:

S = 50 kph = speed limit or 85th percentile speed.

SPDF = 6.7 points = (S-30)/3 to a maximum of 10 points.

4. Pedestrian Protection Location:

D = 1,000 m = distance from study location to nearest protected crosswalk.

LOCF = 15.0 points = (D-200) / 13.3 to a maximum of 15 points.

Actual value =	60.15037594	points.

5. Pedestrian/Vehicle Volume Priority Points:

H =	5.0	= (hours) duration o	f counting	period.
-----	-----	-----	-------	--------------	------------	---------

Ps =	20.0	 total number of children, teenagers, seniors and/or impaired

counted.

	Pa = 0.0	= total number of adults counted.
	Pw = 30.0	= weighted average of pedestrians crossing the main street.
main street.	Pcm = 6.0	 weighted average hourly pedestrian volume crossing the

V = 1156.0 = volume of traffic passing through the cro	ssing(s).
--	-----------

Vam = 231.2 = average hourly volume of traffic passing through the crossing(s).

6. Satisfaction of Installation Criteria:

SUMF = (LANF + MEDF + SPDF + LOCF + VOLF)

SUMF = 30 points

(P.A. Signal Warrant Points)

The total of the warrant points is less than 100 indicating that

a pedestrian actuated signal is NOT warranted.

APPENDIX E: COLLISION ANALYSIS

Street 1	Street 2	Ugrid	All Collisions (2009 – 2013)	All collisions - 2013	Right Angle, Left Turn, Right Turn (2009 -2013)	Right Angle, Left Turn, Right Turn - 2013 only	Collector or Arterial	Average (2009 – 2013)
Ave P	23rd St	E7-50	19	4	11	3	yes	4
Ave W	29th St	D6-14	18	4	11	3	yes	4
Ave P	29th St	E6-27	15	4	11	3	yes	3
Ave P	Rusholme Rd	E7-54	14	2	6	1	yes	3
Ave W	Rusholme Rd	D7-33	11	0	8	0	yes	2
Bedford Rd	Ave T N	D7-22	11	4	9	4	no	2
23rd St	Ave Q N	D7-3	10	3	7	3	no	2
23rd St	Ave T N	D7-20	9	1	9	1	no	2
Ave P	Bedford Rd	E7-51	8	0	3	0	yes	2
Ave W	23rd St	D7-31	8	2	3	1	yes	2
23rd St	Ave V N	D7-38	6	2	5	2	no	1
23rd St	Ave S N	D7-15	5	0	1	0	no	1
Rusholme	Ave P N	D7-11	5	1	3	0	20	1
23rd St		D7-26	J	2	3	1	no	1
20th St		D6-6	4	2	1	0	Ves	1
Ave W	Bedford Rd	D7-61	4	0	0	0	Ves	1
Bedford Rd		D7-01	4	0	0	0	yes no	1
Rusholme	AVEON	D7-33	4	0	4	0	110	1
Rd	Ave Y N	C7-7	4	2	2	1	no	1
Rylston Rd	Ave Q N	D7-7	4	1	3	1	no	1
23rd St	Ave R N	D7-9	3	3	3	3	no	1
Ave P	31st St	E6-30	3	0	1	0	yes	1
Ave Rusholme	29th St	E6-41	3	0	1	0	yes	1
Rd	Ave Q N	D7-6	3	0	1	0	no	1
Rylston Rd	Ave X N	C7-47	3	2	2	2	no	1
Witney Ave	29th St	C6-4	3	1	1	0	no	1
Witney Ave	Rusholme Rd	C7-10	3	1	1	1	no	1
30th St	Ave T N	D6-39	2	0	0	0	no	0
Ave W	Rylston Rd	D7-51	2	1	1	1	yes	0
Bedford Rd	Ave V N	D7-50	2	1	2	1	no	0
Bedford Rd	Ave Q N	D7-4	2	1	1	1	no	0
Edmonton Ave	31st St	D6-24	2	1	0	0	yes	0
Ave	31st St	E6-51	2	0	1	0	no	0
Witney Ave	Bedford Rd	C7-28	2	0	2	0	no	0
Witney Ave	23rd St	C7-14	2	0	1	0	no	0
23rd St	Vancouver Ave N	C7-26	1	1	0	0	no	0
23rd St	Ave X N	C7-65	1	0	1	0	no	0
29th St	Ave X N	C6-11	1	0	1	0	no	0
29th St	Ave U N	D6-27	1	0	0	0	ves	0
29th St	Ave S N	D6-9	1	0	1	0	yes	0
30th St	Ave V N	D6-47	1	0	1	0	no	0
31st St	Trotter Cres	E6-50	1	0	0	0	no	0
Ave P	Rylston Rd	E7-56	1	0	0	0	yes	0
Bedford Rd	Ave Y N	C7-29	1	0	0	0	no	0
Bedford Rd	Ave R N	D7-10	1	0	1	0	no	0
Ottawa Ave	Winnipea Ave	C7-72	1	0	0	0	no	0
Rusholme Rd	Vancouver Ave N	C7-91	1	0	0	0	no	0
Rusholme Rd	Montreal Ave N	C7-86	1	1	0	0	no	0

Rusholme			1	0		0	20	0
Rusholme	Ave v N	DI-19	1	0	0	0	110	0
Rd	Ave T N	D7-24	1	0	0	0	no	0
Rusholme Rd	Ave S N	D7-18	1	0	1	0	no	0
Rylston Rd	Ave S N	D7-56	1	0	1	0	no	0
Rylston Rd	Ave R N	D7-12	1	0	1	0	no	0
Winnipeg	Ottawa Ave N	C7-72	1	0	0	0	no	0
23rd St		C7-59	0	0	0	0	no	0
23rd St	Ottawa Ave N	C7-64	0	0	0	0	no	0
23rd St	Montreal Ave N	C7-53	0	0	0	0	no	0
23rd St	Ave Y N	C7-6	0	0	0	0	no	0
29th St	Ave Y N	C6-28	0	0	0	0	no	0
29th St	Ave V N	D6-7	0	0	0	0	ves	0
29th St	Ave R N	D6-3	0	0	0	0	ves	0
29th St	Ave Q N	D6-2	0	0	0	0	ves	0
29th St	Ave O N	E6-88	0	0	0	0	ves	0
30th St	Ave U N	D6-22	0	0	0	0	no	0
30th St	Ave S N	D6-37	0	0	0	0	no	0
30th St	Ave R N	D6-55	0	0	0	0	no	0
31st St	Ave V N	D6-23	0	0	0	0	no	0
31st St	Ave U N	D6-57	0	0	0	0	no	0
31st St	Ave T N	D6-49	0	0	0	0	no	0
31st St	Ave S N	D6-56	0	0	0	0	no	0
31st St	Ave R N	D6-5	0	0	0	0	no	0
Ave W	Ave X N	D6-54	0	0	0	0	yes	0
Ave W	30th St	D6-32	0	0	0	0	yes	0
Bedford Rd	Ottawa Ave N	C7-18	0	0	0	0	no	0
Bedford Rd	Montreal Ave N	C7-80	0	0	0	0	no	0
Bedford Rd	Ave X N	C7-3	0	0	0	0	no	0
Bedford Rd	Ave S N	D7-16	0	0	0	0	no	0
Ottawa Ave	Bedford Rd	C7-18	0	0	0	0	no	0
Rusholme Rd	Ottawa Ave N	C7-19	0	0	0	0	no	0
Rusholme Rd	Ave X N	C7-4	0	0	0	0	no	0
Rusholme Rd	Ave U N	D7-73	0	0	0	0	no	0
Rylston Rd	Ave Y N	C7-83	0	0	0	0	no	0
Witney Ave	Rylston Rd	C7-67	0	0	0	0	no	0

APPENDIX F: DECISION MATRIX

Decision Matrix – Recommendations proposed at November 17, 2015 meeting

ltem	Location	Recommendation	Reason	Group 1	Group 2	Group 3	Recommendation
1	Edmonton Ave & 31st St	Median islands	Reduce Speed	neutral; consider photo radar or speed board	Edmonton Ave isn't wide enough; heard that younger drivers are driving over; install Four-way stop; people fly around corner; maintenance issues with islands during winter	not sure if this will be effective	Removed. Install speed display board instead.
2	Avenue W & 29th St	Four-way stop with median islands and additional stop signs on Avenue W	Improve safety for drivers crossing or turning onto Avenue W; improve pedestrian safety; reduce speed; median islands will ensure the stop signs are visible to drivers on Avenue W		median islands are more of a hazard		Install Four-way stop signs. Remove median islands.
3	Avenue W & Rylston Rd	Median islands; zebra crosswalk on south leg; parking restrictions on southwest corner	Reduce speed, improve pedestrian safety & improve sightlines		not in support of median islands; daycare at corner may have issues; prefer curb extensions at corners (south side of school side)		Changed to curb extensions on the south side & zebra crosswalk on the south leg.
4	Avenue W & 23rd St	Add hazard boards to stop signs	Enhance visibility of stop signs				Carried.
5	Avenue W - 22nd St to 23rd St	Sidewalk (west side)	Improve pedestrian safety & connectivity(connects to grocery store)				Carried.
6	29th St - intersections along bus route(Ave Q, Ave R, Ave X, Ave Y)	Stop signs	Improve safety along bus route (as per Policy C07-007, stop signs are warranted along a transit route)				Carried.
7	Avenue T & Rylston Rd	Zebra crosswalks	Improve pedestrian safety in front of school				Carried.
8	29th St & Ave T	Zebra crosswalks, curb extension & median island	Reduce speed & improve pedestrian safety	5 in favour; 1 person not sure about curb extensions	not in support of median islands or curb extensions	devices might not be needed; concerns turning around them	Removed.
9	29th St & Ave T	Stop signs	Improve intersection safety			not necessary; drivers are turning so they slow down regardless	Removed.
10	Ave T & Bedford Rd	Stop signs	Improve intersection safety			change direction of yield signs	Removed. 71% of total traffic is on Bedford Rd; therefore keep yield signs as is (facing lower volume street - Ave T)
11	23rd St & Ave T	Median island & standard crosswalk (west leg)	Reduce speed & improve pedestrian safety	bush obstruction and parking; Four-way stop; change orientation of signs	not in support of median island	change to yield signs, stop signs not necessary; median island not necessary	Removed. Collision analysis and turning movement count indicated Four-way stop is warranted. Add to list of recommendations.
12	23rd St in front of St. Gerard School	Move northwest curb extension to 23rd St side; remove northeast curb extension on Montreal Ave	Reduce speed & improve pedestrian safety (direction of yield signs changed in 2012 due to 23rd St bike route)	neutral	split opinions - depends on maintenance; hedges blocking view at south		Remove all temporary traffic calming. Site check indicated hedges were already trimmed.
13	23rd St - Ave P to Ave Q	Sidewalk (both sides)	Improve pedestrian safety & connectivity (connects to school)				Carried.
14	Avenue P & 23rd St	Add hazard boards to stop signs	Enhance visibility of stop signs				Carried.

Decision Matrix – Additional Issues raised at November 17, 2015 meetin
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ltem	Location	Concern	Decision
1	23rd St & Ave R	collisions	Collision analysis indicated three reported collisions within most recent 12 months (all right angle). Upgrade yield signs to stop signs.
2	23rd St between Ave P & Ave W	install sidewalk on one side; speeding	Sidewalk already recommended between Ave P & Ave Q on both sides. Add sidewalk between Ave Q to Ave W (additional 540m - south side only); speed study indicated 47.9kph. No further recommendations.
3	Ave W near Rylston Rd	Disabled parking not needed	Verified this is no longer required. Request sent to sign shop to remove.
4	Bedford Rd between Ave W & Ave T	no sidewalks; need sidewalk on at least one side	Connects to school. Install sidewalk on north side to connect to existing sidewalk on north side between Ave T and Ave R (270m - north side only).
5	Rylston Rd & Avenue S	Tree trimming	Site check determined adequate sightlines.
6	Witney Ave, Avenue T, Avenue X, Avenue H	potholes	Forwarded information to Public Works for further consideration.
7	Ave W & Rusholme Rd	replace pedestrian signal with active pedestrian corridor	Will be reviewed under Pedestrian Device Assessments (city wide).
8	Ave W & Rylston Rd	install pedestrian signal for daycare	Pedestrian device not warranted (33 points for the pedestrian activated signal)
9	Back lane south of Circle Dr between 31st St to pedestrian tunnel	drivers speeding & increased traffic; install 20kph signs; enforcement	Install 20kph speed signs