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To: Councillor Karen Stintz

From: Robert Decleir
Acting Manager, Traffic Operations

**Re: Traffic Safety
Avenue Road - Lawrence Avenue to Eglinton Avenue
Ref: TT22 200700159**

Transportation Services Division, North York District has reviewed your request of behalf of the area residents to undertake a review of the operating conditions and level of safety along Avenue Road from Lawrence Avenue West to Eglinton Avenue West.

The results of our analysis indicates that the following action be implemented:

- Installation of eastbound and westbound left turn and through prohibitions during the a.m. and p.m. peak traffic periods at Avenue Road and Glencairn Avenue to reduce vehicle conflicts and collisions;
- Reassessment in the spring of 2009 of the section of roadway between Glenview Avenue and Glengrove Avenue to determine the level of impact that the modifications to the pavement markings and signage have had on motorist awareness and collision patterns in this area;
- Deployment of the Speed Watch Board on Avenue Road in the vicinity of Allenby Public School;
- Increased Police enforcement of the 40 km/h speed limit; and
- Installation of Decorative Aluminium Handrail/Splash Guard on the west side of Avenue Road between St. Clements Avenue and Castlefield Avenue.

Existing Conditions

Avenue Road, between Lawrence Avenue West and Eglinton Avenue West is designated as a major arterial roadway and is approximately 2.3 km in length and consists of a four lane cross-section, with two lanes per direction. Left turn lanes are introduced along this section of roadway based on the need and available roadway width. A municipal sidewalk exists adjacent to the curb/roadway on both sides of Avenue Road. Horizontal curves exist on Avenue Road in the

vicinity of Glenview Avenue, Glencairn Avenue and Burnaby Boulevard.

The speed limit on this section of Avenue Road is 50 km/h, with the exception of the area between Briar Hill Avenue and Willowbank Boulevard, which has a 40 km/h speed limit, between 8:00 a.m. and 4:00 p.m., Monday to Friday. The 40 km/h speed limit is identified by the use of flashing beacons and regulatory signage in both directions of travel. The limit of the 40 km/h speed zone encompasses both Marshall McLuhan Catholic Secondary School and Allenby Public School. Advisory 40 km/h speed signs are also provided on the horizontal curves in the vicinity of Glenview Avenue and Burnaby Boulevard. In general parking is permitted along Avenue Road but in certain sections parking is prohibited for part of the day or prohibited at all times.

Analysis

In order to determine if any remedial actions or improvements are required, staff undertook a review of the collision history and patterns, operating speeds, signage and pavement markings, traffic control signals, pedestrian activity/railing installation, as well as winter maintenance practices and road drainage conditions. In view of the resident's comments raised at the December 10th 2007 public meeting, the review was concentrated at three specific areas along Avenue Road. This decision was based on roadway alignment, collision history and pedestrian activity (school area). As such the three areas that were reviewed are;

- Glenview Avenue to Glengrove Avenue
- St. Clements Avenue to Roselawn Avenue
- Elwood Boulevard to Eglinton Avenue

Collision Analysis

In order to assess the operating characteristics and driver behaviour, a review of the Toronto Police Services Collision Statistics for the period from January 1, 2005 to December 31, 2007 was conducted for the three above noted mid-block sections of Avenue Road. These sections include roadway sections adjacent to Marshall McLuhan Catholic Secondary School and Allenby Public School. The results of this review are illustrated in the following table:

Location	Dir	Collision Type and Frequency			Total
		Single Motor Vehicle	Multiple Motor Vehicle	Pedestrian	
Glenview Ave to Glengrove Ave	NB	1	0	0	17
	SB	11	5	0	
St. Clements Ave to Roselawn Ave	NB	2	1	0	4
	SB	0	1	0	
Elwood Blvd to Eglinton Ave	NB	3	1	0	11
	SB	6	1	0	

The collision analysis indicates that the majority of the mid-block collisions occur on the curved sections of the roadway near Glenview Avenue, Glengrove Avenue and Burnaby Boulevard. As shown above the majority of the collisions occurred in the southbound direction and were predominantly single motor vehicle collisions. The collision data also reveals that weather

conditions and/or roadway conditions (wet/slush/snow) were a factor, however in all of the incidents driver behaviour was found to be the primary factor. The motorist failed to adjust their driving behaviour based to on the prevailing weather and roadway conditions.

A fatal collision occurred on September 20, 2007 on Avenue Road. The Toronto Police Services Collision Report and Media Release indicated that the driver of the northbound vehicle while travelling within the curb lane struck a 5 tonne truck traversing Avenue Road from west to east. The apparent cause of the collision was that the operator of the 5 tonne truck failed to yield the right of way to the northbound vehicle. As such the operator of the truck was charged with careless driving.

Vehicle Volume and Speeds

To identify existing traffic conditions, 24 hour speed and volume studies were conducted on Avenue Road, between Eglinton Avenue and Lawrence Avenue. The following table identifies the results of these studies:

Avenue Road	Dir	Speed Limit	Vehicle Speeds	
			Operating	Average
Lawrence Ave to Glenview Ave	NB	50	58	46
	SB		65	58
Glenview Ave to Glengrove Ave	NB	50	54	47
	SB		54	46
Glengrove Ave to Lytton Blvd	NB	50	58	52
	SB		60	54
Lytton Blvd to Hillhurst Blvd	NB	50	62	56
	SB		59	53
St Clements Ave to Roselawn Ave	NB	40	58	51
	SB		51	45

As can be noted from the table, the average speeds of traffic on Avenue Road are within acceptable levels for an arterial roadway. However with regards to the operating speeds, the speed at which 85% of the traffic travels at or below, the speeds between St. Clements Avenue and Roselawn Avenue and north of Glenview Avenue, are a concern given the presence of the school activity. The higher speeds in these areas are attributed to the unimpeded alignment of the roadway, which lacks any horizontal curves. The fact that the 40 km/h speed limit is also a time-of-day operation may also contribute to higher speeds through this zone.

At the request of Sergeant Brian Woods, Toronto Police Service, 53 Division, the Speed Watch Board was installed on Avenue Road, north of Castlefield Avenue in the fall of 2007. This location was chosen given the location of the school zone (Allenby Public School). The primary objective of the "Watch Your Speed" program is to reduce speeding by increasing public awareness and by encouraging responsible driving in our communities. In view of the positive public response and the recent improvements to the technology, this section will be once again install the Speed Watch Board on Avenue Road in 2009.

In addition to the Speed Watch Board, this division, by copy of this memorandum, is requesting the enforcement of the 40 km/h speed limit on this section of Avenue Road.

Prior to reviewing the feasibility of reducing the speed limit on this section of roadway, staff also undertook an assessment to determine if the existing regulatory speed limit on Avenue Road is in keeping with the City of Toronto's Policy. The warrant in establishing the most appropriate speed limit on an arterial roadway takes into consideration a number of factors including the horizontal and vertical curvature of the road, sight lines, frequency of driveways and safety considerations.

Our review has concluded that the regulatory speed limit of 50 km/h is indeed in keeping with the current policy. It should also be noted that on February 29, 2000, Toronto City Council adopted a Road Classification System and determined that the minimum speed limit on a major arterial roadway will be 50 km/h, and that the installation of 40 km/h speed limits on arterial roadways, is restricted to school areas and will only be in effect during the daytime periods when schools are in session.

Signage and Pavement Markings

Horizontal curves exist on Avenue Road in the vicinity of Glenview Avenue. Due to concerns regarding collisions in this area, a "Safe Curve Speed Study" (SCSS), was conducted in 2007. The SCSS is used to determine the safe speed that a vehicle can negotiate any given horizontal curve under ideal conditions and other conditions which may require a recommended advisory sign. The results of the SCSS concluded that the appropriate speed for the curves in this area is 40 km/h and advisory signing that was in place is appropriate. A recent review of this curve area as well as the curve between Eglinton Avenue West and Elwood Boulevard indicated that some warning signage was either damaged or missing. These signs were repaired and replaced in November 2008.

In an attempt to address the collisions on the horizontal curve on Avenue Road in the vicinity of Glenview Avenue, pavement marking and signage improvements were undertaken in the fall of 2007. The following signage and pavement marking improvements were completed:

- Relocation of the southbound flashing amber beacon and advance curve warning sign;
- Installation of additional chevrons for northbound and southbound traffic; and
- modification of the centre line and lane line pavement markings

The above improvements are illustrated on the attached plan NY-1682.

The improvements that have been introduced should, in time, address some of the collision patterns that have been reported in the vicinity of the curves. It should be noted that not all collisions can be preventable, as no amount of signage, pavement markings or enforcement by the Toronto Police Service can correct driver behaviour. It is recommended that this section of roadway be reassessed in the spring of 2009 to determine the level of impact that the modifications to the pavement markings and signage have had on motorist awareness and collision patterns.

Traffic Control Signals

On Avenue Road between Lawrence Avenue and Eglinton Avenue there are six (6) intersections controlled by Traffic Control Signals. Between April and October 2008 Pedestrian Countdown Signals (PCS) were installed at all six locations. These PCS displays will aid pedestrians in crossing Avenue Road and may encourage better driver and pedestrian behaviour at these intersections.

We have also reviewed the intersection operations and the feasibility of installing traffic control signals at the intersections of Avenue Road and Glencairn Avenue and Avenue Road and Briar Hill Avenue. The review at the Glencairn Avenue intersection was in response to a continued collision pattern involving east-west through and left turning vehicles attempting to cross Avenue Road during the morning and afternoon peak periods. The review at the Briar Hill Avenue intersection was initiated in response to resident requests.

To satisfy the installation of traffic control signals, one of either the Minimum Vehicular Volume or Delay to Cross Traffic warrants must be 100 percent satisfied, or both must be satisfied to the extent of 80 percent. The Collision Hazard warrant is based on the number of collisions susceptible to correction by the installation of traffic control signals, and must be 100 percent satisfied. Below are the results of the analysis.

Warrant	Locations	
	Avenue Rd at Glencairn Ave	Avenue Rd at Briar Hill Ave
Minimum Vehicular Volume	82%	57%
Delay to Cross Traffic	55%	47%
Collision Hazard	100%	27%

Glencairn Avenue

As indicated above the Collision Hazard warrant is satisfied at Glencairn Avenue. However, when the installation of a traffic control signal is warranted only on the basis of the Collision Hazard, it is our practice to first review alternative solutions prior to recommending the installation of traffic control signals. As such, since the correctable collisions are predominantly occurring during the morning and afternoon peak periods, we recommend the installation of eastbound and westbound left turn and through prohibitions during the a.m. and p.m. peak traffic periods at the intersection of Avenue Road and Glencairn Avenue. This would significantly reduce vehicle conflicts thus reducing the collision hazard. The aforementioned restrictions would however, result in the existing traffic being displaced to other adjacent roads such as Glengrove Avenue at Avenue Road, which is currently controlled by traffic control signals. The prohibition of the eastbound and westbound left turn and through movements at Glencairn Avenue is the preferred action since the installation of a traffic control signal is not appropriate at this location due to the sub-standard spacing to the adjacent traffic control signals at Glengrove Avenue and restricted sightlines for northbound and southbound motorists.

This Section will await the concurrence of the area residents and Councillor Stintz prior to proceeding with a report to North York Community Council for the installation of the turn prohibitions at Avenue Road and Glencairn Avenue.

Briar Hill Avenue

At the intersection of Briar Hill Avenue and Avenue Road, the current intersection operation of side street traffic controlled by stop signs would appear to be adequately addressing the needs of traffic. Existing traffic control signals are located on Avenue Road 100 metres to the north of Briar Hill Avenue at Hillhurst Boulevard and 100 metres to the south at St. Clements Avenue. Ideally, traffic control signals and/or pedestrian crossovers are placed at a minimum of 215 metres apart. As this distance decreases, signals become cluttered and are less recognizable by motorists and can lead to safety concerns such as red-light running. Signals at close proximity to one another also negatively impact progression of main street traffic.

With regards to pedestrians wishing to cross Avenue Road at Briar Hill Avenue, they have the option of crossing at the existing traffic control signals to the north at Hillhurst Boulevard or to the south at St. Clements Avenue.

Pedestrian Railings

Pedestrian railings were installed in the fall of 2006 on the west side of Avenue Road between Roselawn Avenue and Castlefield Avenue. Since the installation of the pedestrian railings, the residents of the area have continually expressed their concerns regarding the feasibility of installing additional pedestrian railings in the area.

The purpose and intent of the pedestrian railings along the public roadway is to channelize pedestrians along the sidewalk and to provide residents/pedestrians with an enhancement and increased comfort level when walking along a roadway. At present the use of the pedestrian railing within the City of Toronto has not been universally promoted. As such the Transportation Services Division is currently developing the appropriate criteria for the use of the pedestrian railings.

The Committee has advised that the creation of the criteria for the installation of the pedestrian railings has not been finalized. However, it would appear from the draft Pedestrian Railing criteria document that the area of Avenue Road between Castlefield Avenue and St. Clements Avenue would be in-keeping with the proposed criteria.

Therefore, this section has requested that the Pedestrian & Cycling Infrastructure Section of Transportation Services install the Decorative Aluminium Handrail/Splash Guard - Toronto Urban Design Streetscape Manual F-050-025, mesh panel design given the high volume of children in the area.

Winter Maintenance / Drainage

Our Road Operations unit has advised that other than the expressways, Avenue Road and other arterial roads receive the next highest level of service relating to the winter maintenance activities. Council approved a bare pavement policy for the arterial roads and as such, they salt arterial roads as slippery conditions prevail. In addition, the arterial road ploughs are activated when we have an accumulation of 5cm of snow and it is still snowing.

We have requested Technical Services to undertake a review of the drainage and cross-fall design of the section of Avenue Road between Glenview Avenue and Glengrove Avenue. It is in this area where there have been concerns about water-ponding and icing. Upon completion of their review we are requesting that they inform your office and this Section of their findings.

Should you have any questions please call Jack Sinopoli, Supervisor of Traffic Engineering at 416-395-7467.

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Attached:

Copy: Daniel Egan, Manager – Pedestrian and Cycling Infrastructure Section
Staff Inspector Larry Sinclair, Toronto Police Services, 53 Division
Trevor Tenn, Manager – Road Operations, North York District
Mo Pannu, Manager – Construction Services, North York District