

INTERSECTION AND ACCESS IMPROVEMENTS

AITKEN CIRCLE AT 16TH AVENUE AND BIRCHVIEW LANE AT KENNEDY ROAD TOWN OF MARKHAM

1. Background Information

The residential area on the southwest corner of the intersection of 16th Avenue and Kennedy Road has 118 household dwellings and a Fire Station that belongs to the Town of Markham. There are two accesses to this residential area:

- Aitken Circle on 16th Avenue, 180 metres to the west of Kennedy Road.
- Birchview Lane on Kennedy Road, 260 metres south of 16th Avenue.

16th Avenue, in the vicinity of Aitken Circle is classified as a four-lane urban arterial with a posted speed limit of 70-km per hour. The intersection has three legs. On 16th Avenue, there are two through-lanes on each approach while the westbound approach also has an exclusive left turn lane.

Kennedy Road, in the vicinity of Birchview Lane is classified as a four-lane urban arterial roadway with a posted speed limit of 70-km per hour. This intersection has three legs. On Kennedy Road, there are two lanes in each direction. There are no turning lanes.

The Region has received a number of requests for the installation of traffic signals at either Aitken Circle or Birchview Lane. Due to high traffic volumes, local residents find it difficult to turn left from Aitken Circle to go westbound on 16th Avenue, or from Birchview Lane to go north on Kennedy Road.

The Region has declined these requests for a traffic signal because the traffic volumes on Aitken Circle and Birchview Lane are too low to meet the Region's warrant for traffic signals. Additionally, a traffic signal at Aitken Circle will be too close to 16th Avenue and Kennedy Road. The 180 metre distance between Kennedy Road and Aitken Circle is less than the Region's standard for an absolute minimum signal spacing of 215 metres.

The Region also received requests to install a northbound left-turn lane on Kennedy Road at Birchview lane to facilitate safe left turn access onto Birchview Lane from Kennedy Road.

The Town of Markham is currently processing an application for a residential and commercial development on the land north of 16th Avenue and west of Kennedy Road. There has been a request for the main entrance to this development – “Street A” to align with Aitken Circle, hoping that this would justify the installation of traffic signals at this location.

The Region does not support this proposed alignment with Aitken Circle because “Street A” will likely require signalization in the future, and as previously indicated, Aitken Circle is too close to Kennedy Road to make the installation of a traffic signal feasible. Recently at the Unionville sub-committee meeting of the Town of Markham on December 6, 2004, local residents expressed their preference to have Birchview Lane signalized instead of Aitken Circle. There are also concerns that aligning Street A with Aitken Circle may encourage traffic infiltration into Aitken Circle as developments continue to take place north of 16th Avenue.

2. Analysis and Options

2.1 Signal Warrant Analysis

On October 15, 2002, Regional staff conducted an eight-hour traffic turning movement count at Birchview Lane and Kennedy Road and on Wednesday, September 3, 2003, Regional staff conducted an eight-hour traffic turning movement count at the Aitken Circle and 16th Avenue. The turning movement data was used to conduct a signal warrant analysis according to the Region’s policy approved by Council on October 17, 2002.

The following table shows the results of the signal warrant analysis for Aitken Circle at 16th Avenue.

Table 1
Signal Warrant Analysis: Aitken Circle at 16th Avenue

Warrant Component	Warrant Compliance
Minimum vehicular delay	14%
Delay to cross traffic	18%
Collisions (last 3 years)	1

The following table shows the results of the signal warrant analysis for Birchview Lane at Kennedy Road.

Table 2
Signal Warrant Analysis: Birchview Lane at Kennedy Road

Warrant Component	Warrant Compliance
Minimum vehicular delay	22%
Delay to cross traffic	12%
Collisions (last 3 years)	0

Traffic signals are warranted when two of the warrant components are at or above 80%, or if five or more collisions, which can be prevented by traffic signals, occurred over a three-year period. None of these warrant criteria are satisfied at the intersection of Aitken Circle and 16th Avenue nor at the intersection of Birchview Lane and Kennedy Road.

The warrant requires a minimum minor street volume of 120 vehicles per hour for at least 80% of the time over the busiest eight hours of the day. At Aitken Circle, the total minor street volume over all eight hours was 146 vehicles which is only marginally more than the minimum required volume for only one hour of the day. At Birchview Lane, the total eight hour minor street volume is 219 vehicles.

If, hypothetically, either one of the intersections closes, the re-directed traffic will still not cause the remaining intersection to meet the warrants for traffic signals.

2.2 Traffic Operations

Over a five-year period between January 1, 1998 and December 31, 2002, a total of five collisions were reported at Aitken Circle and 16th Avenue. Of these five collisions, two involved northbound vehicles colliding with vehicles travelling eastbound on 16th Avenue. Over the same five year period, a total of five collisions occurred at Birchview Lane and Kennedy Road. Of these five collisions, two northbound vehicles were involved in rear-end collisions.

On Wednesday, September 3, 2003, a total of 68 vehicles turned left from Aitken Circle to go west on 16th Avenue. Fourteen vehicles turned left during the morning peak hour (7:30 am to 8:30 am) and nine vehicles turned left during the afternoon peak hour (5:00 pm to 6:00 pm). The average delay to the morning peak traffic is about 12.5 seconds per vehicle and for the afternoon peak traffic, the average delay is about 35 seconds per vehicle. These delays are less than the delays that traffic would experience with a traffic signal.

On 16th Avenue, there is a westbound left turn lane that safely accommodated the 30 westbound vehicles turning left onto Aitken Circle during the morning peak period and 11 vehicles turning left during the afternoon peak period.

On October 15, 2002, a total of 15 vehicles turned left onto Birchview Lane during the morning peak period (8:00 am to 9:00 am) and 37 vehicles turned left during the afternoon peak period (5:00 pm to 6:00 pm). According to MTO's guidelines and warrants for left turn lanes on four-lane undivided highways, a 15 metre long northbound left turn lane is warranted during both the morning and afternoon peak hours.

The number of vehicles turning left from Birchview Lane is extremely low. On Tuesday, October 15, 2002, seven vehicles turned left during the morning peak period and no vehicles turned left during the afternoon peak period.

2.3 Recommendations

It is recommended that:

- Traffic signals not be installed at Aitken Circle.