COMMITTEE OF THE WHOLE - JUNE 19, 2006

COLLISIONS AT SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

Recommendation

The Commissioner of Engineering and Public Works recommends:

- That the following report be received for information;
- That York Region Police Services be requested to provide more frequent surveillance and enforcement of the speed limit and ensure better compliance with the existing traffic signal controls at the following intersections:
 - Ansley Grove Road/Embassy Drive/Blue Willow Drive
 - Clark Avenue/New Westminster Drive
 - Ansley Grove Road/Windflower Gate/Pinedale Gate
- That a copy of this report be forwarded to Transportation & Works Department at the Regional Municipality of York for their information.

Economic Impact

Not applicable.

Purpose

This collision summary, the seventh in an annual series, represents a comprehensive review of collision rates at the City's signalized and major unsignalized intersections.

Background - Analysis and Options

Collision Reporting

Collision data were collected and/or updated at the City's 54 signalized intersections and 26 unsignalized intersections selected by staff across the Municipality. The data were based on the collision reports received from York Region Police Services and do not include unreported collisions. A vehicle collision is reportable when any of the following conditions apply:

- Property damage is reported;
- The collision resulted in a personal injury;
- Charges are laid as a result of the collision; or
- A government vehicle is involved.

It must be recognized that collision reports are generally prepared to document the incident, to assign fault and to identify driver error as opposed to documenting collision factors such as geometric design, traffic control operations, roadside environment or driver behaviour.

Collision Rate Determination

Collision rates are considered a better measure of collision risk than the absolute number of collisions at an intersection. A collision rate takes into account the volume of traffic that travels through an intersection each day. For example, 5 collisions in a year at an intersection with 2,000 cars entering it each day is generally more notable than the same number of collisions occurring at an intersection with 15,000 cars entering it each day. Collision rates at intersections are

measured in "collisions per million vehicles entering" (collisions/mve), or the average number of collisions for every one million vehicles that pass through the intersection.

Collision rate = <u>number of collisions/year x 1,000,000</u> 24 hour entering volume x 365 days

The 24 hour traffic volume entering an intersection was determined from 8 hour turning movement counts conducted by staff. The daily traffic volume was estimated by doubling the 8 hour counts, since the 24 hour volume is typically twice the volume in the peak 8 hours of the day.

An intersection is generally considered 'critical' when the collision rate exceeds 1.5 collisions/mve, or where a fatal collision has occurred in the past year. Most jurisdictions use these criteria as a "trigger" for further review.

Collisions at Signalized Intersections

Collisions were reviewed at the City's 54 signalized intersections, listed as follows and illustrated on Attachment No. 1:

Aberdeen Avenue/Chancellor Drive

Aberdeen Avenue/Embassy Drive

Ansley Grove Road/Chancellor Drive

Ansley Grove Road/Belview Avenue/Aberdeen Avenue

Ansley Grove Road/Embassy Drive/Blue Willow Drive

Ansley Grove Road/Windflower Gate/Pinedale Crescent

Atkinson Avenue/Arnold Avenue

Atkinson Avenue/Campbell Avenue/Manor Gate

Atkinson Avenue/Rosedale Heights Drive (North)

Atkinson Avenue/Rosedale Heights/Edmund Seager Drive

Atkinson Avenue/Spring Gate Boulevard

Centre Street/Atkinson Avenue

Clark Avenue/Atkinson Avenue

Clark Avenue/Brownridge Drive/Joseph Aaron Boulevard

Clark Avenue/Charles Street

Clark Avenue/Condo Corporation (West of Yonge Street)

Clark Avenue/Coulters Mill Plaza (East)

Clark Avenue/Dufferin-Clark C.C. Access/Plaza Access

Clark Avenue/Hilda Avenue

Clark Avenue/Judith Avenue/Stonemill Gate

Clark Avenue/New Westminster Drive

Clark Avenue/South Promenade

Clark Avenue/York Hill Boulevard (West)

Clark Avenue/York Hill Boulevard/Springfield Way

Creditstone Road/Langstaff Road

Chrislea Road/Jevlan Drive

Edgeley Boulevard/Applewood Crescent (North)

Hilda Avenue/Crestwood Road

Hilda Avenue/York Hill Boulevard

Kipling Avenue/Woodbridge Avenue

Langstaff Road/Vaughan Mills Road

Martin Grove Road/Andrew Park/Auburn Road

Martin Grove Road/Langstaff Road

Martin Grove Road/Roysun Road

Martin Grove Road/Woodbridge Avenue

Martin Grove Road/Woodstream Blvd/Regina Road

McNaughton Road/Cranston Park Drive McNaughton Road/St. Joan of Arc Avenue Melville Avenue/Avro Road Melville Avenue/Springside Road Millway Avenue/Applewood Crescent (North) Millway Avenue/Pennsylvania Avenue New Westminster Drive/Beverly Glen Boulevard New Westminster Drive/Brownridge Drive/W. Promenade New Westminster Drive/Conley Street New Westminster Drive/Mullen Drive/Joseph Aaron Blvd. Rivermede Road/Bowes Road Rivermede Road/North Rivermede Road Rowntree Dairy Road/Strada Drive Rowntree Dairy Road/Winges Road/Auto Park Circle Whitmore Road/Winges Road/Trowers Road Woodbridge Avenue/Clarence Street

Woodbridge Avenue/Forest Drive/Lewis Drive

York Hill Boulevard/Chabad Gate

Attachment No. 2 includes a three-year summary of collisions at the City's signalized intersections. None of the locations experienced a collision rate higher than 0.77 collisions/mve, which is significantly lower than the 1.5 collisions/mve thresholds.

The three signalized intersections with the highest collision rates in 2005 are shown below:

	2004 Collision Rate	2005 Collision Rate
Ansley Grove Road/Embassy/Blue Willow Drive	0.61	0.77
Clark Avenue/New Westminster Drive	0.44	0.66
Ansley Grove Road/Windflower Gate/Pinedale	0.38	0.64

These locations experienced the highest collisions rates among the City's signalized intersections during 2005. Staff examined the collision reports in order to identify any trends in the type of collision, road condition, time of day, vehicle type, driver action and pedestrian/cyclist involvement.

Ansley Grove Road/Embassy Drive/Blue Willow Drive

The signalized intersection is located within a residential area in Woodbridge. There were five collisions reported in 2005, compared to four in 2004, for a collision rate of 0.77 collisions/mve. Of the five collisions, two were rear-end collisions, one was a turning movement collision, one was an angle collision, and one involved a pedestrian hit by a vehicle. There were a total of three charges laid by York Region Police – one for failing to have a license, one for failing to yield the right-of-way, and one for to failing to stop.

Clark Avenue/New Westminster Drive

The signalized intersection is located within a residential area in Thornhill. There were nine collisions reported in 2005, compared to six in 2004, for a collision rate of 0.66 collisions/mve. Of the nine collisions, three were rear-end collisions, two were turning movement collision, two were angle collisions, and one involved a bicycle hit by a vehicle. There were a total of two charges laid by York Region Police – both for careless driving.

Ansley Grove Road/Windflower Gate/Pinedale Gate

The signalized intersection is located within a residential area in Woodbridge. There were five collisions reported in 2005, compared to three in 2004, for a collision rate of 0.64 collisions/mve.

Of the five collisions, one was a rear-end collision, two were turning movement collisions, one was an angle collision, and one involved a bicycle hit by a vehicle. There were a total of three charges laid by York Region Police – two for careless driving, and one for to failing to yield the right-of-way.

Staff has verified that the traffic signals at all three locations are clearly visible, in good repair and fully operational at the time of collisions. High speed and disregard for existing traffic control were likely contributing factors in these collisions. Accordingly, it is recommended that York Region Police Services be requested to provide more frequent enforcement of the speed limit in the vicinity of the intersections as well as compliance with the traffic signals.

Collisions at Unsignalized Intersections

Collisions were also reviewed at the following 26 major unsignalized intersections, as illustrated in Attachment No. 3:

Beverley Glen Boulevard/Worth Boulevard Confederation Parkway/Staffern Drive

Cranston Park Avenue/Cunningham Drive

Creditstone Road/Doughton Road

Creditstone Road/MacIntosh Boulevard

Creditatone Road/Pippin Road

Doughton Road/Maplecrete Road

Edgeley Boulevard/Applemill Road

Edgeley Boulevard/Portage Parkway (formerly Applewood Crescent-south)

Edgeley Boulevard/Cidermill Avenue

Edgeley Boulevard/Pennsylvania Avenue

Fossil Hill Road/La Rocca Avenue

Hilda Avenue/Pinewood Drive

Islington Avenue/Nashville Road

Jevlan Drive/Carlauren Road

Jevlan Drive/Roytec Road

Martin Grove Road/Forest Drive

Marycroft Avenue/Strada Drive

Melville Avenue/Cunningham Drive

Melville Avenue/Hawker Road

Millway Avenue/Applewood Crescent (South)

Millway Avenue/Cidermill Avenue

Napa Valley Avenue/Forest Fountain Drive

Sonoma Boulevard/Forest Fountain Drive

Sonoma Boulevard/Monte Carlo Drive

Thornhill Woods Drive/Summeridge Drive

Attachment No. 4 includes a three-year summary of collisions at the City's unsignalized intersections. None of the major unsignalized intersections had a collision rate for 2005 higher than 0.50, which is significantly lower than the 1.5 collisions/mve thresholds.

The two unsignalized intersections under review last year (Edgeley Boulevard and Portage Parkway, and Edgeley Boulevard and Applemill Road) experienced significantly lower collision rates in 2005 than in 2004 as shown below:

•	2004 Collision Rate	2005 Collision Rate
Edgeley Boulevard/Portage Parkway	1.61	0.48
Edgeley Boulevard/Applemill Road	1.01	0.29

Both intersections are under existing all-way stop control and are scheduled for traffic signal installation in 2006.

It should be noted that some of the collision numbers, and the resulting rates, reported on for previous years may have changed as more collision reports for those years are received by the City, and as more recent traffic volume data becomes available. The numbers listed in Attachments No. 2 and 4 reflect the latest data received to date by the Engineering Department.

Relationship to Vaughan Vision 2007

This traffic study is consistent with Vaughan Vision 2007, which seeks to improve community safety through design, prevention, enforcement and education (1.1) through the review of the level of enforcement, compliance and monitoring of regulations relating to public safety (1.1.6).

This report is consistent with the priorities previously set by Council and the necessary resources have been allocated and approved.

Conclusion

Based on the 2005 collision review, none of the City's signalized intersections experienced a collision rate higher than 1.5 collisions/mve. This criterion is generally the trigger for further review. The highest collision rate experienced at a signalized intersection was 0.77.

In addition, the highest collision rate experienced at an unsignalized intersection was 0.50. Two of the previously identified unsignalized intersections – Edgeley Boulevard and Portage Parkway, and Edgeley Boulevard and Applemill Road experienced significantly lower collision rates in 2005 than 2004. Both intersections are scheduled for traffic signal installation in 2006.

Attachments

- Location Map of Signalized Intersections
- Summary of Collisions at Signalized Intersections
- 3. Location Map of Major Unsignalized Intersections
- 4. Summary of Collisions at Major Unsignalized Intersections

Report prepared by

Mark Ranstoller, Senior Traffic Technologist, ext. 3141 Mike Dokman, Supervisor, Traffic Engineering, ext. 3118

Respectfully submitted,

Bill Robinson, P. Eng. Commissioner of Engineering and Public Works Gary Carroll, P. Eng. Director of Engineering Services

City of Vaughan - Collision Review 2005 Signalized Intersections Clark Avenue/Alkinson Avenue Centre Street/Alkinson Avenue Ansley Grove Road/Chancellor Drive Chrisiea Road/Jevian Unive Clark Avenue/D.C.C.C. Access/Plaza Access Clark Avenue/Condo Corporation (West of Yonge Street) Clark Avenue/Brownridge Drive/Joseph Aaron Boulevard Atkinson Avenue/Spring Gate Boulevard Ansley Grove Road/Embassy Drive/Blue Willow Drive Ansley Grave Road/Belvlew Avenue/Aberdeen Avenue Aberdeen Avenue/Embassy Drive Melville Avenue/Springside Road Edgeley Boulevard/Applewood Crescent (North) Creditstone Road/Langstaff Road Clark Avanua/York Hill Boulevard/Springfield Way Clark Avenue/Coulters Mill Plaza (East) Ansley Grove Road/Mindflower Gate/Pinedale Crescent Woodbridge Avenue/Forest Drive/Lewis Drive York Hill Boulevard/Chabad Gate Whitmore Road/Winges Road/Trowers Road Rowntree Dairy Road/Winges Road/Auto Park Circle Rivermede Road/North Rivermede Road New Westminster Drive/Mullen Drive/Joseph Aaron Boulevard New Westminster Drive/Contey Street New Westminster Drive/Brownridge Drive/West Promenade New Westminster Drive/Beverley Glen Boulevard Miliway Avenue/Applewood Crescent (North) Miliway Avenue/Pennsylvannia Avenue McNaughton Road/Cranston Park Drive Martin Grove Road/Woodstream Boulevard/Regina Road Martin Grove Road/Roysun Road Martin Grove Road/Woodbridge Avenue Hilda Avenue/York Hill Boulevard Kipling Avenue/Woodbridge Avenue Clark Avenue/York Hill Boulevard (West) Clark Avenue/New Westminster Drive Clark Avenue/Judith Avenue/Stonemill Gate Atkinson Avenue/Rosedale Heights Drive/Edmund Seager Drive الله (North) Atkinson Avenue/Rosedale Heights Drive \kinson Avenue/Campbell Avenue/Manor Gate tikinson Avenue/Amold Avenue McNaughton Road/St.Joan of Arc Avenue Martin Grove Road/Langstatt Road Martin Grove Road/Andrew Park/Aubum Road Hilda Avenue/Crestwood Road vermede Road/Bowes Road siville Avenue/Avro Road Signalized Intersections aff Road∕Vaughan Mills Road Drawing name: R:\ENGDRAFT\\$TRANSPO\COL SIG 2004.DWG

ATTACHMENT No. 1

CITY OF VALIGHAN - ENGINEERING DEPARTMENT

ATTACHMENT No.2 City of Vaughan Collision Review 2005 - Signalized Intersections

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0.11	0.18	0.18	0.00	0.21	0.37	0.55	0.12	0.66		0.35	0.15	0.34	0.33	0.38	0.59	0.14	0.42	0.17	0.19	0.00	0.00	0.61	0.64	0.77	0.63	0.26	0.00	0.45	2005	ve)	te

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0.29	0.27	0.30	0.00	0.60	0.00	0.60	0.62	0.11	0.21	0.27	0.13	0.43	0.17	0.00	0.31	0.27	0.00	0.24	0.00	0.28	0.29	0.48	0.00	0.52	2005	v́e)	ře

Notes:
AADT - Annual Average Daily Travel, updated to most recent traffic count data available.
mve - million vehicles entering

Collisions per year may vary as new reports are received by the City
* Intersections recommended for monitoring and increased Police surveillance in 2006.

ATTACHMENT No. 3

City of Vaughan - Collision Review 2005 Major Unsignalized Intersections

- 1. Beverley Glen Boulevard/Worth Boulevard
- Confederation Parkway/Staffern Drive
- 3. Cranston Park Avenue/Cunningham Drive
- 4. Creditstone Road/Doughton Road
- Creditstone Road/MacIntosh Boulevard
 Credistone Road/Pippin Road
- 7. Doughton Road/Maplecrete Road
- 8. Edgeley Boulevard/Cidermill Avenue

Edgeley Boulevard/Pennsylvania Avenue

- 10. Hilda Avenue/Pinewood Drive
- Islington Avenue/Nashville Road
- Jevlan Drive/Roytec Road 12. Jevlan Drive/Carlauren Road
- 14. Martin Grove Road/Forest Drive
- 15. Marycroft Avenue/Strada Drive
- 16. Melville Avenue/Cunningham Drive 17. Millway Avenue/Applewood Crescent (South)
- 18. Millway Avenue/Cidermill Avenue
- 20. Sonoma Boulevard/Forest Fountain Drive 19. Napa Valley Avenue/Forest Fountain Drive
- Sonoma Boulevard/Monte Carlo Drive
- Edgeley Boulevard/Applemill Road
- Edgeley Boulevard/Portage Parkway 24. Fossil Hill Road/La Rocca Avenue
- Meville Road/Hawker Road
- Thornhill Woods Drive/Summeridge Drive



CITY OF VAUGHAN - ENGINEERING DEPARTMENT

ATTACHMENT No.4

City of Vaughan Collision Review 2004 - Major Unsignalized Intersections

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	0.00	0.68	0.71	0.37	0.00	0.50	0.18	0.00	0.6	0.24	0.30	0.29	0.00	0.00	0.00	0.39	0,00	1.61	1.01	0.00	0.14	0.10	0.00	0.00	0.00	0.00	2004	collisions/mve)	
	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.22	0.24	0.00	0.58	0.00	0.16	0.00	0.00	0.00	0.48	0.29	<u> </u>	0.14	0.10	0.00	0.00	0.36	0.00	2005	1ve)	g G

"Kleinburg" refers to Kleinburg Village
AADT - Annual Average Daily Travel, updated to most recent traffic count data availabl Collisions per year may vary as reports are received by the City Due to closure at Highway 7 and Jane Street, Locations #4,5,6, and 7 had volumes greater than previous years due to rerouting of traffic.

* Traffic Signals scheduled for installation in 2006.