

COMMITTEE OF THE WHOLE – JANUARY 17, 2012

TRAFFIC OPERATIONS REVIEW STEGMAN'S MILL ROAD WARD 1

Recommendations

The Commissioner of Engineering and Public Works recommends that Council:

1. Approve the installation of standard street lighting along Stegmen's Mill Road from Islington Avenue to Ravendale Court, and pavement modifications including rumble bars/strips and durable pavement markings, through the curves, at the east end of Stegman's Mill Road; and
2. Direct staff to incorporate these improvements as part of the Stegman's Mill Road rehabilitation project currently forecast for 2015.

Contribution to Sustainability

Not applicable.

Economic Impact

Presently, there are no costs associated with this Report. However, should Council approve the recommendations contained herein, the capital costs, estimated to be \$220,000, will be incorporated with the identified road rehabilitation work as part of the Pavement Management Program, tentatively proposed in 2015.

In addition, the annual operating and maintenance costs associated with the street lighting system maintenance is estimated to be approximately \$2,520.

There are no annual maintenance costs associated with durable pavement markings as they pertain to the curved portions of Stegman's Mill Road, as these materials have a service life ranging from 5-8 years.

The above noted capital and operating costs are reflective of current values, that may differ at the time the work is constructed.

Communications Plan

The local area residents, York Regional Police, York Region District School Board, York Catholic District School Board, and the Kleinburg Ratepayers Association, will be notified should the recommendations contained in this report be approved.

Purpose

The purpose of this report is to present the recommendations of the Stegman's Mill Road traffic operations review.

Background

At its meeting on December 14, 2009, Council approved:

“That staff be directed to install slow signs along Stegman’s Mill between Ravendale Gate and Napier Street, provide a report with respect to the installation of street lights along Stegman’s Mill Road between Ravendale Court and Islington Avenue, and also other safety measures be identified.”

In response to Council's direction staff undertook a traffic operations review of Stegman's Mill Road. This included an analysis of the physical characteristics of the roadway, road illumination, traffic volumes, vehicular speeds, sign inventory, and collision history. Mitigating measures were developed where appropriate.

Analysis

Please note that the details of the technical analysis can be found in Attachment 4.

Physical Characteristics

Stegman's Mill Road spans from Islington Avenue to Kipling Avenue. At Kipling Avenue, the road becomes Teston Road (Refer to Attachment No.1). Stegman's Mill Road, from Islington Road easterly approximately 600 metres, is a two-lane arterial road with a semi-urban cross-section. The balance of the road has a rural cross-section. There are several horizontal curves in the road, as well as significant vertical elevation changes.

Stegman's Mill Road has an existing centreline pavement marking, as well as supplementary white lines across the bridge section. The road provides access to approximately 20 residences as well as the entrance to Bindertwine Park.

The existing pavement surface of Stegman's Mill Road is in fair condition and pavement rehabilitation has been identified as part of the Pavement Management Program, tentatively proposed in 2015.

Road Illumination

Currently, there is no street lighting on Stegman's Mill Road.

Vehicular Speeds

A review of the collected speed data reveals that motorists travelling along Stegman's Mill Road are fairly compliant with the posted 40 km/h speed limit along the westerly leg of the road. Vehicular speeds increase considerably towards the east half of the road. This speeding may be attributed to the rural nature of Stegman's Mill Road, and limited side street access. Staff recently monitored Stegman's Mill Road, as part of the Speed Compliance Program, with the use of the radar message boards during the summer months of 2011. In partnership with York Regional Police, results of the traffic studies were forwarded for their information and any associated enforcement efforts.

Traffic Volumes

The traffic studies undertaken have revealed that volumes have increased since 2009. This increase can be attributed to a larger number of motorists using Stegman's Mill Road to access the Highway 400 and Teston Road interchange that was opened in summer 2009.

Sign Inventory

A review of the existing signs demonstrates adequate spacing of the regulatory speed limit signs, as well as an adequate number of curve warning signs for the west half of Stegman's Mill Road, in accordance with the Ontario Traffic Manual.

It is noted that there are no curve warning signs installed for the curves along the east half of the road.

Collision History

A review of the five year collision history revealed five reported collisions. Three of the collisions were attributed to poor road and weather conditions. One collision involved a vehicle hitting a cyclist causing non-life threatening injuries, and the final collision involved a motorist colliding with a deer.

York Regional Police

York Regional Police issued a number of tickets for traffic infractions on Stegman's Mill Road in 2011. The infractions included speeding, driving while suspended, and liquor-related offences.

Review of Options

Several options were reviewed pertaining to the mitigating measures associated with road illumination, vehicular speeds, and signage.

Road Illumination

Three options were investigated regarding the installation of streetlights along Stegman's Mill Road, from Islington Avenue to Ravendale Court. The cost estimates include engineering fees and contingency allowances.

Option 1 – Install streetlights only on existing hydro poles. Approximate cost is \$60,000.

Option 2 – Install streetlights on existing hydro poles and infill with additional light standards, as required, on the opposite side of the road. Approximate cost is \$110,000.

Option 3 – Install a new standard street lighting system along with the associated infrastructure to meet lighting level standards. Approximate cost is \$160,000.

Based on field assessments, Option 1 would not meet the City's illumination requirements due to the spacing of the existing hydro poles. Options 2 and 3 both provide the flexibility required to meet current lighting standards. However, Option 2 will create inconsistent lighting levels that based on the topography of the road way may impact driver visibility.

Based on the analysis of the alternatives, the preferred solution is Option 3, to install a new standard street lighting system along with the associated infrastructure. This alternative will allow for the most efficient road lighting design, while utilizing infrastructure that is owned and maintained by the City. As a result, Option 3 provides the most financially and environmentally sustainable solution.

Vehicular Speeds

Both rumble strips and rumble bars are pavement depressions which are a suitable treatment for Stegman's Mill Road. Larger vertical traffic calming measures, such as speed humps and raised

crosswalks, are not appropriate for this road as the Traffic Calming Policy and Procedure does not permit these types of measures on collector and arterial roads.

Both rumble bars and rumble strips will increase current noise levels as motorists pass over them. It is unknown at this time how much noise these measures will generate. However, given the relatively low surrounding residential uses, the noise should not prove to be an issue.

Rumble strips can be installed as either centerline strips which may assist in speed reduction and awareness, or across the travelled lane approaching the curve.

The rumble bars and strips could also be used in conjunction with pavement marking treatments displaying 'Curve Ahead' or similar message. The cost for the installation of rumble strips and/or rumble bars and pavement markings is approximately \$40,000.00.

Sign Inventory

Staff have made arrangements to install "Curve Ahead" warning signs in advance of the curve, along the east half of Stegman's Mill Road.

The installation of either rumble bars, or rumble strips in advance of the curves between Ravendale Gate and Kipling Avenue will further alert motorists of the geometric characteristics of the roadway.

In addition to these measures, durable pavement markings could be installed before the curves with a "Slow" message to further alert motorists to adjust/reduce vehicular speeds accordingly. The cost to install the durable pavement markings is approximately \$20,000.00.

Relationship to Vaughan Vision 2020/Strategic Plan

In consideration of the strategic priorities related to the Vaughan Vision 2020, the recommended street lighting and pavement modifications on Stegman's Mill Road will assist to enhance and ensure community safety, health, and wellness.

The implementation of the roadway enhancements such as road lighting, rumble strips/rumble bars, and durable pavement markings will address and improve the overall operation on the roadway.

This report is consistent with the priorities previously set by Council.

Regional Implications

Not applicable at this time.

Conclusion

The recommendations resulting from the Stegman's Mill Road traffic operations review are as follows:

1. Install a standard street lighting system, at an estimated cost of \$160,000;
2. Pavement modifications including rumble bars and/or rumble strips be installed along the east end of Stegman's Mill Road at an estimated cost of \$40,000.00; and
3. Durable pavement markings are installed for the east end of Stegman's Mill Road at an estimated cost of \$20,000.00.

It would be appropriate and cost effective to implement and construct the above mentioned pavement modifications and street lighting with the identified road rehabilitation work for Stegman's Mill Road, as part of the Pavement Management Program, tentatively proposed in 2015.

Attachments

1. Location Map
2. Council Extract – December 14, 2009
3. Proposed Pavement Modifications
4. Technical Analysis Review and Figure 1: Operational Study Locations

Report prepared by:

Mark Ranstoller, Senior Traffic Technologist, Ext. 8726
Mike Dokman, Supervisor, Traffic Engineering, Ext. 8745

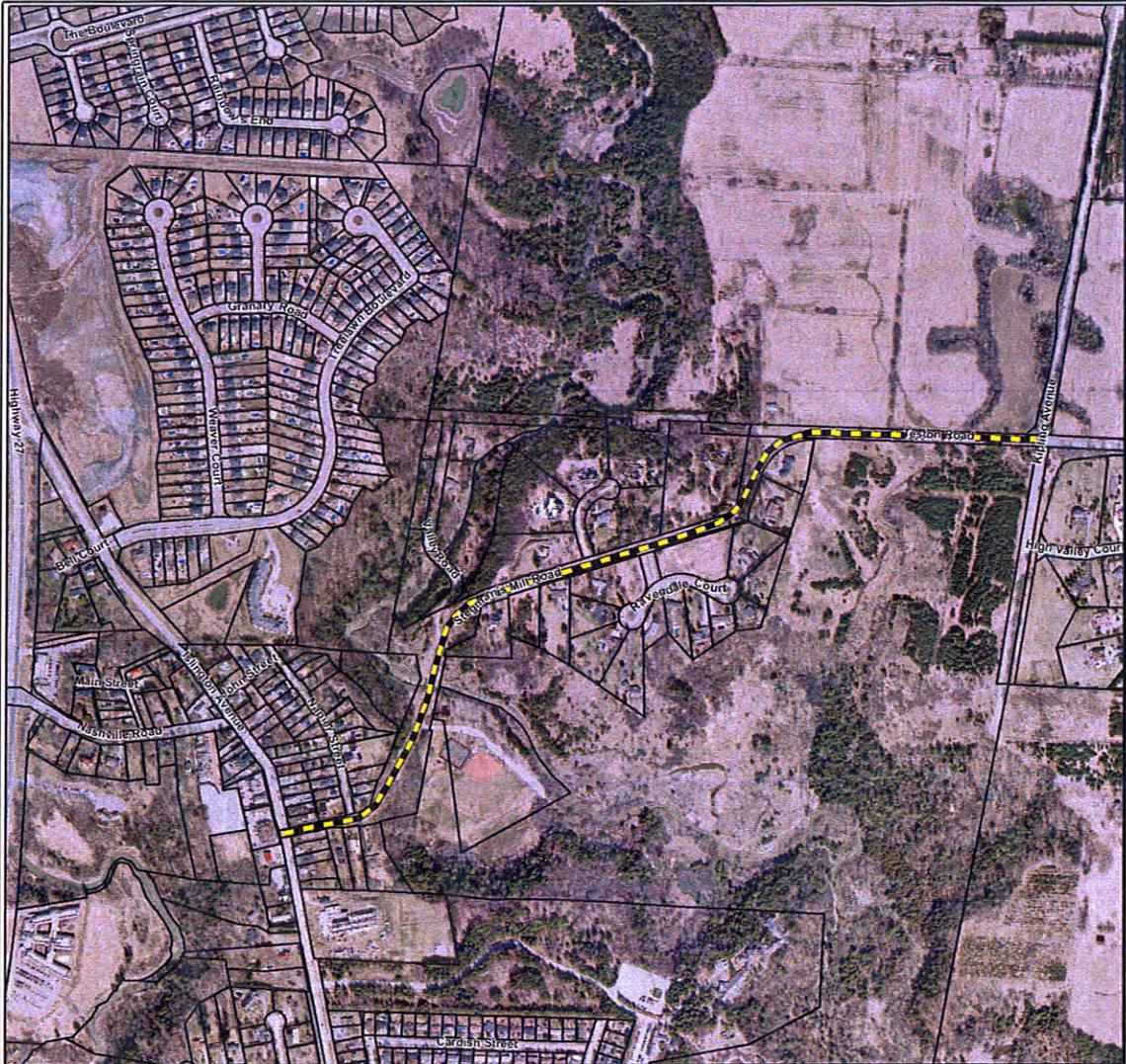
Respectfully submitted,

Paul Jankowski, P. Eng.
Commissioner of Engineering and Public Works

Jack Graziosi, P. Eng.
Director of Engineering Services

MR:mm

ATTACHMENT No. 1



TRAFFIC OPERATIONS REVIEW REPORT STEGMAN'S MILL ROAD

LOCATION : Part of Lot 24 and 25, Concession 8

LEGEND

 Road Under Review



NOT TO SCALE

ATTACHMENT NO. 2

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF DECEMBER 14, 2009

Item 38, Report No. 54, of the Committee of the Whole, which was adopted without amendment by the Council of the City of Vaughan on December 14, 2009.

38 REQUEST FOR STAFF TO INSTALL STREET LIGHTS ALONG WITH SLOW SIGNS ON STEGMAN'S MILL ROAD

The Committee of the Whole recommends:

- 1) That the recommendation contained in the following report of Councillor Meffe, dated December 1, 2009, be approved subject to adding "*and also other safety measures be identified*", at the ending of recommendation 2; and
- 2) That the deputation of Ms. Linda Floyd, 207 Stegman's Mill Road, Vaughan, L0J 1C0, be received.

Recommendation

Councillor Peter Meffe recommends:

1. That staff be directed to install a slow signs along Stegman's Mill between Ravendale Gate and Napier St; and
2. That staff be directed to provide a report with respect to the installation of street lights along Stegman's Mill Road between Ravendale Court and Islington Avenue.

Contribution to Sustainability

N/A.

Economic Impact

Will be determined once the report has been reviewed.

Communications Plan

N/A

Purpose

The purpose of this report is to deter drivers from driving at excessive speeds along this section of Stegman's Mill Road.

Background - Analysis and Options

Stegman's Mill Road is a winding road which has inclines and declines, along with several blind spots and curves. There is also a park located at a bottom of decline portion of the road. Residents that live in the area have had issues with crossing the road safely. They also feel that the fact that there are no street lights poses further safety issues. The installation of the slow signs along with the street lights would greatly improve safety and visibility along with making the drivers aware that they should not be driving at excessive speeds.

Relationship to Vaughan Vision 2020/Strategic Plan

This report recommends a change from the priorities previously set by Council and the necessary resources have not been allocated.

.../2

CITY OF VAUGHAN

EXTRACT FROM COUNCIL MEETING MINUTES OF DECEMBER 14, 2009

Item 38, CW Report No. 54 -- Page 2

Regional Implications

N/A

Conclusion

It is my feeling that the above request is reasonable and the residents that live along Stegman's Mill have relevant concerns which should be addressed.

Attachments

Petition from Residents.

Report prepared by:

Councillor Peter Meffe

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)

ATTACHMENT No. 3



PROPOSED PAVEMENT MODIFICATIONS STEGMAN'S MILL ROAD

LOCATION : Part of Lot 24 and 25, Concession 8

LEGEND

 Proposed Rumble Bars/Rumble Strips/Pavement Markings



O:\Engineering Services\Infrastructure Management\Infrastructure\PROJECTS\ATTACHMENT_TEMPLATE\Stegmans_Mill_Road

ATTACHMENT NO. 4

TECHNICAL ANALYSIS AND REVIEW OF STEGMAN'S MILL ROAD

Classification Study

A classification study was conducted in May 2011 to determine all the types of vehicles that typically use Stegman's Mill Road. The study was also conducted to determine if heavy trucks were using Stegman's Mill Road. The following chart summarizes the classification data.

Stegman's Mill Road east of Napier Street (May 2011)

Classification %					
Direction	Motorcycles	Passenger Cars	Pick-up Trucks and Vans	Buses	Heavy Trucks
EB	1% (37)	71% (3970)	22% (1225)	0% (21)	5% (257)
WB	1% (43)	71% (4530)	21% (1357)	0% (24)	6% (355)

Heavy Truck percentages range from 5-6% for Stegman's Mill Road. There is an existing 5 tonnes per axle prohibition all-year round on this road. The Classification Percentages and Volumes are representing the total counted from May 2 to May 6, 2011. Refer to Figure No. 1 for the locations of the traffic studies.

Sight Visibility Issues

Stegman's Mill Road features four curves and portions of the roadway that have significant vertical elevation changes between Islington Avenue and Kipling Avenue. As well, existing trees, shrubs and vegetation limit sight visibility on some of the curves.

Staff have installed convex mirrors at two locations on Stegman's Mill Road as follows:

- South side of Stegman's Mill Road opposite Napier Street.
- North side of Stegman's Mill Road opposite # 207 Stegman's Mill Road.

At both locations, residents had complained that due to the existing curvature and vegetation, they were experiencing difficulties at Stegman's Mill Road. Staff investigated both locations, and found that the minimum sight distances were not met.

Due to the difficulty in removing a sufficient number of trees and shrubs to meet the minimum sight distance, the convex mirrors were installed to provide drivers a view of the road beyond the curves, to safely proceed onto Stegman's Mill Road. At both locations, residents were pleased with the mirror installations.

FIGURE No. 1



OPERATIONAL REVIEW REPORT STEGMAN'S MILL ROAD

LOCATION : Part of Lot 24 and 25, Concession 8

LEGEND

- | | |
|--|---|
|  Road Under Review |  Automated Traffic Recorder Locations |
|  Napier Infiltration Study Locations |  Radar Message Board Location |
|  Islington/Nashville Infiltration Study Locations |  Vehicle Classification Study Location |



NOT TO SCALE

Speed and Volume Data Summary

Speed and Volume data was collected on Stegman's Mill Road and Teston Road in 2009, 2010 and 2011 by Automatic Traffic Recorders. The table below summarizes speed and volume data for comparison.

Location	Direction	Highest 24-Hour Volume	Average speed (km/h)	85 th Percentile Speed (km/h)
Stegman's Mill Rd west of Napier Street (Spring 2009)	EB	779	43	52
	WB	793	37	44
Stegman's Mill Rd east of Ravendale Gt (Spring 2009)	EB	772	70	80
	WB	769	66	77
Stegman's Mill Rd west of Windrush Rd (Summer 2009)	EB	1138	57	69
	WB	1324	60	73
Stegman's Mill Rd west of Kipling Ave (Spring 2010)	EB	1079	69	79
	WB	1336	68	79
Stegman's Mill Rd west of Kipling Ave (Spring 2011)	EB	1312	68	81
	WB	1558	71	84
Stegman's Mill Rd east of Napier St (Spring 2011)	EB	1538	51	58
	WB	1838	48	56

Stegman's Mill Road is posted at 40 km/h. Teston Road from Kipling Avenue to approximately 200 metres west of Kipling Avenue is 60 km/h. Speed limit signs are installed in accordance with the Ontario Traffic Manuals along Stegman's Mill Road to provide sufficient notice of the posted speed limit. In 2010, an additional 40 km/h sign was posted for westbound traffic to ensure sufficient spacing between signs.

At the west end of Stegman's Mill, the average speeds appear to be fairly compliant with the posted speed limit. However, further east on Stegman's Mill Road (and Teston Road); the average speeds are well above the posted limits. This may be attributed to the rural nature of the road as drivers may perceive Stegman's Mill Road to be less travelled, due to the limited number of intersecting roads and driveways. Historically, the City has sent correspondence regularly to York Regional Police for speed enforcement on Stegman's Mill Road.

Traffic volumes have significantly increased since summer 2009, which coincided with the opening of the Teston Road/Highway 400 interchange.

Speed Compliance Program (Stegman's Mill Road near Bindertwine Park entrance)

Speed data was collected on Stegman's Mill Road, near the Bindertwine Park entrance, by Radar Message Boards from July 25 to September 2, 2011. The table below summarizes the collected data.

Location	Direction	Highest 24 Hour Volume	Average Speed (km/h)	85 th Percentile Speed (km/h)
Stegman's Mill Rd near Bindertwine Park entrance	EB	901	46	56
	WB	936	47	57

As with the Automatic Traffic Recorders for the west end of Stegman's Mill Road, the average speeds appear to be fairly compliant with the posted speed limit. The 85th Percentile Speeds are well above the posted speed limit.

Existing Sign Inventory

A sign inventory was conducted on May 7, 2010 to compile what existing signs are present and if any additional signs are recommended. A listing of these signs is noted below:

Starting Westbound on Stegman's Mill Road from Kipling Avenue

1. 40 Ahead sign
2. Max 40 + Begins Tab
3. Max 40 sign
4. School Bus Stop Ahead Warning Sign + Tab
5. Deer Crossing sign
6. Max 40 sign
7. 12% Grade Ahead Warning sign
8. Curve Warning Sign + Slow Tab
9. Hidden Driveway Warning sign
10. Checkerboard Curve Warning sign
11. Max 40 sign
12. Curve Warning sign + Hidden Driveway sign
13. Hidden Intersection + 30 km/h warning tab

Starting Eastbound on Stegman's Mill Road from Islington Avenue

14. 5 tonnes per axle year round + 12% grade warning sign
15. Curve warning sign + Slow Tab + Max 40 (on nearby post)
16. Checkerboard Curve Warning sign
17. Deer Crossing sign
18. Max 40 sign
19. Hidden Driveway + School Bus Stop Ahead Warning sign + Tab
20. Hidden Driveway + Curve Warning sign
21. Max 40 sign
22. Curve Warning sign
23. Max 40 sign
24. Max 40 sign

An additional sign (No. 3 - Max 40 km/h sign) was installed in 2010. It was determined that the distances between existing 40 km/h signs was too great, thus necessitating the need for the additional sign. The existing 40 km/h signs are all highly visible.

There are many curve warning signs on the west half of Stegman's Mill Road which appropriately warns drivers of upcoming curves in the road. These signs are adequately placed and highly visible. However, there are no curve warning signs for the east half of Stegman's Mill Road. Curve warning signs will serve to alert motorists of upcoming curves in the road to reduce the number of "loss of control" collisions.

Stegman's Mill Road/Teston Road Collision History

A five year collision history of Stegman's Mill Road was compiled for the audit. There have been a total of five reported collisions based on available submitted collision reports received from York Regional Police and the Region of York. York Region was contacted to confirm the number of submitted collision reports for Stegman's Mill Road.

Three of the five collisions involved poor road and weather conditions which contributed to the cause of the collision as 'loss of control'.

One collision involved a vehicle hitting a cyclist. This collision occurred on Teston Road just west of Kipling Avenue.

The last collision involved a vehicle hitting a deer.

07-76907 (April 5, 2007)

Stegman's Mill Road east of Ravendale Court @ 6:50 am

WB driver lost control and drove into ditch. Roads were icy and it was snowing.

08-41919 (February 17, 2008)

Stegman's Mill Road east of Valley Road @ 8:00 pm

WB driver lost control and struck fire hydrant. Roads were icy and it was freezing rain.

08-141044 (June 7, 2008)

Teston Road near Kipling Avenue @ 10:44 am

WB driver struck a WB cyclist. Roads were dry and conditions were clear.

08-288532 (November 21, 2008)

Teston Road west of Kipling Avenue @ 7:00 am

WB driver struck a deer. Roads were dry and conditions were clear.

08-302897 (December 9, 2008)

Teston Road west of Kipling Avenue @ 5:46 pm

EB driver lost control and drove into ditch. Roads were icy and it was snowing.

Based on this collision history, three of the five collisions occurred on Teston Road just west of Kipling Avenue. This is a straight road section with very good sight visibility.

The other two collisions occurred near the curves of Stegman's Mill Road. Poor weather conditions were a contributing factor in both collisions where the driver lost control and left the roadway.

Infiltration Study Results – Islington Avenue/Stegman's Mill Road

An infiltration study was conducted for this area on April 29, 2009 from 7-9 am and from 4-6 pm. Staff were positioned at four locations – Islington Avenue and Highway 27, Nashville Road and Highway 27, Islington Avenue and Major Mackenzie Drive and Stegman's Mill Road and Kipling Avenue.

Inbound Traffic (Islington Avenue and Highway 27) 7-9 am

Total Number of Inbound Traffic 285 vehicles

Number of vehicles infiltrating 175 vehicles (17 of these infiltrated to Stegman's Mill Rd)

Infiltration Percentage 61%

Inbound Traffic (Nashville Road and Highway 27) 7-9 pm

Total Number of Inbound Traffic 328 vehicles

Number of vehicles infiltrating 203 vehicles (118 of these infiltrated to Stegman's Mill Rd)

Infiltration Percentage 62%

Inbound infiltrating vehicles during the AM period infiltrated to either Stegman's Mill Road or to Major Mackenzie Drive/Islington Avenue. There were a total of 135 vehicles that infiltrated on Stegman's Mill Road during the AM period.

Inbound Traffic (Islington Avenue and Major Mackenzie Drive) 4-6 pm
Total Number of Inbound Traffic 998 vehicles
Number of vehicles infiltrating 198 vehicles
Infiltration Percentage 20%

Inbound Traffic (Stegman's Mill Road and Kipling Avenue) 4-6 pm
Total Number of Inbound Traffic 127 vehicles
Number of vehicles infiltrating 28 vehicles
Infiltration Percentage 22%

Inbound infiltrating vehicles infiltrated to either Nashville Road/Highway 27 or to Islington Avenue/Highway 27. There were a total of 28 vehicles that infiltrated on Stegman's Mill Road during the PM period.

Infiltration Study Results – Napier Street

An infiltration study for this area on May 3, 2011 from 7-9am and from 4-6pm. Staff were positioned at three locations – John Street and Islington Avenue, Kellam Street and Islington Avenue and Stegman's Mill Road and Napier Street.

Inbound Traffic (John Street + Kellam Street) 7-9 am
Total Number of Inbound Traffic 14 vehicles
Number of vehicles infiltrating 6 vehicles
Infiltration Percentage 43%

Inbound Traffic (Napier Street) 7-9 pm
Total Number of Inbound Traffic 7 vehicles
Number of vehicles infiltrating 1 vehicle
Infiltration Percentage 14%

Inbound Traffic (John Street + Kellam Street) 4-6 pm
Total Number of Inbound Traffic 4 vehicles
Number of vehicles infiltrating 0 vehicles
Infiltration Percentage 0%

Inbound Traffic (Napier Street) 4-6 pm
Total Number of Inbound Traffic 11 vehicles
Number of vehicles infiltrating 5 vehicles
Infiltration Percentage 45%

Overall Inbound volumes were very low during the AM and PM periods. Staff did not recommend any turning prohibitions as a result of this study. Study locations for the infiltration studies, the Automatic Traffic Recorders, and the Speed Compliance Program are shown in Attachment No. 2.

Staff have been in discussion with Region of York's Transportation and Works Department staff regarding the possibility of implementing prohibitions at the following intersections:

1. Highway 27 and Islington Avenue
2. Highway 27 and Nashville Road

A survey will be prepared and sent out to the Kleinburg community to solicit their input on turning prohibitions. The results would then be provided to the Region of York. This information is required by the Region as both intersections are under their jurisdiction and their approval is required for any prohibition at the intersections.