

COMMITTEE OF THE WHOLE (WORKING SESSION) NOVEMBER 27, 2001

TRAFFIC CALMING EVALUATION

Recommendation

The Commissioner of Development Services and Public Works, in consultation with the Deputy City Manager and City Solicitor, recommends:

1. That the following report be received for information purposes;
2. That a moratorium be placed on the implementation of traffic calming in existing areas in the City of Vaughan, with the exception of the three traffic calming projects that have already received Council approval, in order to more fully evaluate the feasibility of implementing traffic calming measures in existing road allowances in conformity with Engineering standards;
3. That staff continue to attend community meetings for the remaining Neighbourhood Traffic Committees which do not have approved plans to obtain information regarding traffic concerns, which will be taken into consideration in evaluating the feasibility of implementing traffic calming measures in existing road allowances in conformity with Engineering standards;
4. That surveys be distributed to residents within each completed Neighbourhood Traffic Committee area next year to obtain input on the effectiveness of traffic calming and suggestions on how it may be improved;
5. That the implementation of traffic calming measures such as roundabouts and pavement marking in new subdivisions continue in accordance with Engineering standards which require sufficient road allowance widenings at intersections; and
6. That the Engineering Department develop design standard drawings for the City's traffic calming measures, and criteria for determining if or where traffic calming should be implemented.

Purpose

This report is to inform Council about the traffic calming projects that have been constructed to date in the City of Vaughan, and provide recommendations on the implementation of traffic calming in the future.

Background – Analysis and Options

Traffic Calming To Date

By the end of 2001, the City of Vaughan will have constructed traffic calming measures in sixteen Neighbourhood Traffic Committee areas and two streets by way of twenty separate projects. Sixteen projects were constructed this year. The cost of traffic calming in the City since 1998 has been approximately \$1,225,000, of which \$950,000 was spent this year. To compare, spending by the City of Toronto on traffic calming is capped at \$750,000 annually.

Attachment No. 1 illustrates the Neighbourhood Traffic Committee areas in the City of Vaughan that have been completed or are in progress.

Most traffic calming measures constructed through the Neighbourhood Traffic Committee process have been speed humps and raised crosswalks in existing areas. Other measures have included

intersection medians, curb extensions or intersection narrowings, chicanes, patterned crosswalks, and edge pavement marking to reduce the apparent width of the road. Measures such as roundabouts, curb extensions and raised intersections have been integrated into streets in new subdivisions.

Speed Studies

Staff conducted radar studies in ten of the sixteen projects where traffic calming measures were implemented this year to determine their impacts on traffic speeds. The studies were conducted in the summer, before the measures were in place, and in the fall, after they were constructed.

The radar studies were conducted for the following projects:

1. Westmount/Wilshire Traffic Committee Phase II;
2. Kleinburg Core Traffic Committee Phase II;
3. Brownridge Dr. Traffic Committee;
4. Woodbridge Ave. Ratepayers Traffic Committee;
5. Woodbridge Core Traffic Committee;
6. Torii St. Speed Hump;
7. York Hill Blvd. Traffic Committee;
8. Crossroads Traffic Committee;
9. Forest Dr./Bainbridge Ave. Traffic Committee; and
10. Morning Star Dr./Mapes Ave. Traffic Committee.

The Belview Avenue, Westmount/Wilshire Phase I, Kleinburg Core Phase I and Joseph Aaron Boulevard Traffic Committees were not evaluated because these plans were implemented in prior years, before a program to collect speed data was initiated. The Historic Maple, Maple Springs, and Arnold Avenue Traffic Committee plans, as well as a portion of the Weston Downs Traffic Committee Phase I and the Thompson Creek Boulevard raised crosswalk, were implemented too late in the year to be included in the evaluation.

Speeds were recorded near, but not at, most of the traffic calming measures in each project. At least thirty readings were taken in each direction for motorists travelling under free-flow conditions (i.e. not slowing for turns or stops). The speeds were averaged to produce before/after average and maximum speeds for each project. In turn, these results were averaged to produce before/after average and maximum speeds for all ten projects.

The before/after average and maximum speed results are summarized below:

<u>Project</u>	<u>Speed Before Implementation</u>		<u>Speed After Implementation</u>	
	Average (km/h)	Max. (km/h)	Average (km/h)	Max. (km/h)
1. Westmount/Wilshire Traffic Committee Phase II	48	80	45	70
2. Kleinburg Core Traffic Committee Phase II	57	83	42	66
3. Brownridge Dr. Traffic Committee	44	81	36	52
4. Woodbridge Ave. Ratepayers Traffic Committee	50	72	46	78
5. Woodbridge Core Traffic Committee	49	73	44	59
6. Torii St. Speed Hump	42	62	37	51
7. York Hill Blvd. Traffic Committee	50	68	41	61
8. Crossroads Traffic Committee	37	57	27	43
9. Forest Dr./Bainbridge Ave. Traffic Committee	46	70	38	63
10. Morning Star Dr./Mapes Ave. Traffic Committee	49	78	35	52
Average for all projects	47	72	39	60

The results show that traffic calming has reduced average speeds by approximately 8 km/h, and corresponding average maximum speeds by about 12 km/h. It has been generally effective in all ten projects, although it has had mixed results in two of the projects.

Traffic calming has had mixed results in the Westmount/Wilshire neighbourhood because of the intersection medians constructed on Beverley Glen Boulevard and Worth Boulevard. Neither the raised nor the flush-to-pavement medians on these streets have significantly slowed motorists. However, the speed humps and raised crosswalks in the plan have been effective in regulating traffic speeds.

Traffic calming has had mixed results in the Woodbridge Avenue neighbourhood because of the chicanes constructed on Meeting House Road. In fact, one motorist travelled through the chicanes at 78 km/h. The speed humps and raised crosswalk on Clarence Street have been effective in regulating speeds, and the narrowing at the intersection of Clarence Street and Meeting House Road has been successful in forcing eastbound motorists to slow when making a right turn onto Clarence Street.

The remaining traffic calming measures have been generally effective. These include other speed humps and raised crosswalks, curb extensions, and edge pavement marking. It is possible that with improved design and implementation intersection medians and chicanes can successfully regulate speeds as well.

The Mullen Drive Traffic Committee was used as a control. As in the other ten projects, average and maximum speeds were recorded before and after the implementation of traffic calming. However, the readings were not taken near the traffic calming measures, but rather at other locations to determine if motorists were increasing their speed elsewhere to compensate for having to reduce their speed at the measures. It was found that both average and maximum speeds remained the same in these other areas before and after traffic calming.

Resident Surveys

Surveys will be circulated to residents within each completed Neighbourhood Traffic Committee area next year. The surveys will give them an opportunity to indicate whether they think each specific traffic calming measure has been effective in regulating speeds, and whether they think the overall traffic calming plan for their neighbourhood has been a success. It is expected the surveys will reveal not only the public's perceived effectiveness of traffic calming, but also any suggestions relating to improving traffic calming design or aesthetics.

Experience in Other Municipalities

Many municipalities in North America now regularly employ traffic calming on their streets. The two largest cities in Ontario, Toronto and Ottawa, have been using traffic calming for several years, and other municipalities in the Greater Toronto Area such as Hamilton, Newmarket, Aurora, Whitby and Pickering have recently implemented traffic calming.

The City of Toronto has concluded that traffic calming is an effective means of speed control. At its meeting of June 6, 2001, the City of Toronto Transportation and Works Committee approved a recommendation that "physical traffic calming be endorsed as an effective way of improving traffic conditions on local and collector streets in the City of Toronto."

The majority of the traffic calming measures in the City of Toronto are speed humps. They are all 4.0 metres long by 75 mm high. As elsewhere in North America, concerns with vertical measures such as speed humps have been raised by fire and ambulance services. It is recognized that they should not be installed on primary emergency response routes, but that a neighbourhood

should be given the opportunity to decide whether they should be installed on other streets. In Toronto, speed humps are not installed on TTC surface routes.

In Vaughan, speed humps and raised crosswalks are 7.0 metres long by 100 mm high, and a few have been installed on transit routes since this longer and higher design is more forgiving on large vehicles such as buses. They are being monitored by the Engineering Department and York Region Transit, Vaughan Operations, to determine their appropriateness and suitability on additional transit routes.

In 2000 the City of Ottawa commissioned a formal study to evaluate the use and effectiveness of the traffic calming projects constructed to date in Ottawa. The *Ottawa-Carleton Traffic Calming Evaluation Study*, by Synectics Transportation Consultants, found that:

- Traffic calming on regional roads is questionable at best, because of impacts to transit and emergency services, and because of the potential to divert traffic to other parallel streets.
- Traffic calming on collector roads is a qualified success, as it usually met its objectives in regulating traffic speeds and improving safety.
- Traffic calming on local streets is an unmitigated success, as it consistently met its objectives in regulating traffic speeds and improving safety.

The study concluded that “traffic calming on Ottawa streets has been relatively successful, with the exception of vertical devices (i.e. speed humps) on regional roads” and “... that traffic calming should continue to be pursued in Ottawa.”

Concerns and Issues

Traffic calming has been implemented in the City of Vaughan in response to concerns with traffic speeds and infiltration on many of the City’s residential streets. In the past residents on these streets would bring their concerns to the attention of their local Councillor, who in turn could recommend to Council the formation of a Neighbourhood Traffic Committee. After a series of public meetings to determine the areas of concern and the degree of interest in traffic calming, a final meeting would be held to vote on a traffic calming plan developed by members of the Traffic Committee and City staff. This plan would be implemented following a staff report and Council approval. Notices for the initial and final public meetings would be mailed to all residents in the Neighbourhood Traffic Committee area.

Once traffic calming measures are implemented, it is not unusual for other residents in the area to express further concerns with their perceived effectiveness or visibility, or to complain that they were not aware that traffic calming was being implemented. These concerns usually subside within a month of completion of each project as residents become adjusted to the traffic calming measures.

Specific concerns with traffic calming from the public have included the following:

- **Speed humps are ineffective:** A number of residents, specifically in the Brownridge Drive and Mullen Drive Traffic Committee areas, have reported that many of the speed humps were too low and were not slowing motorists. Staff determined that some of the speed humps were not constructed to the height or shape specified in the contract, and were allowing motorists to traverse them at higher-than-desired speeds. The City’s contractor has since corrected these humps.
- **Medians block traffic:** Some motorists in the Westmount/Wilshire and York Hill Boulevard Traffic Committee areas have concerns that the intersection medians narrow the roadway and make it difficult to turn from intersecting streets. Staff have confirmed that the

medians have been designed to allow a 15 metre turning radius from a side street, sufficient for large vehicles such as fire trucks.

- Medians are not visible: Others have raised the concern that certain intersection medians are sometimes difficult to see. In response, staff have had the City's contractor re-paint the yellow centreline pavement markings so that they "split" the medians, giving motorists a better idea of how to drive past them. Staff have also had some fluorescent plastic delineators installed at the corners of the medians at York Hill Boulevard and Winding Lane/Colleen Street to improve visibility. These delineators will be installed at some of the other traffic calming medians in the City as well.
- Speed humps and raised crosswalks are not visible: Some motorists have expressed concerns with the degree of advance warning they receive with speed humps and raised crosswalks, or that the measures are constructed before accompanying signs are installed. Every such traffic calming measure in the City is constructed with signs and pavement markings in accordance with the *Canadian Guide to Neighbourhood Traffic Calming*. Beginning with the Arnold Avenue project, the size of the signs at each speed hump will be increased from 450 by 450 mm, as specified in the *Canadian Guide to Neighbourhood Traffic Calming*, to 600 by 600 mm. These signs will be installed prior to construction, and will replace the smaller signs at the remaining measures in the City next year. In addition, the size of the painted white triangles on each speed hump and raised crosswalk in the City is being increased to further enhance visibility.

Warning signs are placed in advance of each measure or series of measures to provide additional notification to motorists. Again beginning with the Arnold Avenue project, new pictographic warning signs, as opposed to text signs, will be used. Their performance will be evaluated over the winter, and if successful will be recommended to replace existing advance warning signs elsewhere in the City.

Impacts on Emergency and Transit Services

Traffic calming measures regulate speeds for all vehicles, including ambulances, fire trucks, utility vehicles and transit buses. In many cases the impacts of traffic calming measures are greater on these vehicles because of their large size. Speed humps have the greatest negative impact on response times, equipment, patients and attendants. The decision to implement traffic calming should be considered in light of these impacts.

Studies conducted in other municipalities in North America have shown that traffic calming measures can reduce emergency response time by 3 to 10 seconds each. This reduction in response time will accumulate with a series of measures.

Wherever possible, staff contacted representatives from emergency services, public works and transit to establish their positions on traffic calming. The following were determined:

- Staff were unable to obtain comments from York Regional Police on traffic calming. Generally, police departments officially support the use of traffic calming because it lessens the need for police enforcement of posted speed limits.
- Staff were also unable to obtain formal comments from any of the ambulance companies that serve Vaughan. Ambulance services usually do not support traffic calming because of the effects of vertical measures such as speed humps on patients in the ambulance.
- The City's Fire Department prefers that traffic calming measures be lateral measures such as roundabouts in conformity with Engineering standards with sufficient turning radius, rather than vertical measures such as speed humps.

- The City's Public Works Department recognizes that traffic calming is a response to demands from residents; however, it has been their experience that streets with traffic calming measures are more difficult to maintain. An example is the extra work required to plough snow in the vicinity of curb extensions and roundabouts.
- A representative from York Region Transit, Vaughan Operations, indicated that they do not support the installation of traffic calming measures because of their physical effects on buses.

The foregoing confirms the need to ensure that emergency services are made aware of potential traffic calming projects, and are allowed an opportunity to provide input as to types and locations of traffic calming measures. All forms of traffic calming or traffic control, including traffic signals and stop signs, can have impacts on the time required for all vehicles to traverse a given street or neighbourhood.

Public works and transit agencies should be informed of potential traffic calming projects so that opportunities for minimizing their impacts can be examined. For example, the placement of speed humps near bus stops, or the relocation of these bus stops, can lessen their impacts on transit buses.

Recommendations

The radar studies have shown that traffic calming can be an effective means of speed control. The speed humps, raised crosswalks, curb extensions and edge pavement marking implemented to date have all successfully lowered speeds.

However, as in other municipalities, concerns have been raised with the impacts of traffic calming measures on emergency services, public works and transit. Residents have not yet been given the opportunity to indicate whether they think traffic calming has been effective in regulating speeds, or to provide suggestions for improving traffic calming. Surveys will be circulated to each completed Traffic Committee area next year to allow residents that opportunity.

It is recognized that the implementation of traffic calming in new subdivisions has less constraints than implementation in existing areas.

Accordingly, notwithstanding its success to date in regulating speeds, it is recommended that a moratorium be placed on the implementation of traffic calming in existing areas in the City of Vaughan to evaluate the feasibility of implementing the measures in existing road allowances in conformity with Engineering standards. The moratorium need not apply to traffic calming in new subdivisions, which can continue to be integrated into new streets in accordance with Engineering standards, which require sufficient road allowance widenings at intersections.

Prior to the implementation of any further traffic calming measures in either existing areas or new subdivisions, staff shall finalize Engineering standard drawings for traffic calming.

Implications for Traffic Committees in Progress

A moratorium on traffic calming will have implications for the twenty-five Neighbourhood Traffic Committees that have been established by Council that are currently going through the Traffic Committee process.

The following projects have been approved by Council:

1. Rosedale Heights Dr. Traffic Committee
2. Alberta Dr. Speed Hump
3. Weston Downs Traffic Committee Phase I

The following Traffic Committees are at varying stages in the Traffic Committee process:

1. South Vaughanwood Traffic Committee
2. Maple Landings Ratepayers Traffic Committee
3. Greenock Dr. Traffic Committee
4. Pinewood Dr./Crestwood Rd./Hilda Ave. Traffic Committee
5. Vaughanwood Ratepayers Traffic Committee
6. Weston Downs Traffic Committee Phase II
7. Airdrie Dr. Traffic Committee
8. Woodbridge Meadows Traffic Committee
9. Glen Shields Ave. Traffic Committee
10. Townsgate Dr./Emerald Ln. Traffic Committee
11. Crofters Rd. Neighbourhood Traffic Committee
12. Charles St./Helena Gdns. Traffic Committee
13. Barrhill Rd. Traffic Committee
14. Belview Ave. Traffic Committee Phase II
15. Kipling Ave. South Traffic Committee
16. Kipling Ave. Traffic Committee
17. Maple Springs Traffic Committee Phase II
18. Pine York Ratepayers Traffic Committee
19. Sonoma Heights Ratepayers Traffic Committee
20. Spring Gate Blvd. Traffic Committee
21. Nimbus Pl. Traffic Committee
22. Thomson Creek Blvd. Traffic Committee

It is recommended that the three projects that have received Council approval be allowed to proceed to construction. For the remaining projects it is recommended that staff continue to attend community meetings and obtain information regarding their traffic concerns, which will be taken into consideration in evaluating the feasibility of implementing traffic calming measures in existing road allowances in conformity with Engineering standards.

Conclusion

Before/after speed studies have demonstrated that the City's traffic calming measures have reduced average speeds by approximately 8 km/h, and average maximum speeds by about 12 km/h. However, there has been insufficient time to comprehensively evaluate after traffic calming measures have been constructed, and concerns have been raised with emergency response and transit. Accordingly, it is recommended that a moratorium be placed on the implementation of traffic calming in existing areas in the City of Vaughan, with the exception of the three projects that have received Council approval, until the feasibility of implementing traffic calming measures in existing road allowances in conformity with Engineering standards is evaluated. The moratorium need not apply to the implementation of measures such as roundabouts and pavement markings in new subdivisions. The moratorium will allow the time required to develop design standard drawings for the City's traffic calming measures, and criteria for determining if or where traffic calming should be implemented.

Attachments

1. Location Map

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Respectfully submitted,

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ATTACHMENT No. 1

