

**THE CORPORATION OF THE CITY OF WINDSOR  
OFFICE OF THE CITY ENGINEER- Engineering**



*MISSION STATEMENT:*

*"The City of Windsor, with the involvement of its citizens, will deliver effective and responsive municipal services, and will mobilize innovative community partnerships"*

<b>LiveLink REPORT#: 16637 ST2013</b>	<b>Report Date: July 8, 2013</b> PW#3614-07/08/13:eb
Author's Name: JeffHagau	Date to Standing Committee: Jul 24,2013
Author's Phone: 519 255-6247"ext. 6003	Classification #:
Author's E-mail: jhagan@city.windsor.on.ca	

To: **Environment, Transportation & Public Safety Standing Committee**

Subject: **Bartlet Drive and Bellagio Drive Traffic Calming Pilot Projects - Follow-up Report**

**1. RECOMMENDATION: City Wide: \_\_\_ Ward(s): 2, 7**

That the report "*Bartlet Drive and Bellagio Drive Traffic Calming Pilot Projects - Follow-up Report*" **BE RECEIVED** for information.

**EXECUTIVE SUMMARY:**

N/A

**2. BACKGROUND:**

This report addresses speed cushion installations in two neighborhoods that were implemented as pilot projects:

- Bartlet Drive between Neal and Casgrain (2 installations)
- Bellagio Drive north of Beverly Glen Street

**Bartlet Drive**

On July 9, 2012, Council passed motion M287-2012, directing Administration as follows:

*M287-2012 **WHEREAS** Council, by resolution lvfl66-2012, Authorized the reduction of speed on residential streets in the Roseland Area; and*

*WHEREAS Administration was directed by the same Motion to amend the Traffic Calming Policy to allow for speed cushions based on a successful City of London pilot project; and*

*WHEREAS it would be prudent for the City of Windsor to undertake their own pilot project before formally amending the Traffic Calming Policy;*

***THEREFORE, BE IT RESOLVED** that Administration proceed with the purchase and installation of speed cushions for two (2) locations on Bartlett Drive for such a pilot project; and*

*THAT Administration **BE DIRECTED** to monitor the impact of these devices on emergency services and any operational issues (i.e. winter control activities) and that Administration **REPORT BACK** on the effectiveness of this particular traffic calming device.*

Following this motion, speed cushions were installed on Bartlett Drive as directed. This report is provided to report back as directed and intended to provide Council with information on experiences with the speed cushions and their effectiveness.

Previous to M287-2012, speed limits in the Roseland neighborhood (including Bartlett Drive) were reduced from 50 km/h to 40 km/h by Council motion M166-2012, passed on March 19, 2012. Following M166-2012, 40 km/h speed limit signage was posted in the affected area.

### **Bellagio Drive**

On June 27, 2012, in response to Report# 15901, M122-2011 -Bellagio Street Closure Petition, the Environment and Transportation Standing Committee issued Report #73, containing the following recommendations:

***THAT** the report of the City Engineer dated June 14, 2012 entitled "M1 22-2011 - Bellagio Street Closure Petition" **BE RECEIVED** for reformation; and farther*

***THAT** Administration **BE DIRECTED** to proceed with the purchase and installation of speed cushions on Bellagio Street, and that Administration provide details as to the cost and where the speed cushions will be installed on the street.*

On August 7, 2012, Council passed motion M353-2012 adopting the recommendations of the Environment and Transportation Standing Committee with regard to traffic calming on Bellagio Drive:

***M353-2012 That Report No. 73 of the Environment. And Transportation Standing Committee of its meeting held June 27, 2012 regarding M1 22-2011 - Bellagio Street Closure Petition **BE ADOPTED** as presented.***

Speed cushions were installed on Bellagio Drive north of Beverly Glen Street in October 2012, as directed.

### 3. DISCUSSION:

As directed in the Council motion described above, the following factors were examined:

- Traffic calming effectiveness of the devices
- Impact of the devices on emergency services
- Impact of the devices on Operations

each of these is discussed in detail below.

Motor M287-2012 requested a report back to Council regarding Bartlet Drive specifically. Because of the similarities in the issues involved, the scope of the discussion for this report has been expanded to collectively review the pilot use of speed cushions.

#### Traffic Calming Effectiveness - Bartlet Drive

Speeds and volumes on Bartlet Drive and on other neighborhood streets were collected by automatic traffic recorder (tube count) before and after the installation of the speed cushions. "Before" speeds and volumes were collected at several points over 2010 and 2011. "After" speeds and volumes were collected in October, 2012.

The 2012 traffic data was not affected by the nearby temporary closure of Cousineau Road at Highway 3; all traffic data was collected prior to Cousineau Road being closed in November 2012.

Traffic data collection in 2012 was hampered by the theft of the automatic traffic recorder on Bartlet Drive. In order to ensure that the theft would not be repeated, a staff member was assigned to be present (at a sufficient distance as not to impact results) while the data was collected with a replacement unit. Because of this, traffic data on Bartlet Drive for 2012 is only available from 8:00 am to 4:00 pm instead of a full 24 hours, as is normal practice. In order to properly identify the net effect of the speed cushions on traffic speeds and volumes, the 2012 traffic count data was compared against speeds and volumes from 8:00 am to 4:00 pm in the 2010 traffic count.

The speeds and traffic volumes on Bartlet Drive before and after the installation of the speed cushions are summarized below.

Measure	2010		2012	
	Value	Value	Value	Change
Speed Limit (km/h)	50	40		
Speed - Mean (km/h)	50.3	39.6	-10.7	-21%
Speed - 85th Percentile (km/h)	58.0	49.7	-8.3	-14%
Volume - Total	814	792	-22	-3%
Volume - >10 km/h Over Speed Limit	90	104	+14	+16%
% > 10 km/h Over Speed Limit	11%	13%	+2%	+19%

Note: all data in this table is for the period from 8:00 am to 4:00 pm.

Traffic volumes decreased by 3% (22 vehicles) from before the installation of the speed cushions, to after. These results indicate that **the speed cushions did not have a significant effect on Bartlet Drive traffic volumes.** This is in keeping with the guidelines given in the Institute of Transportation Engineers' *Canadian Guide to Neighborhood Traffic Calming*, which states that speed humps/cushions can cause a "minor" reduction in traffic volumes,

As noted in the table above, the mean vehicle speed on Bartlet Drive decreased by 21% (10.7 km/h) and the 85<sup>th</sup> percentile speed (i.e. the speed below which 85% of vehicles travel) decreased by 14% (8.3 km/h) from before the installation of the speed cushions to after. Despite these reductions in vehicle speeds, with the lowering of the speed limit from 50 km/h to 40 km/h, the number of vehicles exceeding the posted speed limit by 10 km/h or more increased by 16%.

In order to isolate the effect of the speed cushions from other factors affecting traffic volumes and speeds such as lowered speed limits in the Roseland area and enforcement activity, the traffic-calmed section was compared against other neighborhood road sections. Traffic speeds before and after the installation of the speed cushions are summarized in the table below.

Location	Speed (km/h)					
	Before		After		Change	
	Mean	85 <sup>th</sup> Percentile	Mean	85 <sup>th</sup> Percentile	Mean	85 <sup>th</sup> Percentile
Roseland east of Mansfield	48.1	54.6	34.6	48.9	-13.5	-5.7
Kennedy between Darcey and McRae	50.4	59.6	43.9	55.2	-6.5	-4.4
Roseland between Kenned and McRae	51	59.5	47.6	57.1	-3.4	-2.4
<b>Volume-Weighted Average</b>					<b>-9.1</b>	<b>-4.7</b>
<b>Bartlet Drive East of Sutherland</b>					<b>-10.7</b>	<b>-8.3</b>
<b>Difference - Bartlet Drive vs. Neighbourhood Streets Without Speed Cushions</b>					<b>-1.6</b>	<b>-3.7</b>

As shown in the table above, while speeds reduced in the study area overall from October 2010 to October 2012, speeds on Bartlet Drive in the vicinity of the speed cushions decreased somewhat more than average: Bartlet Drive experienced a reduction in average speed of 1.6 km/h and 85<sup>th</sup> percentile speed of 3.7 km/h over and above the average speed reduction observed on other neighborhood streets where speed cushions were not installed. These results suggest that **the speed cushions were slightly effective at reducing vehicle speeds on Bartlet Drive.** This is generally not in keeping with the guidelines given in the Institute of Transportation Engineers' *Canadian Guide to Neighborhood Traffic Calming*, which states that speed humps/cushions can cause a "substantial" reduction in vehicle speeds.

### Traffic Calming Effectiveness - Bellagio Drive

Speeds and volumes on Bellagio Drive between Beverly Glen Street and Wyandotte Street were collected by automatic traffic recorder (tube count) before and after the installation of the speed cushions. In both cases, the count was taken in the vicinity of #950 Bellagio Drive, approximately 190 m north of the speed cushion installation. "Before" speeds and volumes were

Collected in April 2012, and "After" speeds and volumes were collected in March 2013. The results of the speed and volume surveys are summarized in the table below.

Measure	Weekday Average			
	Before	After	Change	
	April 2012	March 2013	Difference	Percent
Speed Limit (km/h)	50	50		
Speed - Mean (km/h)	41.8	41.5	-0.3	-1%
Speed - 85th Percentile (km/h)	54.1	54.2	+0.1	0%
Volume - Daily Average	1004	890	-114	-11%
Volume - >10 km/h Over Speed Limit (Daily Average)	48	35	-13	-28%
% > 10 km/h Over Speed Limit	5%	4%	-1%	-18%

On average, the daily traffic volume reduced by 11% (114 vehicles per day) from before the speed cushions were installed to after. This suggests that **the speed cushions were moderately effective at reducing vehicle volumes on Bellagio Drive.**

While the number of "aggressive" speeders (i.e. drivers exceeding the speed limit by more than 10 km/h) decreased by 28% (13 vehicles per day), the overall average speed and 85<sup>th</sup> percentile speed showed only negligible change with the installation of the speed cushions. This suggests that **the Bellagio Drive speed cushions were moderately effective at reducing aggressive speeding but did not have a significant effect on vehicle speeds overall.**

### Emergency Services Experience

Windsor Police Service, Windsor Fire & Rescue Services, and Essex-Windsor EMS were contacted for feedback on their experience with the speed cushions on Bartlet Drive and Bellagio Drive. Their responses are summarized below:

Organization	Feedback
Windsor Police Service	No issues with the speed cushions.
Windsor Fire & Rescue Services	WFRS apparatus is not able to straddle the speed cushions as intended. WFRS reports that their safe speed to traverse the speed cushions is lower than for speed humps.
Essex-Windsor EMS	EWEMS ambulances are not wide enough to straddle the speed cushion as intended. Ambulances have to slow down significantly for the cushions.

After receiving this initial feedback, Administration followed up with Windsor Fire & Rescue Services and Essex-Windsor EMS to determine whether the speed cushion design could be altered so that it could be straddled by fire engines and ambulances but not passenger vehicles. Measurements were made of the clear width between the wheels for fire engines and ambulances, and the following conclusions were drawn:

- Fire engines: The dual-wheel rear axles on WFRS engines leave a clear width that is only slightly larger than a mid- to large-sized passenger vehicle such as an SUV or minivan. Any speed cushion design that could be straddled by a WFRS fire engine could also be straddled by passenger vehicles.

- Ambulances: it appears that any speed cushion design that could be straddled by a EWEMS ambulance could also be straddled by mid- to large-sized passenger vehicles such as SUVs and minivans, thereby undermining the effectiveness of the speed cushions.

Speed cushions (as opposed to speed humps) are intended to provide a clear wheel path for large vehicles such as fire engines and transit buses, thereby allowing them to traverse the speed cushion without slowing down. However:

- The experience with the Bartlet Drive and Bellagio Drive pilot projects has shown that, for Windsor Fire & Rescue Services equipment, speed cushions require emergency vehicles to slow down *even more* than for speed cushions.
- The current City of Windsor traffic calming policy does not allow vertical deflection devices (including speed cushions and speed humps) on transit routes.

The experience of Windsor Fire & Rescue Services differs significantly from the experience reported from the City of London, where the fire department reported that speed cushions are significantly easier to traverse with fire apparatus than speed humps. This information from the City of London had informed the original decision to implement pilot speed cushion projects in Windsor. After receiving feedback from Windsor Fire & Rescue Services, Administration followed up with the City of London and confirmed that the speed cushions used in London are similar in dimension to those used in Windsor, and that the fire apparatus in the two cities is similar as well. Further investigation will be needed to determine the reason for the differing experiences in London and Windsor.

These findings will be provided to the consultant for the Traffic Calming Policy update.

### Operations Experience

Operations staff were solicited for feedback about their experience with the speed cushions' effects on maintenance, waste pickup, and street sweeping. Their responses are summarized in the table below:

Maintenance	Speed cushions interfered with winter maintenance operations.
Waste Pickup	No issues reported with speed cushions.
Street Sweeping	No issues reported with speed cushions, Street sweepers must raise brooms for speed cushions, but no requests from residents for hand sweeping at speed cushion locations have been received,

### Summary

Overall, the experience of speed cushions on Bartlet Drive and Bellagio Drive is summarized as follows:

- They appeared to moderately reduce the number of aggressive speeders (i.e., drivers exceeding the speed limit by 10 km/h or more), but only had negligible to minor effects on the speeds of less aggressive speeders and passenger vehicles driving below the speed limit

- They appeared to cause a moderate volume reduction on Bellagio Drive (a street with several parallel alternate routes, including an arterial road), but did not appear to significantly affect volumes on Bartlet Drive (a street with limited alternate routes).
- They required fire engines and ambulances to slow significantly, but did not create issues for Windsor Police.
- They created winter maintenance issues by interfering with snow plowing.
- Opposition to the specific location selected for the speed cushions was expressed by fronting property owners in two of the three locations.

Administration will provide this information to the consultant performing the update to the traffic calming policy so that the updated policy reflects City of Windsor experience.

#### **4. RISK ANALYSIS:**

Since the Bartlet Drive speed cushion installation was intended as a pilot project, this analysis focused on the risks associated with speed cushions generally.

Speed cushions have several potential risks associated with them:

- Speed cushions may increase emergency services response times;
- Speed cushions may cause damage to vehicles, particularly if warning signs are damaged, removed, or improperly placed;
- If left installed over winter, speed cushions may cause interference with snow plowing operations, resulting in damage to plows or to the cushions themselves. This represents a financial risk to the City in terms of repair and replacement cost as well as maintenance of snow clearing equipment;
- Speed cushions, like other traffic calming measures; may shift traffic problems onto other nearby streets if not part of a comprehensive "area-wide" traffic calming strategy.

Traffic calming in general, including speed cushions as one measure, are intended to address risks to pedestrian comfort and resident enjoyment by restoring neighborhood streets to their Intended function in cases where traffic characteristics, particularly speeds and/or volumes, are inappropriate for the functional classification of the street. The effectiveness-*of* traffic calming measures at mitigating these risks and achieving their intended purpose depends greatly on them Only being installed when warranted, and on the appropriate traffic calming measures being chosen to address the specific characteristics of the streets, neighborhood, and traffic problems experienced. Inappropriate or unwarranted traffic calming measures may be ineffective at their intended purpose and in some cases can actually increase risk.

#### **5. FINANCIAL MATTERS:**

*N/A*

#### **6. CONSULTATIONS:**

Operations (Maintenance) - Peter Matheson  
 Operations (Solid Waste)-Anne Marie Albidone, David Girard, and Colleen Labutte  
 Windsor Police Services - Barry Horrobin and Staff Sgt. John Richards  
 Windsor Fire & Rescue Services - David Hart  
 Essex-Windsor EMS - Dean Wilkinson  
 City of London Transportation Division - Mark Ridley

**7. CONCLUSION:**

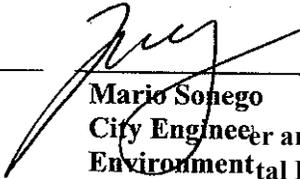
Based on the data collected so far, it appears that the speed cushion installations on Bartlet Drive have had slight effects on vehicle speeds and negligible effects on traffic volumes, and that the speed cushion installation on Bellagio Drive resulted in a moderate reduction in traffic volumes and the number of aggressive speeders, but had only negligible effects on average vehicle speeds.

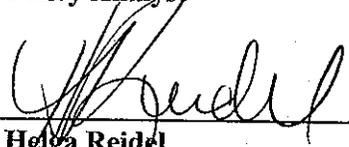
The experience of emergency services with the speed cushions has been generally neutral to negative, with Essex Windsor EMS and Windsor Fire & Rescue Services reporting that the speed cushions have a significant effect on emergency vehicle speed, and in the case of WFRS, even more of an effect on speed than speed humps. The speed cushions were found to create issues for winter maintenance.

Opposition to the speed cushions was expressed by fronting property owners in two of the three locations.

An update of the traffic calming policy is currently underway; Administration will provide information to the consultant so that the updated policy reflects City of Windsor experience with speed cushions.

  
 Jeff Hagan  
 Policy Analyst

  
 Mario Sonego  
 City Engineer and Corporate Leader  
 Environmental Protection and Transportation

  
 Helga Reidel  
 Chief Administrative Officer

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**APPENDICES:**

**DEPARTMENTS/OTHERS CONSULTED:**  
 Name:  
 Phone #: ext.

<b>NOTIFICATION:</b>				
Name	Address	Email Address	Telephone	FAX
Councillor Ron Jones		rjones@city.windsor.on.ca		
Councillor Percy Hatfield		phatfie@city.windsor.on.ca		
Bartlet Drive residents (Casgrain to Nea!)				
Bellagio Drive residents (Wvandonne to Little River)				