




INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	July 10, 2024
SUBJECT/REPORT NO:	Speed Cushion Process (PW24039) (City Wide)
WARD(S) AFFECTED:	City Wide
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SIGNATURE:	

COUNCIL DIRECTION

N/A

INFORMATION

Traffic Calming is a combination of physical features that are intended to effectively address issues related to vehicle speed, excessive traffic volume, and overall neighbourhood safety. Traffic calming measures when combined with engineering, education, and enforcement can improve the safety of all road users and aid the City in achieving the goals of Vision Zero.

Information Report PW24039 is intended to provide clarity on the process for the implementation of speed cushions. A traffic calming policy will come forward to Public Works Committee for consideration in the last quarter (Q4) of 2024. Since speed cushions are one of the many methods of traffic calming, the larger policy will include broader content related to standards, guidelines and other associated policies. This information report is not intended to include this level of information in consideration of the pending Traffic Calming Policy.

Speed cushions are one of the many tools in the traffic calming toolbox that are used for traffic calming purposes. They provide vertical deflection in the pavement perpendicular to the direction of travel across a street to reduce vehicle speeds. The cushions include

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

wheel cut-outs to allow bicycles and large vehicles such as transit vehicles and fire trucks to pass unaffected. The cut-outs also aid in drainage of the roadway during rain events and snow melt. Speed cushions can also deter cut-through traffic and reduce volumes by making it inconvenient for through-traffic travel. The City's standard design for speed cushions is attached to Report PW24039 as Appendix "A". There are approximately 500 existing speed cushions City-wide.

The use of speed cushions was introduced predominantly in 2019 and previously a variety of different vertical deflection-based devices, including variations of speed cushions, were used but mostly categorized as speed humps. Speed humps do not include wheel cut-outs and are considered more physically aggressive compared to speed cushions. While speed humps are still a useful traffic calming tool, industry best practices have shifted from speed humps to speed cushions for municipal roadways since they better accommodate transit and emergency services vehicles and provide better roadway drainage.

The City's standard design for speed humps is attached to Report PW24039 as Appendix "B". There are approximately 80 existing speed humps City-wide. The existing speed humps still provide traffic calming benefits and they are upgraded to speed cushions during roadway reconstruction, if they are deemed to be no longer effective, or have asset condition issues.

Between 2015-2018 the City installed temporary rubberized speed humps which could be deployed quickly and easily. However, they had to be removed during the winter months to avoid damage from winter operations and therefore they only were beneficial for approximately 8 months of the year. They were also difficult to maintain when installed because of a variety of condition related issues, including damage to the road surface, breakdown of the rubberized hump material and the loosening of the anchors that attached the humps to the roadway. Because of the operating and maintenance challenges they are no longer used, and all previous locations were replaced by permanent speed cushions in 2019-2020.

Speed bumps are a form of vertical deflection and are similar in design to speed humps, but they are more aggressive to vehicles which require considerably slow operating speeds to traverse them and are not recommended for use on municipal roadways. Speed bumps are regularly installed on private property such as parking lots and driveways for example. There are no speed bumps on roadways in the City, nor are they typically used in other jurisdictions.

Vertical deflection features require drivers to slow the operating speed of their vehicles so that they can be safely traversed in a controlled manner. They are not necessarily designed or intended to be driven over at the posted speed limit, but rather at a lower speed so that a traffic calming effect is achieved. The speed at which a vehicle can safely traverse them depends on many factors including weather and vehicle types. The

height of speed cushions and humps allow sufficient vertical clearance for standard vehicles to drive over. Vehicles with low ground clearance can traverse them safely at low speeds. Modified vehicles that have abnormally low ground clearance may not be able to traverse speed cushions and humps and would also have similar difficulty navigating other vertical based features such as railway tracks and driveway approaches for example. A typical speed cushion installation is attached to Report PW24039 as Appendix “C” for reference.

Vertical deflection features are not recommended to be used on major collector or arterial roadways as these roadways accommodate larger volumes of traffic, a variety of different vehicle types and are designed to operate in a relative efficient manner from a traffic flow perspective – all of which would be impeded. The Transportation Division is not aware of any other jurisdictions that install speed cushions on major collector or arterial roadways, nor are they recommended to be used on these types of roadways in industry standards and best practices. Speed cushions are best suited for roadways that receive lower traffic volumes and little to no truck traffic. Other traffic calming measures are used on major collectors and arterial roadways, such as bump-outs, traffic signal timing/functional adjustments and automated traffic enforcement for example

The Transportation Division and Ward Councillor offices routinely receive requests from residents regarding concerns with speeding and driver behaviour on local streets, or requests related to drivers cutting-through neighbourhoods. The Transportation Operations Section (Roadway Safety Team) investigates these concerns, considering a variety of factors including collision history, vehicle operating speeds, traffic volumes, proximity to schools and parks and roadway characteristics.

When investigating speeding concerns and/or requests for the installation of speed cushions, speed studies will be conducted to measure the operating speed and volume of vehicles on the segment of roadway in question. The speed studies measure multiple consecutive days of information to ensure that the data collected is representative of normal day-to-day conditions. Data collection does not occur during the winter months since winter weather can skew results as vehicle speeds are generally lower in winter weather.

A traffic calming assessment, in line with the Transportation Association of Canada’s Traffic Calming Guideline, is completed which considers the recorded operating speeds, traffic volume, prevalence of cut-through traffic, collisions, and road characteristics (which include identifying the presence of sidewalks and pedestrian generators such as schools, playgrounds, community centres and libraries for example). The results of the assessment will output if traffic calming is warranted or not. Notwithstanding seasonal factors and internal workplan priorities, it typically takes 4-6 weeks to complete a traffic calming assessment.

Assessment results are communicated back to residents and Councillor's offices. Warranted speed cushions are added to the Transportation Division's workplan, implemented, and funded from the Vision Zero program. Should residents and Councillor's office wish to proceed with the installation of unwarranted speed cushions, then the typical practice is that a motion is prepared which includes a funding source. In these instances, the use of petitions has been encouraged to ensure that most residents are in favour of the use of speed cushions on their street since they are not warranted from a technical perspective.

The threshold for a successful petition is when 50% + 1 of the total homes on the roadway segment are in favour of the installation of speed cushions. While petitions have typically not been required and their use is at the discretion of the Ward Councillor, moving forward a successful petition will be required unless there are exceptional circumstances.

In circumstances when petitions have not been utilized for unwarranted installations it is common for the Transportation Division to receive complaints from residents after installation, at times in an aggressive manner. Receiving and responding to resident complaints strains resources and the use of petitions greatly reduces these instances. In circumstances where petitions are not possible, or would not be of benefit, their use can be removed from the approval process.

In some instances, residents take it upon themselves to conduct petitions and present the petition to the City or their Ward Councillor's office. The Transportation Division assists in the preparation of motions for speed cushions to ensure they contain the necessary information for implementation including the quantity and estimated cost for installation.

The percentage of warranted vs. unwarranted speed cushions cannot be calculated at this time due to the cyber-attack, however, the majority of speed cushions installed throughout the City are considered unwarranted from a technical perspective.

While the social value and resident appreciation of unwarranted speed cushion installations cannot be discredited, installing unwarranted traffic calming features can allocate resources away from efforts that are of a higher benefit from a Vision Zero perspective.

Local roadways, where most unwarranted speed cushions exist, represents 45% (2,812 km) of the City's overall road network (6,517 km), however only 6.68% of fatal and injury collisions occur on local roadways. Expending resources studying and implementing unwarranted traffic calming features on local roadways reduces the City's capacity to apply resources where fatal and injury collisions are occurring or more likely to occur.

Speed cushion placement is based on roadway segment length, existing stop controls, sharp curves in the road, driveway spacing and drainage/manholes. The recommended spacing between speed cushions is 120 meters to 250 meters apart and is dependent on the desired speed reduction. The minimum spacing between speed cushions and stop controls and sharp curves is 65 meters and 75 meters from traffic signals. Speed cushions are not installed in front of driveways or on top of or adjacent to catch basins or manholes. The process diagram for speed cushion requests is attached to Report PW24039 as Appendix “D” for reference.

Speed cushions are installed by contractual services and have been implemented in two phases, specifically spring implementation (May-June) and fall implementation (August-November). To include speed cushions in the spring implementation phase, locations must be formally identified to the City’s contractor by the end of March and by the end of July for the Fall implementation phase. Beginning in 2025, the speed cushion installation contract will be restructured so that the two-phase approach will be unnecessary.

In its place when an approved speed cushion location(s) is identified they will be processed immediately and forwarded to the installation contractor for implementation. It is expected that upon receipt, it would be approximately 6-8 weeks to when the speed cushion(s) are installed if this occurs during the construction season. Locations identified outside of the construction season would wait until the re-start of the construction season. The exact timelines will be determined upon the issuance of the revised 2025 installation contract. This change in process will provide a more streamlined approach and result in more timely installations.

Upon the formal identification of speed cushion installations, the process of installing speed cushions includes multiple activities as summarized per the following:

- a) Location Pre-Marking:
The physical location of the speed cushion(s) is marked with white marking paint on the roadway. A speed cushion frequently asked question brochure, as attached to Report PW24039 as Appendix “E”, is delivered to residential properties that are in proximity of the pending installation locations.
- b) Utility Locating:
The City’s contractor requests utility locates through the Ontario One Call process. Utility companies identify the location of the presence of their underground infrastructure by applying marking paint on the roadway and boulevards to permit the installation of the speed cushions and associated signage posts.
- c) Pavement Milling:

The milling (removal of a layer of pavement) of the existing pavement where the speed cushion will be installed takes place. Milling leaves a temporary depression in the pavement which is often marked with a temporary sign alerting drivers to the discontinuity of the roadway's paved surface. Multiple speed cushion locations across the City will be milled before proceeding with installation of the speed cushion. Prior to physical construction, construction notices are delivered to properties directly impacted or adjacent to the roadway works to provide information and notice. A copy of the construction notice is attached to Report PW24039 as Appendix "E".

d) Speed Cushion Installation:

The speed cushion is installed which is constructed from asphalt. Multiple locations of speed cushions across the City will be installed before proceeding with the installation of signage and pavement markings.

e) Signage & Pavement Markings:

Speed Hump signage is installed on either side of the speed cushions to alert drivers to the presence of the cushions as required by the Ontario Traffic Manual. Pavement markings are also installed on either approach side of the speed cushion for the same purpose as the signs.

f) Quality Control & Adjustment:

The Transportation Division inspects the installation of the speed cushions, signage, and pavement markings to ensure that they conform to the installation standards. Any installation issues found during inspection are provided to the contractor who is required to make any adjustments to meet specification compliance.

In 2022, 123 speed cushion locations were implemented, and 161 locations in 2023. The cyber-attack impacted the issuance of the City's 2024 speed cushion installation contract and spring locations have been slightly delayed. However, 40 speed cushions are in the process of being installed in 2024 as part of the spring implementation which began in May. The 2024 Speed Cushion Spring Implementation list is attached to Report PW24039 as Appendix "F".

2024 fall speed cushion implementation locations are required to be formally identified by Friday, August 30, 2024, to ensure that installations can be completed prior to the end of the construction season. This is later than in the past and in consideration of the impacts that the cyber-attack on the program.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW24039 – City of Hamilton Standard Road Drawing
DT:0119-02 Speed Cushions

Appendix “B” to Report PW24039 – City of Hamilton Standard Road Drawing
DT:0119-01 Speed Humps

Appendix “C” to Report PW24039 – Typical Speed Cushion Installation

Appendix “D” to Report PW24039 – Speed Cushion Request Process Diagram

Appendix “E” to Report PW24039 – Speed Cushion Public Handouts

Appendix “F” to Report PW24039 – 2024 Speed Cushion Spring Implementation List