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NEIGHBOURHOOD TRAFFIC MANAGEMENT GUIDE

March 2007

EXECUTIVE SUMMARY

Like most municipalities, Brampton is faced with issues of neighbourhood safety caused by vehicular traffic. With no absolute solution to the concerns related to speeding and excessive volume on city streets, staff must find ways to manage the ongoing challenge of changing driver behaviour.

The purpose of this guide is to provide the City of Brampton with a consolidated strategy to respond to a wide range of public concerns related to traffic in residential neighbourhoods. It outlines the process for reviewing and implementing Neighbourhood Traffic Management measures customized to the needs of the City of Brampton.

Neighbourhood Traffic Management involves the implementation of a broad range of measures, devices and techniques based on a combination of parallel strategies, known collectively as the "three E's" (education, enforcement and engineering). It is intended to improve the safety and the liveability of neighbourhoods and seeks to improve safety of all road users by implementing a wide range of measures, including physical road modifications, generally referred to as traffic calming.

Neighbourhood Traffic Management has the following benefits:

- It reduces vehicle speeds
- It discourages through traffic on local roads
- It minimizes conflicts

To successfully implement Neighbourhood Traffic Management, there must be established procedures documenting the process, evaluation criteria and the actions to be taken. This guide establishes those procedures and identifies the techniques and devices to be used to achieve the objective of safer neighbourhoods.

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1.0 INTRODUCTION

1.1 Background

Brampton is a diverse urban municipality located within the Greater Toronto Area, currently experiencing rapid growth and development. Like most municipalities, Brampton is faced with issues of neighbourhood safety caused by vehicular traffic. With no absolute solution to the issues of speeding and excessive volume on city streets, staff must find ways to manage the ongoing challenge of changing driver behaviour.

Neighbourhoods are designed and expected by those living in them to be quiet, safe and liveable. However, excessive traffic volume, speeding and the risk of collisions all contribute to the deterioration of neighbourhood security and the quality of life for residents.

Key Issues:

- *Traffic growth*
- *Congestion*
- *Infiltration*
- *Speed*

Considering that Brampton has a large commuting population, it also has one of the highest vehicle trip rates per capita within the Greater Toronto Area. This contributes to many traffic issues such as increased volume, delay and congestion on the arterial road network. When faced with the frustration of such delays and congestion, motorists will often seek alternate routes to bypass the congested areas. This ultimately results in increased traffic volumes and speeds on residential roadways.

1.2 Purpose of the Guide

The purpose of this guide is to provide the City of Brampton with a consolidated strategy to respond to a wide range of public concerns such as speeding, infiltration and many other traffic issues in residential neighbourhoods. It outlines the process for reviewing and implementing Neighbourhood Traffic Management measures customized to the needs of the City of Brampton.

This Guide is intended to be a reference tool for the City of Brampton with respect to Neighbourhood Traffic Management measures.

The objectives of this guide are:

- To provide City staff and local residents with a reference tool containing standard policies and procedures in determining the need for Neighbourhood Traffic Management; and,
- To provide proactive means of administering, preparing, implementing and maintaining Neighbourhood Traffic Management; and,
- To build upon policies and practices already adopted within the City.

1.3 Guiding Principles

The following guiding principles form the basis for Neighbourhood Traffic Management and will be taken into consideration whenever investigating, selecting and implementing appropriate measures:

- Public safety is the primary consideration;
- Capacity and operational improvements should be considered for arterial roads first;
- It is not meant to resolve temporary traffic issues resulting from construction disruptions;
- Consideration will be predominantly restricted to two-lane roadways (one lane of through traffic in each direction) with a posted speed limit no greater than 50 km/h;
- Physical measures are to be considered only after education, enforcement and traffic engineering efforts have failed to produce the desired results;
- Measures should be considered on an area-wide basis, as treatments implemented with too narrow of a scope could transfer the problem elsewhere;
- Self-enforcing measures should be considered before measures requiring police presence to ensure compliance;
- Measures that restrict access and egress should be carefully considered and accompanied by public consultation;
- Measures should consider, and not impede, the movement of cyclists and pedestrians;
- Measures shall not impede Emergency, Transit and Maintenance service access unless alternate measures are agreed upon;
- The process shall involve effective public and stakeholder consultation;
- Implementation of traffic management plans shall be undertaken in accordance with local by-laws and within available funding capabilities; and,
- The City shall monitor and report its findings to the public.

Following these guidelines will maximize the effectiveness of Neighbourhood Traffic Management measures while building community acceptance and support of the final recommendations.

Guiding principles will be considered when investigating, selecting and implementing Neighbourhood Traffic Management measures.

1.4 Community Involvement

The primary objectives of Neighbourhood Traffic Management are to restore neighbourhood roadways to their intended function and to improve the overall liveability of the neighbourhood. In order to achieve these goals, community involvement and support is imperative.

Throughout the process, residents are encouraged to participate in the development of a Neighbourhood Traffic Management Plan. The community must support and be committed to developing a solution.

Community involvement and support is imperative to achieve the objectives of Neighbourhood Traffic Management.

In order to obtain a working partnership with residents, city staff will hold public meetings and deliver surveys to all those impacted by the implementation of traffic calming measures. These types of communication will provide the community with the opportunity to provide input into the development of the plan. They will also help to publicize and increase the awareness of the study.

The planning, design and implementation of traffic management measures is a time-consuming and expensive process requiring many resources. Without public support, the solution intended to alleviate traffic concerns could be met with negative public opinion, jeopardizing its outcome and any potential positive impacts for the affected neighbourhood.

2.0 NEIGHBOURHOOD TRAFFIC MANAGEMENT

2.1 Overview

The traffic issues experienced within the City of Brampton are not unique. Many other jurisdictions across North America have identified traffic infiltration and excessive speeds in local neighbourhoods as a problem and have implemented ***Neighbourhood Traffic Management***.

Neighbourhood Traffic Management is normally considered on local residential streets, which are predominantly residential in character and have the intended traffic function of providing accessibility to limited numbers of local residents. The rationale for neighbourhood traffic management lies in the recognition of the intended function of a local road.

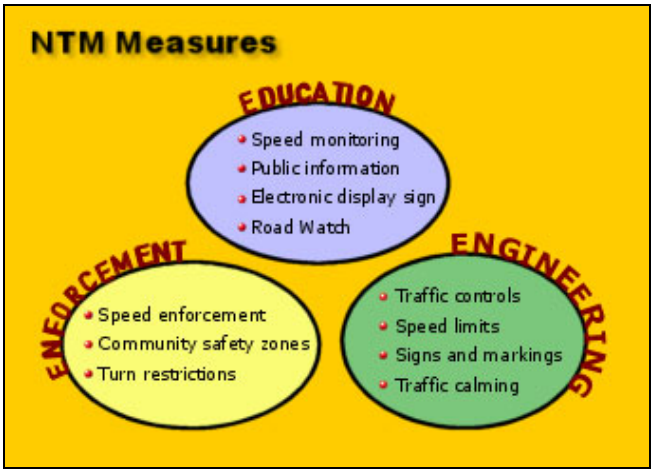
Neighbourhood Traffic Management involves the implementation of a broad range of measures, devices and techniques based on a combination of parallel strategies, known collectively as the "three E's" (education, enforcement and engineering).

Three E's of Neighbourhood Traffic Management:

- *Education*
- *Engineering*
- *Enforcement*

Education-based measures often include public education campaigns and initiatives, speed monitoring programs, radar boards and the Road Watch program. Enforcement-based measures may include increased police enforcement, red light cameras and Community Safety Zones. Engineering-based measures include regulatory signage such as lowered posted speed limits, turn restrictions, or physical changes to the roadway to discourage short-cutting or reduce speeds. **Figure 1** illustrates the range of available traffic management measures.

Figure 1: Neighbourhood Traffic Management Measures



Neighbourhood Traffic Management usually falls into one of two categories:

- An area-wide plan scheme – typically introduced where there are area wide problems or where implementation on a single street is likely to result in displacement of traffic onto adjacent streets; and,
- A street-specific plan – used on a single problem street where it is not likely to displace traffic onto adjacent streets.

Neighbourhood Traffic Management can be area-wide or street-specific, depending on resulting impact.

An example of the need for an area-wide plan is one within a neighbourhood with a grid street system in which measures on one street would shift traffic to adjacent streets. An example of a street-specific plan may include a collector roadway with connections to arterial roads at either end with minimal intersecting streets.

Neighbourhood Traffic Management is undertaken for two key reasons: it improves the **safety** and the **liveability** of neighbourhoods. It helps to preserve and enhance neighbourhood streets by minimizing negative impacts of traffic, such as noise, pollution, and visual intrusion. It also seeks to improve safety for pedestrians, cyclists, motorists and all other road users by implementing a wide range of measures. Successful traffic management measures effectively modify driver behaviour and some of them are self-enforcing.

2.2 Benefits of Neighbourhood Traffic Management

Neighbourhood Traffic Management has the following benefits:

It reduces vehicle speeds – Speeds that are suitable for higher classes of roadways are not suitable for collector and local roads. Measures that address vehicle speeds will reduce collision severity as a result. Speed is a particularly critical factor for vulnerable road users such as pedestrians and cyclists; and

Potential benefits of Neighbourhood Traffic Management:

- *Reduced speed*
- *Lower traffic volumes*
- *Improved safety*

It discourages through traffic on local roads – Local roads are primarily intended for access to properties, rather than for accommodating through traffic. Reducing through traffic helps to improve safety by reducing the potential for conflicts, and helps to improve liveability by reducing pollution, noise and other negative impacts of traffic; and

It minimizes conflicts – By removing unnecessary traffic from local and collector roads, Neighbourhood Traffic Management reduces vehicle-vehicle, vehicle-pedestrian and vehicle-cyclist conflicts that would have otherwise occurred.

2.3 Goals and Objectives

The guidelines presented in this document will assist the City in the implementation of effective Neighbourhood Traffic Management strategies and measures. The specific goals of Neighbourhood Traffic Management are to:

Increase the Safety of Neighbourhoods – Excessive traffic volumes, infiltration and speeding on residential roads are the basis for many concerns raised by residents. By the use of measures to alter traffic patterns and/or driver behaviour, Neighbourhood Traffic Management can improve safety on neighbourhood streets.

Improve the Liveability of Neighbourhoods – Traffic management is intended to uphold and restore the liveability and sense of community within neighbourhoods by addressing the concerns of traffic speeds, volume and infiltration. As a result, negative impacts such as noise, air pollution, visual presence of numerous vehicles and potential safety hazards are minimized. In addition, when attractively designed, traffic management measures can enhance the aesthetics of a neighbourhood and improve liveability.

Restore Streets to Their Intended Function – The intended function of a local roadway is to accommodate low to moderate volumes of traffic travelling at low speeds. Local roads provide direct vehicle access to residences fronting the roadway and through traffic should be discouraged. Residential collector streets are intended to provide access to properties as well as access to local roadways, while operating at lower speeds.

Preserve Access and Minimize Impact to Emergency Service, Public Transit and Maintenance Providers – The potential impacts to these services have been considered in the development of this guide and will continue to be considered throughout the planning and implementation process, providing the opportunity for these services to comment on any proposed plans prior to implementation.

Promote Public Participation and Community Support – Neighbourhood Traffic Management measures have a direct impact on neighbourhoods and the residents living within them. As such, an integral part of the process is to strongly encourage resident communication and feedback. Good community involvement leads to liveable solutions to specific local traffic issues. Effective communication with residents provides staff with the opportunity to explain the benefits and potential drawbacks of each measure, and ensures two-way dialogue throughout the process.

3.0 REVIEW PROCESS

3.1 Overview of Study Process

To successfully implement effective neighbourhood traffic management plans, there must be established procedures documenting the process and the actions to be taken. Consistency in the review and approval process creates credibility and fairness in site selection.

Figure 2 represents the implementation process to be followed by the City of Brampton in the consideration of Neighbourhood Traffic Management.

The City's process has been divided into four Phases (I, II, III, and IV).

- Phase I: Front Line Measures;
- Phase II: Assessment and Prioritization;
- Phase III: Plan Development and Approval;
- Phase IV: Design and Implementation.

The process is divided into four separate Phases.

Each Phase of the process is discussed in greater detail in the following sections.

3.2 Phase I: Front-Line Measures

Phase I involves routine investigation of roadways and exploration of Front Line Mitigating Measures consisting of easily implemented, lower cost and less intrusive measures.

3.2.1 Neighbourhood Issues Identified

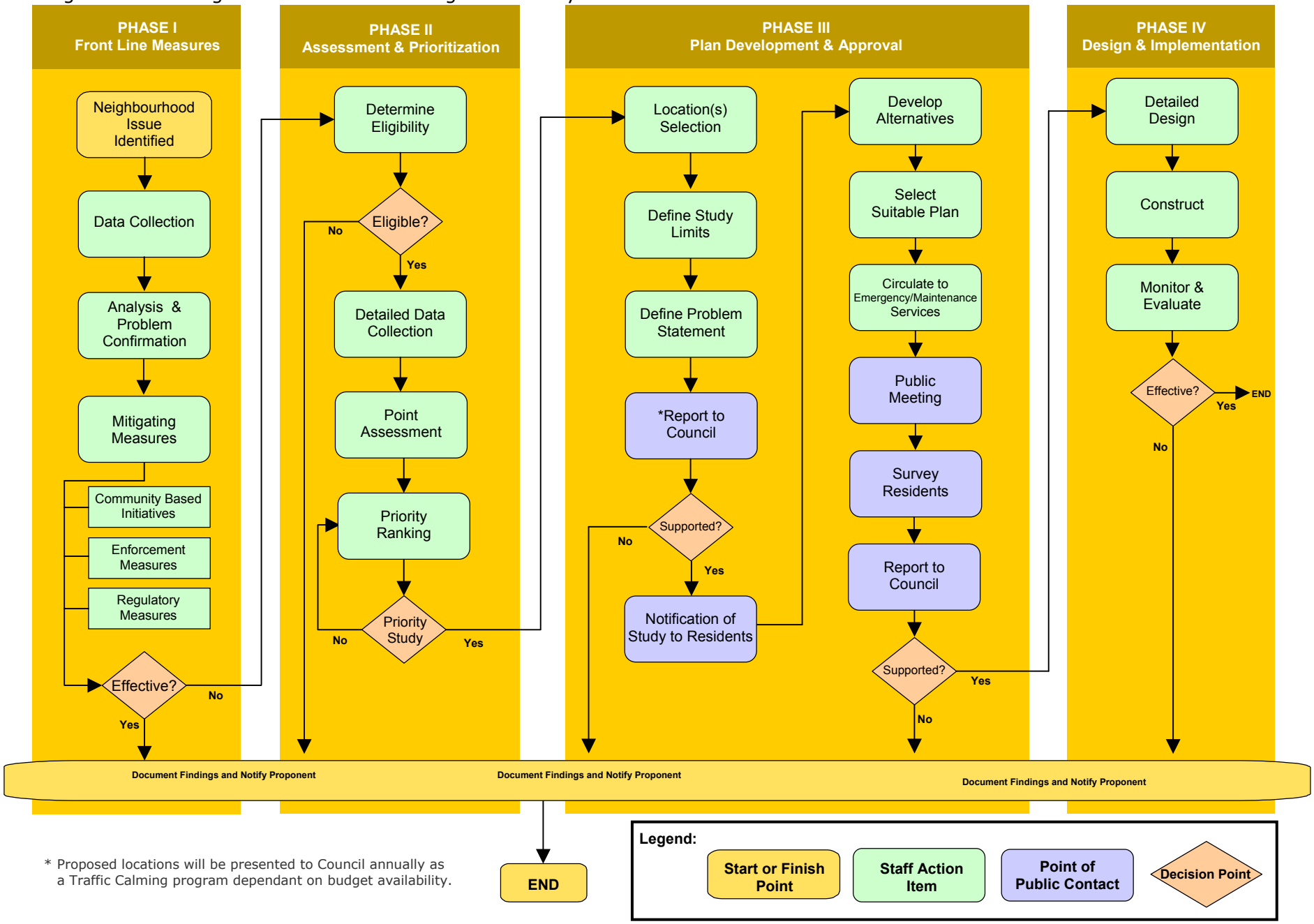
The City of Brampton will identify potential issues requiring Neighbourhood Traffic Management initiatives through:

- Internal staff reviews of the municipal street system operations; or
- Concerns or complaints from residents, citizen groups or business owners; or
- Internal notification by staff or a Councillor.

Neighbourhood traffic issues are identified and tracked by reference number.

Traffic related concerns will be logged as a service request and appropriately assigned to the Traffic Engineering Services section. Complainants will be given a reference number for follow up.

Figure 2: Neighbourhood Traffic Management Study Process



* Proposed locations will be presented to Council annually as a Traffic Calming program dependant on budget availability.

3.2.2 Data Collection

Traffic studies and site analyses are conducted to gain an understanding of the concern. Data and information related to the following is collected:

- Traffic volume;
- Vehicle speeds;
- Collision history;
- Location characteristics;
- Comparisons to typical Citywide characteristics; and
- Knowledge of recent temporary or permanent changes that may be contributing to the concern.

Current and accurate traffic data is necessary in defining a problem.

3.2.3 Analysis and Problem Confirmation

The results from the traffic studies are analysed to identify and quantify problems with existing conditions. Comparisons will also be made with typical conditions and Citywide averages.

3.2.4 Mitigating Measures

Mitigating measures consist of easily implemented, lower cost and less intrusive measures, including:

- Implementing **community based initiatives** such as the use of speed display boards, promoting the Road Watch Program or traffic safety awareness campaigns;

- Conducting targeted police **enforcement** within the subject neighbourhood. This involves enforcement of high incident locations. City staff may provide detailed speed study information by time-of-day to enable police to provide an increased presence within the affected community.

- Implementing **regulatory measures** such as turning restrictions, designated lanes, and speed limit reviews. Careful consideration should be given prior to implementing regulatory changes to avoid relocating the problem onto another local road. Any regulatory changes implemented should be complemented with further police enforcement through co-ordination with Peel Regional Police; and

Mitigating measures are easily implemented, lower cost and less intrusive measures.

Further details of community based initiatives, regulatory measures, and enforcement measures are discussed in **Section 4.0**.

An evaluation of community based initiatives, regulatory measures and targeted enforcement measures will be undertaken to quantify their effectiveness in addressing the problems specified.

Where implementation of these initiatives is found to be effective, the findings will be documented and the proponent notified accordingly. Otherwise, if the front-line mitigation measures are shown to be ineffective, the City, in consultation with the community, may wish to proceed to Phase II: Assessment and Prioritization, where a more thorough consideration of traffic calming and other physical modifications to the roadway will be carried out.

3.3 Phase II: Assessment and Prioritization

Phase II activities include determination of eligibility, detailed traffic studies and priority ranking of roadways based on current conditions.

3.3.1 Determination of Eligibility

A high level review of the roadway(s) is made to determine if all of the following generalized criteria are met:

- Must be a local roadway or 2-lane collector roadway;
- The posted maximum speed limit shall not be greater than 50 km/h;
- All reasonable efforts have been made to address the concerns utilizing accepted engineering practices, increased enforcement, and educational strategies.

Eligible roadways include two lane local and collector roadways.

Meeting the above criteria is consistent with the Goals and Objectives of neighbourhood traffic management.

3.3.2 Detailed Data Collection

Initially, consideration should be given to factors such as sight lines, road grades, alignment, transit and emergency service routing, existing services and utilities, and the potential for traffic diversion to neighbouring streets. Where it is evident that traffic calming devices can be installed without adverse impacts, a more technical assessment should follow.

Roadways are then investigated further for problem confirmation and to identify contributing factors. Guidelines for detailed data collection and studies include the following:

- Vehicle speed data collected for a minimum of 3 full days with summaries of average and 85^{th} percentile speeds;
- Traffic volume studies for intersections and segments within the study area or neighbourhood;
- Traffic infiltration studies using the licence plate trace survey method or origin destination (OD) studies. In the absence of such studies, simple estimates could be made based on the Institute of Transportation Engineers (ITE) trip generation rates;
- A detailed review of the 3 year collisions history with specific

attention to those involving vulnerable road users;

- An inventory of road characteristics such as the presence of sidewalks, schools and playgrounds, pedestrian generators and transit activity.

3.3.3 Point Assessment

The point assessment system quantifies current conditions and gives weight to sensitive characteristics of a roadway. Points are assigned based on the severity of certain road attributes bringing to the forefront roads requiring traffic calming most.

The criteria included as part of the Point Assessment are as follows:

Operating Speed (85^{th} percentile) – 5 points for every 1 km/h over the posted speed;

Vehicle Volume – 5 points for every 1,000 vehicles/day:

Cut-through Traffic – 5 points for every 10% non-local traffic;

Collision History – the average annual number of collisions over the previous three years multiplied by 5;

Sidewalks – 5 points for no sidewalks or the evidence of heavy pedestrian activity;

Presence of Schools – 5 points for each school located within the study limits;

Playgrounds, Parks, and Recreation Areas – 5 points for each within the study area;

Pedestrian Generators – 5 points for the presence of pedestrian generators such as libraries, community centres, etc.

The point assessment system provides a uniform and objective method of quantifying existing conditions on a given roadway. The weighting calculations give emphasis to sensitive road and traffic characteristics.

The point assessment system provides a uniform and objective method of prioritizing locations.

3.3.4 Priority Ranking

The evaluation phase concludes with a ranking of locations based on their point assessment score. This list will be maintained and updated regularly by City staff. It will be the basis for site selection and funding recommendations for the next phases of Neighbourhood traffic management.

Ranking is required when eligible requests exceed resources.

3.4 Phase III: Plan Development and Approval

Phase III and subsequent phases are carried out independently from the previous phase. There may be several months between the time a location is added to the priority ranking list and the time a traffic calming study is initiated.

There may be several months between the time a location is prioritized and the time a traffic calming study is initiated.

3.4.1 Location Selection

The location(s) selected for initiation of a traffic calming study will be based primarily on priority ranking. Other influences on site selection include budget availability, future improvements to the immediate or adjacent road network, and cost-benefit analysis.

3.4.2 Define Study Limits

The information gathered about the roadway and the surrounding area will be used to establish the study limits. Typically, the extent of the study limits will include areas bounded by the nearest arterial roadways or natural boundaries (creeks, rail lines, etc.). The extent of the study limits will not necessarily represent the polling area for opinion surveys, but will provide the context for potential traffic issues and impacts, including adjacent arterial road operations.

The Study Limits will typically go beyond the immediately affected area.

As a part of defining the study area, factors contributing to the problem may be identified on the surrounding road network. With this, possible immediate remedial measures may be recommended during this phase (i.e. arterial road improvements).

3.4.3 Define Problem Statement

The detailed data collected during Phase II will be used to begin developing the problem statement. When finalized, the problem statement is documented and used as a point of reference for future phases. It outlines contributing factors and problem descriptions.

The problem statement outlines contributing factors and problem descriptions.

3.4.4 Report to Council

The problem statement and study limits for the selected priority locations are then presented to Council. The staff recommendations will focus on seeking Council approval to move forward with the selected location(s).

3.4.5 Notification of Study to Residents

A notification letter will be delivered to all residences with direct frontage onto the street under investigation, with the intent to:

- Advise residents that their roadway has been selected for consideration of traffic calming measures
- Serve as the first point of contact to residents unaware of previous activity on their street
- Inform residents of Council's approval to proceed
- Give a brief description of traffic calming
- Provide an overview of the process and next steps

The notification letter re-engages the public with information about the study process

The notification letter will contain contact numbers for residents to ask for additional information or to provide feedback.

3.4.6 Develop and Evaluate Alternatives

Developing alternative solutions involves consideration of a reasonable range of solutions to mitigate the problem. Alternative solutions may include the "do nothing" alternative.

Traffic Engineering Services staff will determine which traffic calming measures would be most suitable for the location, based on the following criteria:

- Roadway designation;
- Roadway cross-section (rural / urban);
- Roadway geometric features (right-of-way / pavement widths, horizontal / vertical alignment, radii, on-street parking, etc.);
- The presence of transit and commercial users;
- Emergency services impacts;
- Potential implications of diverting traffic to adjacent streets;
- Cost (capital and operating);
- The presence of pedestrian and cycling facilities; and
- Impact on roadway maintenance activities.

Using the information gathered to date, City staff will develop alternatives

Tables 1, 2, and **3** (**Section 4**) of this guide provide further guidance on the benefits and impacts of each traffic calming measure. A short list of potential alternatives should be developed and evaluated to identify the preferred alternative.

Alternative plans involving road design or traffic control measures will be at a sufficient level of detail to identify feasibility issues and preliminary cost estimates. Additional detail related to design would be addressed during phase IV – Design and Implementation.

3.4.7 Select Suitable Plan

Appropriate traffic calming measures will be determined based on a review of the TAC/ITE Canadian Guide to Neighbourhood Traffic Calming (CGNTC). The proposed traffic calming measures will be in accordance with the design guidelines outlined in the CGNTC and the engineering judgement and experience of staff. The "tool box" of potential traffic calming measures is further described in **Section 4.4** of this guide.

The feasibility of the proposed traffic calming measures will be evaluated based on the following:

A suitable plan is selected using the "tool box" of potential traffic calming measures.

- Adherence to City and other design standards;
- Driveway and Intersection locations;
- Utility locations or relocations; and
- Sightlines and sight distances.

If limitations are identified which challenge the feasibility of the traffic calming measure, alternative measures will need to be considered.

3.4.8 Consultation with Emergency/Transit/Maintenance Services

Staff will provide the details of the preferred plan to the various review agencies (i.e. emergency and transit services, maintenance providers, etc.). Comments from the potentially affected services will be solicited and feedback with respect to potential impacts to their operations will be requested.

Imput from Emergency services is critical.

3.4.9 Public Meeting

A meeting will be held to provide the public with information about the plan, its purpose and the next steps of the implementation process. Visual aids will be available and staff will be present to answer questions and provide additional information to those who attend.

3.4.10 Survey Residents

The objective of the traffic calming survey is to determine the level of support for traffic calming measures and to provide residents with a way to voice any opposition to the plan.

A minimum of 51% of the surveys returned must favour the proposal.

A survey will be delivered to all residences with direct frontage onto the street under investigation. The survey will describe the final plan and ask whether or not they support its implementation.

In order to satisfy the public support requirement, a minimum of 51% of the surveys returned must favour the plan as proposed.

3.4.11 Report to Council

Staff will submit a report to Council outlining the results of the survey with recommendations on how to proceed.

3.5 Phase IV: Design & Implementation

3.5.1 Detailed Design

Following approval of the recommended plan, detailed engineering drawings are required. These drawings provide a high level of detail, taking into consideration, but not limited to, the following:

- Surface drainage and Sub-base requirements;
- Roadway slope and surface type;
- Location of utilities;
- Requirements for warning signs and pavement markings; and
- Cost considerations.

3.5.2 Implementation, Monitoring and Evaluation

The final stage of the study involves the implementation, monitoring and evaluation of the recommended plan. The monitoring/evaluation program should be developed consistent with the data collection activities that occurred in the problem identification stage of the process. This would facilitate comparison of "before and after" data.

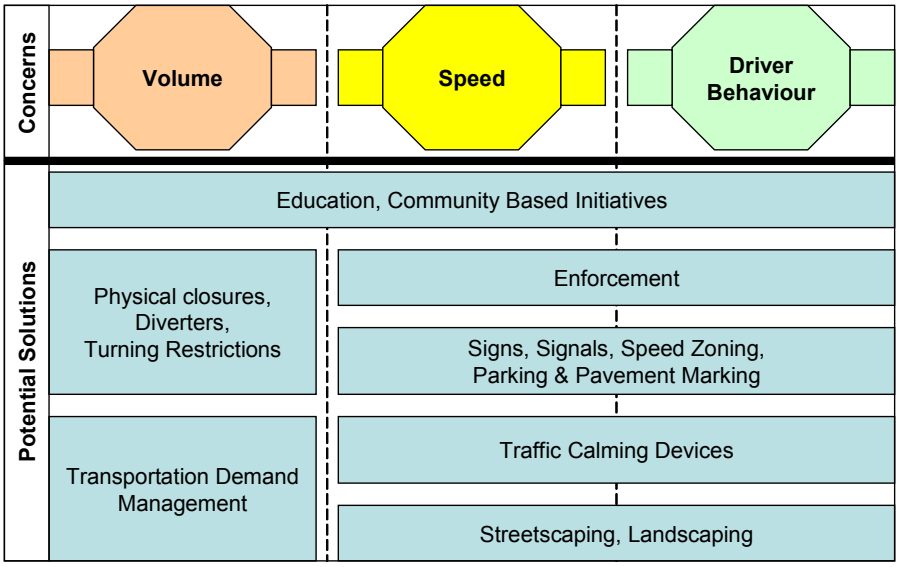
A monitoring period follows after installation

The monitoring and evaluation of the relevant traffic characteristics of an area after implementation should occur after a sufficient period of time has elapsed in order to allow for the desired effect to be achieved (i.e. 1 – 2 years post installation). In particular, evaluation of winter operating conditions should be included to verify that the installations operate adequately under diverse conditions.

4.0 DEVICES

This section identifies techniques and devices which can be used to effectively achieve a specific goal or solve a specific problem. There are numerous devices available that have been field tested to determine their effectiveness under similar conditions (environmental and motorist behaviour) as experienced within the City of Brampton. The general suitability of using any of the measures in addressing traffic volumes, speed, or driver behaviour concerns is illustrated in **Figure 3**.

Figure 3: Suitability of Measures in Addressing Traffic Concerns



Traffic management measures can be directed at traffic volume, speed or driver behaviour

The major planning consideration – location and frequency of the devices, geometric design and materials, etc. – will vary considerably by location. Specific factors may include:

- Roadway classification;
- Roadway geometric features (right-of-way, pavement widths, alignment, radii, presence of on-street parking, etc.);
- Presence of transit and commercial users;
- Emergency service impacts;
- Implications of diverting traffic to adjacent streets;
- Cost (capital and operating);
- Presence of pedestrian and cycling facilities; and
- Impact on roadway maintenance activities.

4.1 Community Based Initiatives

Community based initiatives are an important component of a Neighbourhood Traffic Management program and are often used as the first action in addressing traffic and safety concerns. Specific community based initiatives are further described as follows:

4.1.1 Speed Display Board Program

Speed Display Boards are pole-mounted devices equipped with radar speed detectors and an LED display. The boards are capable of detecting the speed of an approching vehicle and displaying it back to the driver. When combined with a regulatory speed limit sign, a clear message is sent to the driver displaying their vehicle speed. The objective of the program is to improve road safety by making drivers aware of their speed, evoking voluntary speed compliance.

Intended to improve road safety by making drivers aware of their speed.

Advantages	Disadvantages
• Provides awareness to driver • Encourages speed compliance • Portable mounting method allows for exposure at numerous locations Citywide	• Not an enforcement tool • Less effective on multi-lane, high volume roadways • Not conducive to recording speed data

4.1.2 Road Watch Program

The local Road Watch program is an initiative that encourages citizens to improve road safety in their community by reporting unsafe and aggressive driving. When an incident of dangerous or aggressive driving is observed, the complainant fills out a Citizen Report Form. The completed form is received by the Peel Region Police Services and checked for accuracy. If found to be accurate, police will initiate contact with the registered owner of the vehicle.

ROAD WATCH

Road Watch program encourages citizens to reporting unsafe driving.

Advantages	Disadvantages
• Encourages resident involvement • Raises awareness to repeat offenders • Offenders receive letter from Peel Regional Police Services • Can be utilized in conjunction with the Radar Message Board Program	• Difficult to gather and record all necessary information in the time that a vehicle passes by • Subject to the biases of the individual completing the form • The registered owner of the vehicle is issued the letter, not necessarily the driver at the time of the incident

4.1.3 Radar Message Board Program

The radar message board program assist in educating the public about speeding concerns.

The Radar Message Board Program is an initiative aimed at raising awareness of travel speeds and discouraging speeding on residential roadways. The board vibrantly displays the motorists travel speed, as well as the posted speed limit for the roadway. This serves to alert drivers to their own travel speed compared to the posted speed limit. During these surveys, involvement from area residents is promoted. This helps to display a neighbourhood presence to passing motorists, allows residents to get involved, and gives area residents a true sense of the actual vehicle speeds on their street. This initiative can be combined with other educational strategies and the presence of enforcement to increase the effectiveness.

Advantages	Disadvantages
• Provides awareness to driver • Encourages speed compliance • Promotes participation from the community • Can also work in conjunction with education and enforcement campaigns (i.e. Road Watch Program)	• Not an enforcement tool • Less effective on multi-lane, high volume roadways • Not conducive to recording speed data • Labour intensive

4.1.4 Watch for Children Signs

These signs are commonly requested by residents who are concerned with speeding on residential streets, and want a warning sign to provide protection for their children playing on or near the street.

Warning signs are most effective when used sparingly to advise motorists of unusual or unexpected conditions ahead. Therefore, signs will be considered on streets meeting all of the following criteria:

	Location Criteria	Objective
a)	Two lane collector road	Exposure on two-lane collector roadways allows for delivery of the cautionary message to a larger driving population.
b)	Contains direct residential frontage	Direct residential frontage maintains the relevance of the sign and in turn, adherence to its message. If drivers do not make the

		connection between the presence of children and the message to watch for them, the credibility of the sign is lost.
c)	Intersects with an arterial road	Placement of these signs at entry points into neighbourhoods conveys the message to drivers as they transition from higher speed roads into residential areas. This is especially important during peak hours and as the arterial road network is improved.
d)	Has evidence of non-local traffic	Local residents are most aware of pedestrian activity whereas drivers not familiar with area require the warning most.

Specific placement of "Watch for Children" signs is to be determined by staff taking into consideration exposure, visibility and the proximity and impact on other regulatory, warning and guide signs. Where it is determined that a sign is not effective or it interferes with existing signage, alternatives, including non-placement will be considered.

4.2 Enforcement Measures

4.2.1 Police Enforcement

When requested by City staff, the Peel Regional Police will perform targeted enforcement on residential streets. The intent of police enforcement is to reduce vehicle speeds by acting as a visible deterrent. It is the mandate of the Peel Regional Police to target locations with high injury or fatal collisions. City staff may also provide the Police with speed data to assist in identifying potential locations for enforcement.

Regular police enforcement is required to effectively lower travel speeds

Advantages	Disadvantages
• Provides a clear message to the driver that speeding is unacceptable • Increases speed compliance • Can temporarily reduce speeds	• Speed reductions are temporary • Requires long-term use to be effective • Expensive and labour intensive • Recent trend of causing additional strain on court system • Subjective speeding tolerance sends motorists conflicting messages

4.2.2 Community Safety Zones

The Ontario Highway Traffic Act (1998) allows municipal Councils to implement Community Safety Zones. The zones are identified as areas where public safety is of special concern. Community Safety Zones typically include areas around parks, schools and residential neighbourhoods where there is significant number of vulnerable road users. Community Safety Zones are implemented through a municipal by-law under the authority of the Ontario Highway Traffic Act. Fines are increased for violations committed within these zones, typically representing a doubling of minimum fines for moving traffic violations.

Fines are increased for violations committed within Community Safety Zones.

Advantages	Disadvantages
• Highlights areas where public safety is of special concern	• Continued enforcement is expensive and labour intensive • Research has indicated that Community Safety Zones are not effective at reducing speed or improving safety

4.3 Regulatory Measures

4.3.2 Turning Restrictions

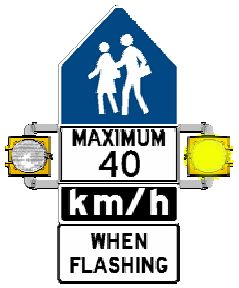
Restricting turns between local streets and arterial roads through signage (with appropriate supporting municipal by-laws) can be used as a mitigating measure to restrict certain vehicle manoeuvres. Turning restrictions are simple to implement and can be time-based. They can target cut-through traffic and do not impede the flow of emergency vehicles. However, to ensure compliance, they require police enforcement. Turning restrictions are often an inconvenience to local residents who are forced to find alternative routes into or out of their neighbourhood. In addition, they also divert traffic to other streets and intersections which can result in increased congestion and less safe operating conditions.

Turning restrictions can be used as a mitigating measure to restrict certain vehicle manoeuvres.

Advantages	Disadvantages
• Provides a clear message to drivers of roadway regulations • Received well by local residents • Low cost • May be successful in altering traffic patterns	• Enforcement may be required to ensure compliance • Sign proliferation leads to non-adherence • May result in traffic diversion to adjacent streets

4.3.3 Flashing 40 km/h Beacons in School Zones on 4-lane Roadways

The intent of flashing 40 kilometres per hour signs is to identify specific times for reduced speed limits on 4-lane roadways containing school frontage, in conjunction with school activity. The elements of the flashing 40 sign work together to provide information to the driver indicating that vehicle speeds are to be reduced during times of school activity. Outside of school times, the flashing beacons are deactivated and traffic is permitted to travel at an increased rate of speed.



Used to reduce the speed limit during hours of school activity.

4.4 Traffic Calming Measures

Under the umbrella of neighbourhood traffic management, traffic calming is the implementation of physical or physiological changes to reduce traffic speeds or volumes, in order to improve safety and quality of life within a neighbourhood. Traffic calming installations are generally appropriate for local residential and minor collector roadways. The advantage of traffic calming installations is that they are self-enforcing and do not require regular police enforcement.

Traffic calming devices may alter the driver's perception of the road, influencing them to modify their driving habits and patterns. Traffic calming measures typically include one or more of the following features:

- Changes to a roadway's horizontal and/or vertical alignment;
- Roadway or lane narrowing;
- Changes to roadway surface texture and/or colour;
- Landscaping immediately adjacent to the roadway or within a median;
- Definition/separation of pedestrian/cycling facilities;
- Physical obstructions to prevent traffic movements;
- Streetscaping; and
- Gateway treatments.

Traffic calming measures can be grouped into Level I and Level II measures. Level I measures are those that involve only minor changes to the roadway. They are relatively straightforward to implement, low cost, have moderate effects on lowering traffic speeds and volumes, and are generally well received by residents and emergency services.

Level II measures are those that involve significant physical changes to the roadway, require more effort to implement, are high cost, have significant effects on traffic speeds and volumes, and are not always well received by some residents and emergency personnel.

Level I traffic calming measures include:

- Pavement markings;
- Textured pavement and crosswalks;
- Lane narrowing;
- Increased on-street parking; and
- Roadside improvements.

Level I traffic calming involves only minor changes to the roadway

Level II traffic calming measures include:

- Raised crosswalks;
- Speed humps/tables;
- Centre median/pedestrian refuge;
- Curb radius reduction;
- Curb extensions;
- Traffic circle/Roundabout;
- Chicane;
- Road closure;
- Diagonal diverters;
- Breakaway barriers; and
- Bus only crossing / links.

Level II traffic calming involves significant changes to the roadway

Figures 4 and **5** illustrate examples of Level I and II traffic calming measures.

Figure 4: Level I Traffic Calming Treatments - *Pavement Markings to narrow the roadway.*

Figure 5: Level II Traffic Calming Treatments – *Neighbourhood Roundabout.*

Level I traffic calming involves only minor changes to the roadway. Pavement markings can be used to narrow the travelled portion of a roadway. This low cost treatment has been a successful traffic calming treatment in terms of modest reductions in travel speeds and greater separation between vehicles and vulnerable road users (i.e. cyclists and pedestrians). Level II traffic calming includes measures such as traffic circles and roundabouts, resulting in significant changes to the roadway, and is typically more effective in reducing travel speeds and cut-through traffic.

There are a wide variety of devices and techniques available for use as part of a Neighbourhood Traffic Management strategy, and each is intended to address a specific type of problem. **Tables 1, 2**, and **3** provide a comprehensive list of typical traffic calming devices, their application, and associated impacts. A definition and full description of commonly used devices and techniques is contained in **Appendix B**, which has been assembled from the TAC / ITE Canadian Guide to Neighbourhood Traffic Calming.

Table 1: Potential Traffic Control Measures – Assessment of Impacts

	OPERATIONAL			SAFETY			ENVIRONMENTAL			
MEASURE OR TECHNIQUE	Impacts on Adjacent Residential Roadways	Emergency Vehicle Impact	Transit Vehicle Impact	Cyclist Impact	Vehicular Impact	Pedestrian Impact	Noise Impact	Air Quality Impact	Fuel Impact	Visual Impact
COMMUNITY BASED										
Radar Message Board	◑	◑	◑	◑	◕	◑	◑	◑	◑	◔
Road Watch Program	◑	◑	◑	◑	◕	◑	◑	◑	◑	◑
Public Education	◕	◑	◑	◕	◕	◕	◑	◑	◑	◑
ENFORCEMENT										
Increased Enforcement	◕	◑	◑	◑	◕	◑	◑	◑	◑	◑
Photo Radar	◕	◑	◑	◑	◕	◑	◑	◑	◑	◔
REGULATORY										
Speed Limit Signs	◑	◑	◔	◕	◔	◕	◑	◑	◑	◑
Turn Prohibitions	○	◑	◑	◔	◑	◑	◔	◔	◔	◔
One-Way Streets	○	○	○	◔	◔	◑	◑	◔	◔	◑
Truck Restrictions	◔	◑	◑	●	◕	●	●	●	●	●
School Zone Signs/Signals	◔	◑	◑	◕	◕	●	◑	◑	◑	◑
Information Signing	◑	◑	◑	◑	◑	◑	◑	◑	◑	◔
LEVEL I TRAFFIC CALMING										
Rumble Strips	◔	◔	◔	○	◔	◑	○	◑	◑	◔
Textured Pavement/Crossing	◑	◑	◑	○	◔	●	○	◑	◑	◕
Road Diets	◔	◔	◔	◔	◕	◕	◑	◑	◑	◕
Increase On Street Parking	◔	◔	◔	◔	◑	◑	◑	◑	◑	◔
Roadside Improvements	◑	◑	◑	◕	◕	◕	◑	◑	◑	●
LEVEL II TRAFFIC CALMING										
Speed Humps/Cushions	◔	○	○	◔	◔	◑	○	◔	◔	○
Raised Crosswalk/Intersection	◔	○	○	◔	◔	◕	○	◔	◔	◔
Curb Radius Reduction	◔	○	○	◑	◔	◕	◑	◑	◑	◑
Curb Extensions	◔	○	○	◔	○	◔	◑	◔	◔	◔
Centre Median/Pedestrian Refuge	◔	◔	◔	◑	◔	◑	◑	◑	◑	◕
Traffic Circles	◔	◔	◔	○	◔	○	VARIES			
Chicane	◔	○	○	◔	◔	◕	◔	◔	◔	◕
Cul-de-Sacs/Road Closures	○	○	○	◕	◑	◕	◑	◔	◔	◑
Diagonal Diverters	○	○	○	◔	◔	◔	◔	◔	◔	◔
Breakaway Barriers	○	◔	○	◑	◑	◑	◑	◔	◔	◔
Bus Only Crossings/Links	◑	◑	◑	◑	◑	◑	◑	◑	◔	◔
SYSTEM IMPROVEMENTS										
Arterial Improvements	●	●	●	◑	◕	◑	◑	◑	◑	◑

LEVEL OF IMPACT:

○ MAJOR NEGATIVE ◔ MINOR NEGATIVE ◑ NONE ◕ MINOR POSITIVE ● MAJOR POSITIVE

Table 2: Potential Traffic Control Measures – Assessment of Impacts

	COST		COMMUNITY	
MEASURE OR TECHNIQUE	Installation* (Construction)	Operation and Maintenance	Difficulty of Neighbourhood Access	Need for Enforcement
COMMUNITY BASED				
Radar Message Board	Variable	●		
Road Watch Program	Variable	◑		
Public Education	Variable	◑ OR ○		
ENFORCEMENT				
Increased Enforcement	Variable	◑		
Electronic Enforcement	$75,000 - $95,000 / unit	◑	●	●
REGULATORY				
Speed Limit Signs	$250 - $500 / sign	●	●	○
Turn Prohibitions	$250 - $500 / sign	●	◑	○
One-Way Streets	$250 - $500 / sign	●	◑	◑
Truck Restrictions	$250 - $500 / sign	●	●	○
School Zone Signs/Signals	$5,000 - $8,000 / location	◑	●	○
Information Signing	$250 - $500 / sign	●	●	●
LEVEL I TRAFFIC CALMING				
Rumble Strips	$200 to $1000 / location	○	●	●
Textured Pavement/Crossing	$50 - $150 / m^2	◑ OR ○	●	●
Road Narrowing	$10 / linear metre	●	●	◑
Increase On Street Parking	$250 - $500 / sign	◑	●	○
Roadside Improvements	Variable	◑	●	●
LEVEL II TRAFFIC CALMING				
Speed Humps/Cushions	$3,000 - $5,500 / unit	◑	●	●
Raised Crosswalk/Intersections	$20,000 - $32,500 / unit	◑	●	●
Curb Radius Reduction	$6,000	●	●	●
Curb Extensions	$5,000 - $8,000 / unit	◑	◑	◑
Centre Median/Pedestrian Refuge	$5,000 - $8,000 / unit	◑	●	●
Traffic Circles	$15,000 - $27,500 / unit	◑	◑	◑
Chicane	$ 4,000 - $8,000	●	●	●
Cul-de-Sacs/Road Closures	$25,000 - $32,500 / unit	◑	○	●
Diagonal Diverters	$5,000 - $8,000 / unit	◑	○	●
Breakaway Barriers	$5,000 - $8,000 / unit	◑	○	●
Bus Only Crossings/Links	$30,000 - $42,500 / unit	◑	●	●
SYSTEM IMPROVEMENTS				
Arterial Improvements	Variable		●	●

LEVEL OF IMPACT:

○ HIGH IMPACT ◑ MEDIUM IMPACT ● LOW IMPACT

Note: * Installation Cost does not include: Design & Engineering, Property & Drainage or Maintenance Costs

Table 3: Potential Traffic Control Measures – Selecting Appropriate Measures

		ISSUE/CONCERN		
MEASURE OR TECHNIQUE	SUITABILITY to Road Type*	Vehicle Speeds	Excessive Through Traffic Volumes	OVERALL EFFECTIVENESS
COMMUNITY BASED				
Radar Message Board	L,C	◑	○	◑
Road Watch Program	ALL	◑	○	◑
Public Education	ALL	◑	◑	◑
ENFORCEMENT				
Increased Enforcement	ALL	●	◑	●
Photo Radar	ALL	●	◑	●
REGULATORY				
Speed Limit Signs	ALL	◑ 1 & 2	○	◑
Turn Prohibitions	ALL	○	◑ 2	◑
One-Way Streets	ALL	○	◑	◑
Truck Restrictions	ALL	○	◑	◑
School Zone Signs/Signals	ALL	◑	○	◑
Information Signing	ALL	◑	○	◑
LEVEL I TRAFFIC CALMING				
Rumble Strips	L, C, CT	◑	○	◑
Textured Pavement/Crossing	L, C, CT	◑	○	◑
Road Narrowing	L, C, CT	◑	○	◑
Increase On Street Parking	L, C, CT	◑	○	◑
Roadside Improvements	L, C, CT	◑	○	◑
LEVEL II TRAFFIC CALMING				
Speed Humps/Cushions	L, C	◑	◑	◑
Raised Crosswalk/ Intersections	L, C	◑	◑	◑
Curb Radius Reduction	L, C	◑	○	◑
Curb Extensions	L, C, CT	◑	◑	◑
Centre Median/Ped Refuge	L,C	◑	◑	◑
Traffic Circles	L, C	◑	◑	◑
Chicane	L, C	●	◑	●
Cul-de-Sacs/Road Closures	L	●	●	●
Diagonal Diverters	L	◑	◑	◑
Breakaway Barriers	L	●	●	●
Bus Only Crossings/Links	CT	○	●	◑
SYSTEM IMPROVEMENTS				◑
Arterial Improvements	A	◑	●	◑

LEVEL OF EFFECTIVENESS:

○ NOT EFFECTIVE ◑ MARGINALLY EFFECTIVE ● EFFECTIVE

Road Types:
- L Local Road
- C Collector Road, No Transit Service
- CT Collector Road, Transit Service
- A Arterial Road

1. When Warranted can be effective
2. With Police Enforcement

GLOSSARY OF TERMS

The following summarizes common terms used in Neighbourhood Traffic Management. It is further augmented with information from the Canadian Guide to Neighbourhood Traffic Calming (TAC).

Break-away Barriers	Gates, barriers or posts, most often constructed from wood and designed to break away upon impact by an emergency service vehicle. These barriers are often used as means to temporarily of permanently close a roadway while ensuring passage for emergency service vehicles.
Bus-Only Crossings	Also known as bus-only links, this form of roadway connection is used to reduce the impact of vehicular infiltration, but permits transit and other emergency service vehicles to utilize the crossing. The bus-only crossing is a device that could be as simple as a gate that opens when activated by the approaching bus.
Channelization	The separation and direction of vehicle and pedestrian movements at an intersection into defined paths through the use of roadway features and signs.
Chicane	A series of curb extensions on alternating sides of a roadway, which narrow the roadway and require drivers to steer from one side to the other in order to travel through the chicane. Typically, a series of at least 3 curb extensions is used.
Community	A group of individuals with a common interest. A community is often defined by neighbourhood boundaries, but may also include individuals who live outside the neighbourhood, but work or operate businesses within the neighbourhood, or whose children attend school in the neighbourhood.
Curb Extensions	A horizontal intrusion of the curb into the roadway resulting in a narrower section of roadway.
Curb Radius Reduction	The reconstruction of an intersection corner using a smaller radius, usually in the 3.0 metre to 5.0 metre range.
Deflection	A vertical and/or horizontal change in the course or path of a vehicle as a result of a physical feature of the roadway. For example, a speed hump deflects the wheels, suspension and chassis of a vehicle in a vertical direction. A traffic circle requires that the vehicle be steered or deflected horizontally from its straight path to manoeuvre past the circle.
Depressed Curb	A section of concrete curb in which the height of the vertical face has been reduced to allow passage while maintaining positive guidance and drainage control. Also referred to as drop curb.

Device	A physical feature of the roadway, constructed for the purpose of affecting the movement of motor vehicles, bicycles and/or pedestrians.
Diagonal Diverter	A raised barrier placed diagonally across an intersection, that forces traffic to turn and prevents traffic from proceeding straight through the intersection.
Directional Closure	A curb extension or vertical barrier extending to approximately the centreline of a roadway, effectively obstructing (prohibiting) one direction of traffic.
Divert	To redirect traffic, typically through the use of physical obstructions in the roadway and/or regulatory signs.
Full Closure	A barrier extending across the entire width of a roadway that obstructs all motor vehicle traffic movements from continuing along the roadway.
Informational Signing	Signs such as "Traffic Calmed Neighbourhood" or "Watch for Children" or "Slow" can be considered as informational signing. Such signing is non-standard and is not generally to OTM standards and is often implemented through local by-laws.
Intersection Bump-Out	The narrowing of the roadway at the intersection through the use of curb extensions. The result is less distance for pedestrians to cross the travelled portion of the roadway.
Intersection Channelization	Raised islands located in an intersection, used to obstruct specific traffic movements and physically direct traffic through an intersection.
Median Barrier	A raised island located near the centreline of a roadway through an intersection that narrows the pavement width for vehicles and prevents turning movements from being made.
Mode	A way or manner of travelling. Examples of common modes of transportation include drive-alone automobile travel, carpooling, transit, cycling and walking.
Neighbourhood	A cohesive urban area defined by geographic features, the street network or socio-economic characteristics. With respect to traffic calming, neighbourhood boundaries are often defined by the arterial street network, which typically presents a significant barrier to travel and interaction.
Neighbourhood	A phrase often used to describe an approach that encompasses traffic

Transportation Management	calming measures as well as design, operations, legal and other techniques to address transportation issues within a neighbourhood.
Proponent	A person who carries out or proposes to carry out an undertaking.
Raised Crosswalk	A marked pedestrian crosswalk at an intersection or mid-block location constructed at a higher elevation than the adjacent roadway, usually at the same elevation as the adjacent sidewalk.
Radar Message Board	A portable electronic message sign or board to be used in conjunction with a manned speed radar unit. The board is used to display the speed of approaching vehicles and is most often employed on roadways where "speeding" has been identified as a problem. The unit is designed to alert motorists to their vehicle operating speeds relative to the posted speed limit. These devices are regularly used as part of an educational program in conjunction with a "road watch" program or Neighbourhood Traffic Management study.
Raised Intersection	An intersection, including crosswalks, constructed at a higher elevation than the adjacent roadways, usually at the same elevation as the adjacent sidewalk.
Raised Median Island	An elevated median constructed on the centreline of a two-way roadway to reduce the overall width of adjacent travel lanes. The median island can be mountable (rolled curb) or constructed with a barrier curb.
Raised Median through Intersection	An elevated median located on the centreline of a two-way roadway which travels through an intersection, preventing left turns and through movements to and from the intersecting roadway.
Retrofit	The reconstruction of a roadway or other transportation facility with physical improvements to the existing design.
Roundabout	Similar to a traffic circle. Roundabouts are typically used on arterial and collector streets and are distinguished by Yield signs and raised median islands on all approaches, and in some cases, flare of the entry approach to two or more lanes.
Rumble Strip	Raised buttons, bars or grooves closely spaced at regular intervals on the roadway that create both noise and vibration in a moving vehicle.
Self-Enforcing	A traffic calming measure that does not require police enforcement in order to be effective. For example, a speed-hump is self-enforcing whereas a posted maximum speed limit is not self-enforcing.
Short-Cutting	Traffic that is travelling through or "infiltrating" a neighbourhood normally to bypass congestion on the arterial street network, or to make

	use of a more direct route. Short-cutting or infiltrating traffic normally does not have an origin or destination within the community.
Sidewalk Extension	A sidewalk is continued across a local street to indicate pedestrian presence.
Speed Bump	A raised curb often used in parking lots and through private entrances which deflects both the wheels and frame of a traversing vehicle.
Speed Hump	A raised area of roadway which deflects both the wheels and frame of a traversing vehicle.
Stop Sign	Regulatory signs used for right-of-way control. Their usage should be limited to the control of right-of-way conflicts and should not be used as speed control devices.
Streetscaping	A means of enhancing the street environment for all users of the right-of-way, and means of modifying motorist behaviour through the use of physical features that provide protection, coherence, security, community identity, way-finding and orientation, aesthetic quality and interest along an urban street.
Textured Crosswalk	A crosswalk incorporating a textured and/or patterned surface that contrasts with the adjacent roadway.
Through Traffic	Traffic that travels through or "infiltrates" a neighbourhood and does not originate from, nor is destined to, a location within the neighbourhood.
Traffic Calming	The combination of mainly physical measure that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users. Traffic calming devices or strategies are most often implemented to address concerns regarding vehicle speeds.
Traffic Circle	A raised island located in the centre of an intersection which requires vehicles to travel through the intersection in a counter-clockwise direction around the island.
Traffic Management	The change in traffic routing or flow within a neighbourhood street system through a combination of measures that alter route options.
Turn Prohibition	A regulation prohibiting a left turn or right turn at an intersection.

Appendix A

Neighbourhood Traffic Management
Frequently Asked Questions

Frequently Asked Questions (FAQ's)

1. **Who is in charge of the road system?**
   The roadway system is organized into freeways, arterials, collector and local residential roads. The City of Brampton is responsible for local and collector roadways. The Region of Peel is responsible for arterial roadways, and the Freeways and Highways are under the jurisdiction of the Ministry of Transportation of Ontario.

2. **What programs or measures are available in the City of Brampton in order to address the traffic concerns on my street?**
   The City has a Neighbourhood Traffic Management Program which includes measures such as increased enforcement, the Road Watch program, the Radar Message Board Program, regulatory measures (i.e. signage) and neighbourhood traffic calming. Stringent criteria are followed in order to approve and implement any of these programs on a street or within a neighbourhood.

3. **Who do I contact to get any of these programs or measures on my street, or to report any traffic problems?**
   Please contact the City of Brampton, Traffic Engineering Services Department, 8850 McLaughlin Road, 905-874-2500.

4. **What can be done about speeding and cut-through traffic on my street?**
   An investigation can be undertaken by City staff to determine which programs listed under question 2 are most suitable for your street.

5. **Why doesn't the City use more stop signs to slow traffic?**
   Stop Signs should only be installed where warranted based on traffic volumes or collision history. Motorists tend to ignore unwarranted stop signs, leading to potential safety hazards for pedestrians and drivers alike. The City has a Stop Sign warrant policy that must be followed and satisfied in order for stop signs to be installed at an intersection.

6. **Why doesn't the City just reduce the speed limit to slow traffic?**
   Setting speed limits on public roadways is governed by the Highway Traffic Act (HTA) and speed limit reduction alone does not necessarily result in reduced travel speeds on a roadway.

7. **Why doesn't the City use photo radar to catch speeders?**
   Photo Radar is not actively used in the province of Ontario at present. Issues and concerns surrounding the use of Photo Radar include privacy, cost and effectiveness. The City of Brampton is actively monitoring the use of photo radar in other municipalities.

Appendix B

Commonly Used Traffic Calming Measures

PAVEMENT MARKINGS / LANE NARROWING

Description: The use of pavement markings (i.e. bike lanes) to visually narrow the travelled portion of a roadway, thereby encouraging lower travel speeds.

Advantages:

- Does not impact emergency or transit vehicles
- Provides for an on-street bike facility or parking

Disadvantages:

- Can impact on-street parking

TEXTURED CROSSWALK

Description: Crosswalk incorporating a textured and/or stamped surface which contrasts with the adjacent asphalt roadway. The purpose of a textured crosswalk is to better define the crossing location for pedestrians and to reduce pedestrian-vehicle conflicts.

Advantages:

- Improves street appearance
- Provides improved visibility of crossing locations
- When used in combination with other measures it may have a speed reduction effect

Disadvantages:

- Minimal effect on traffic speeds and volumes when used alone
- May result in maintenance problems
- May create extra noise from vehicle wheels travelling over the textured surface

RUMBLE STRIPS

Description: Raised buttons, bars or grooves closely spaced at regular intervals which create both noise and vibration in a moving vehicle. Rumble strips are used to alert motorists to unusual conditions ahead.

Advantages:

- May reduce vehicle speeds over an extended length

Disadvantages:

- Loud and aesthetically unappealing
- No effect on traffic volumes or conflicts
- May result in increased maintenance

ROADSIDE IMPROVEMENTS

Description: The careful use of landscaping along a street section can provide separation between vehicles and pedestrians, reduce the visual width of the roadway, and provide a more pleasant street environment. This can be achieved by using a variety of trees, bushes and/or flower pots which can be planted in the buffer area between the sidewalk.

Advantages:

- Visually appealing
- Does not impact emergency or transit services

Disadvantages:

- High implementation cost
- High maintenance costs

CURB EXTENSION (BULB-OUT)

Description: Horizontal intrusion of the curb into the roadway resulting in a narrower section of roadway. The curb can be extended on one or both sides of the roadway to reduce its width to as little as 6.0 metres for two-way traffic.

Advantages:

- Reduces vehicle speeds
- Reduces crossing distance for pedestrians
- Increases pedestrian visibility
- Prevents parking close to an intersection

Disadvantages:

- May result in the loss of some on-street parking
- Difficult for large-vehicle movements if located at an intersection
- May inhibit bicycle travel if inappropriately designed

RAISED INTERSECTION

Description: An intersection (including crosswalks) constructed at a higher elevation than the adjacent roadways. The purpose of the raised intersection is to reduce vehicle speeds, better define the crosswalk areas and to reduce pedestrian-vehicle conflicts.

Advantages:

- Reduces vehicle speeds
- Improved visibility of pedestrians
- Reduces pedestrian-vehicle conflicts

Disadvantages:

- Impacts and delays to emergency services, transit and maintenance vehicles
- May result in a false sense of pedestrian security

RAISED MEDIAN ISLAND

Description: An elevated median constructed on the centreline of a two-way roadway to reduce the overall width of the adjacent travel lanes. The purpose of raised median islands is to reduce vehicle speeds, prohibit turning movements and to reduce pedestrian-vehicle conflicts.

Advantages:

- Slows traffic
- Separates opposing flows of traffic
- Can improve street appearance
- Can function as a pedestrian refuge, and as a result, may reduce vehicle-pedestrian conflicts.

Disadvantages:

- May require removal of on-street parking
- May restrict driveway access

FLUSH MEDIAN ISLAND

Description: A non-raised median along the centreline of a roadway to reduce the overall width of the adjacent travel lanes aimed at reducing vehicle speeds while enabling driveway access.

Advantages:

- Slows traffic
- Separates opposing flows of traffic
- Can improve street appearance

Disadvantages:

- May require removal of on-street parking

TRAFFIC CIRCLES/MINI ROUNDABOUT

Description: A raised island located in the centre of an intersection, which requires vehicles to travel through the intersection in a counter-clockwise direction around the island. Traffic Circles and Mini Roundabouts are typically used in low-speed urban environments.

Advantages:

- Reduces vehicle speeds
- Reduction in vehicle-vehicle conflicts
- Motorists need only consider traffic approaching from one direction
- Landscaping within the centre island improves aesthetics

Disadvantages:

- May require some removal of on-street parking
- May impact emergency services, transit and maintenance vehicles

CHICANE

Description: A series of curb extensions on alternating sides of the roadway which are used to narrow the roadway and require drivers to steer from one side of the roadway to the other in order to travel through the chicane. Chicanes are used to discourage through traffic and reduce speeds. However, in order to be effective, traffic volumes in both directions should be equal.

Advantages:

- Reduction in speeds
- Reduction in volumes
- Reduction in conflicts
- Can improve streetscape

Disadvantages:

- Loss of on-street parking
- May divert traffic to adjacent streets without traffic calming measures

INTERSECTION CHANNELIZATION

Description: Raised islands located at an intersection used to obstruct specific traffic movements and physically direct traffic through an intersection. The purpose of intersection channelization is to obstruct through traffic along a street by obstructing specific movements.

Advantages:

- Reduction in traffic volumes.

Disadvantages:

- May restrict local access;
- May divert traffic to adjacent streets without traffic calming measures;
- May delay and/or obstruct emergency vehicles.

DIVERTER

Description: A raised barrier placed diagonally across an intersection that forces traffic to turn and prevents traffic from proceeding straight through the intersection. Diverters can incorporate gaps for pedestrians, wheelchairs and bicycles and can be mountable by emergency vehicles.

Advantages:

- Eliminates cut-through traffic
- Reduces conflict potential

Disadvantages:

- May divert traffic to adjacent local roadways
- May restrict local access
- Reduction in emergency response times

RAISED MEDIAN THROUGH INTERSECTION

Description: An elevated median located on the centreline of a two-way roadway through an intersection, preventing left-turns and through movements to and from the intersecting roadways.

Advantages:

- Eliminates cut-through traffic
- Improves safety by reducing conflicting movements
- Improves pedestrian safety by reducing crossing distances

Disadvantages:

- May divert traffic to adjacent local roadways
- May restrict local access, inconveniencing local residents
- Requires on-street parking restrictions
- Reduces emergency response times

DIRECTIONAL CLOSURE

Description: A curb extension or vehicle barrier extending to the centre of the roadway, effectively obstructing (prohibiting) one direction of traffic. When combined with other measures elsewhere in a neighbourhood, directional closures obstruct short-cutting.

Advantages:

- Eliminates cut-through traffic
- Reduced pedestrian crossing distances
- Permits emergency access

Disadvantages:

- Not self-enforcing, can easily be violated
- Reduces access for local residents

Appendix C

Council Correspondence

Flower City
brampton.ca

Management & Administrative Services

Date: April 16, 2007

To: **T. Mulligan** **R. D'Ippolito** **M. Parks**
E. Hansman

From: **Sonya Pacheco**

The following recommendation of the Committee of Council Meeting of April 4, 2007 was approved by Council on April 11, 2007:

CW143-2007

1. That the report from M. Parks, Manager of Traffic Engineering Services, Works and Transportation, dated March 26, 2007, to the Committee of Council Meeting of April 4, 2007, re: **Neighbourhood Traffic Management Guide** (File T00) be received; and,

2. That the City of Brampton not install speed humps or speed bumps as traffic management options when addressing concerns on local roadways; and,

3. That the Neighbourhood Traffic Management Guide, appended to the subject report, be approved, as amended by clause 2 of this Recommendation; and,

4. That staff be directed to identify possible intersections as candidates for traffic circle/roundabout retrofits, in accordance with the Neighbourhood Traffic Management Guide, and report back to a future Committee of Council Meeting in this regard.

By copy of this correspondence to M. Parks, Manager of Traffic Engineering Services, Works and Transportation, he is hereby requested to carry out the direction in Recommendation CW143-2007 above. **(Reference #2007-032, Clause 4)**

Yours truly,

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/sp (CW-H1-4-2)