

TRAFFIC CALMING TOOLBOX

“The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce desired effects.”

- Federal Highway Administration definition of traffic calming

Introduction

Having a standardized roadway system is imperative to the safety of residents and drivers alike. Predictability on a road increases safety and decreases variability when traveling to different parts of the Village. The goal of this traffic calming toolbox and scoring sheet is to assist the Village in identifying locations for further study, choose from a list of appropriate countermeasures, and maintain consistency of traffic improvements throughout the Village.

The process will begin with either an internal initiation by the Traffic and Safety Commission identifying a location with potential traffic problems, or a resident petition being presented to the Traffic and Safety Commission. From there the scoring document will be used to evaluate the location and determine what improvement categories apply. The improvement type used will be left to the discretion of the Traffic and Safety Commission in conjunction with resident and Village Staff input. In addition to the “Improvement Matrix” which lists the improvement types that may be considered, this document also includes a “Cost Matrix” to further inform the reader of potential cost implications and to identify ideal locations for each improvement type.

The improvement types are taken from the Federal Highway Administration’s (FHWA) recommendations for traffic calming along with Thomas Engineering’s own experience completing traffic studies around the state. The scoring sheet and matrix are meant to serve as guidelines for the Village. All improvements should rely on site specific criteria to determine the optimal countermeasures at each location. The relevant application of each improvement will ultimately be up to the Traffic and Safety Commission and Village Board.

Scoring Criteria

The Scoring Matrix will be the first step after identifying a location for potential traffic calming. The location will be analyzed based on recent crash history, vehicle speed (using speed study), average daily traffic, and nearby pedestrian traffic generators (school, library, park, church, or public transit). Additional points will be awarded for locations identified as a bike route per the Village Bicycle Plan implemented in 2019 and/or if the interest in the location was created through a resident petition.

The maximum score a location can get will be 100 points with a minimum threshold of 25 points to proceed with review and potential improvements. Points from this section will be used to determine what level of improvements can be used in the Improvement Matrix.

Scoring Process

The scoring process will utilize two intersections and one connecting segment for each scoring category. This means, for example, the crash score will utilize the total crashes at both intersections and the joining segment. While there are some intersection-specific traffic calming measures TEG assumes most studies will be based along a specific road which will then have a suitable segment chosen for study.

For full corridor studies including multiple segments along a road each segment + its two termini intersection will be used to score all segments through a corridor. In the end each segment & intersection combo will have a final score and corresponding level of improvement. In testing scores through a corridor were generally similar, but in the case of segments falling into different improvement levels TEG recommends using engineering judgement to choose the level of improvement most appropriate for the corridor.

Improvement Matrix

After scoring a location the Traffic and Safety Commission should look at the Improvement Matrix to determine what “Level” of improvements should be considered. Using the score from the Scoring Matrix, the Levels are as follows:

Level 1 = 25-39 points – Locations that may have speed and safety concerns not apparent without further review; minimal impact to traffic.

Level 2 = 40-59 points – Locations with minor speed and safety problems; no new physical barriers or traffic control.

Level 3 = 60-79 points – Locations with moderate speed and safety problems; physical barriers or new traffic control may be justified.

Level 4 = 80-100 points – Locations with major speed and safety problems; roadway may be in need of substantial improvements to correct traffic conditions on the road.

Traffic improvements are categorized by how much of an impact each improvement has on drivers using the road. As the impacts to drivers become greater, the effectiveness of the improvement also increases. For this reason, the level 3 and 4 traffic calming measures should be used sparingly to correct areas with clear deficiencies. Some of the level 3 and 4 improvements have secondary criteria that must be met prior to considering the improvement, which are listed in the “Usage Notes” column. For example, in order to install a new all-way stop sign, the intersection must first fulfill an all-way stop warrant.

In general, when considering a location for traffic calming improvements, even if there are enough points to justify a level 3 or 4 intervention, it is recommended that the Village adopt a conservative approach. Starting with a level 1 or 2 improvement is recommended to assess whether or not the existing issues are effectively resolved without significantly impacting drivers' road usage. However, if level 1 or 2 improvements are already in place, it may be appropriate to proceed with a level 3 or 4 intervention.

The Improvement Matrix includes a table which shows the primary issues addressed by each improvement. While all suggested improvements will help calm traffic on the road, each improvement type will primarily impact one to two aspects of road safety. For ease-of-use, the table lists whether the improvements primarily impact speed on the roadway, volume of vehicles, or pedestrian safety. Level 1 and 2 improvements primarily target speed and pedestrian safety. As the impact to the roadway increases

in level 3 and 4, the improvements make the roadway less appealing to travel on due to physical barriers or new traffic control. Slowing down the speed to navigate a corridor will reduce traffic coming from major routes but will also inconvenience residents.

Cost Matrix

The Village can also use the Cost Matrix to consider the approximate cost for each improvement and review a brief description of how/where the improvement should be used in order to determine what changes should be made to the studied locations.

Survey Results

As part of the Village-Wide Traffic Study Survey, Village residents were asked about their preferences for traffic calming measures. This section is intended to provide insight into the current preferences of residents in order to be able to better anticipate potential responses to proposed traffic calming measures.

The following table shows the results of a survey question in which Village residents were asked to indicate which improvements they would like to see more of in the Village:

Improvement Type	% Respondents in favor of improvement
Speed Humps	39%
Mounted Flashing Beacons	39%
Curb Extensions	34%
Driver Feedback Speed Sign	41%
Raised Intersection	26%
None	9%
Other	27%

Table 1

As shown in Table 1, only 9% of respondents did not want to see any new traffic calming in the Village. The three most-supported improvement types were driver feedback speed signs (41%), mounted flashing beacons (39%), and speed humps (39%). Overall, there was generally an even distribution of support across all listed improvement types, with the exception of raised intersections. This, however, may be due to a lack of experience with raised intersections. Therefore, if the Village ever chooses to use this improvement type it may be helpful to provide an education campaign about the benefits and effectiveness of raised intersections.

A total of 27% (238) of respondents listed other forms of traffic calming they would like to see – many of these responses were reaffirming the boxes they checked or did not check in the first portion of the question. When looking into the open-ended responses further, the following trends were identified:

1. Many residents expressed dislike for speed humps due to potential damage to vehicle undercarriages
2. Residents expressed dislike of flashing beacons because the flashing lights could shine in windows of nearby homes

3. Bicyclists complained that curb extensions are dangerous because they force bicyclists into traffic lanes at intersections
4. Driver feedback signs are seen as ineffective
5. Raised intersections were mentioned in several responses as an improvement, but one that residents are uncertain as to how they would be used

The remaining 238 open-ended survey responses were reviewed and divided into six categories of improvement:

1. Additional stop signs (35 responses)
2. Roundabouts (13 responses)
3. Street closures (16 responses)
4. Crosswalk improvements (13 responses)
5. More police enforcement (58 responses)
6. Speed cameras (19 responses)

From these initial categories the categories were further divided into ‘new traffic control’ and ‘more enforcement’ groups. Within the ‘new traffic control’ group the categories of additional stop signs, roundabouts, and street closures were combined with 64 total respondents preferring new traffic control. New traffic control will not be suggested unless it is warranted by existing traffic conditions. Traffic control improvements are included within the traffic calming toolbox, but these are not to be used without proper justification which is why none were included within the survey. The ‘more enforcement’ group includes the categories of more police enforcement and speed cameras, which total 77 responses. More police enforcement or auto-ticketing speed cameras are at the discretion of the Village and beyond the scope of this study. The 13 people who suggested some form of crosswalk improvements focused mainly on roadway features to make crosswalks more visible and their suggestions were incorporated into the Traffic Control Toolbox.

Conclusion

Ultimately, many Village residents appear to be open to traffic calming improvements. There seems to be a preference for improvements that would have low driver impact and road treatments with which residents are already familiar. This would explain why speed humps were picked 13% more than raised intersections, even though they are similar treatment types. Only 9% of respondents indicated that they would not want to see any new traffic calming measures implemented. This suggests that there is a demand for well-planned traffic calming measures, even if there is indecision on which measures would be most effective. A Village led information campaign to inform residents of the potential advantages of each improvement type, as well as, outlining how the Village will handle the concerns residents have with things like the flashing beacons or speed humps (such as restricting locations where improvements can be implemented). As the Village’s road system continues to evolve with increased traffic volumes and multi-modal transportation options, residents will likely adapt and realize the benefits of introducing a wide range of traffic calming methods.

Improvement Matrix



Available Traffic Calming Measures	Primary Issue Addressed			Usage Notes
	Speed	Volume	Pedestrian Safety	
Level 1 - No Traffic Flow Changes (25-39 points)				
Targeted Speed Enforcement	X			
Speed Radar Trailer	X			
Speed Feedback Sign	X			
Centerline/Edgeline Markings	X			
Updated Signage (New/Larger/Refreshed)	X		X	
Speed Limit Signage	X			If not already existing
Flashing Signs	X		X	
Pavement Legend	X		X	
High Visibility Crosswalks			X	
Education/Community Outreach	X		X	
Level 2 - Some Traffic Flow Changes (40-59 points)				
Sign Turn Restrictions/Turn Movement Restrictions		X		
On-street Parking Strategies	X			
Parking Lane Markings	X			
Textured Pavement	X			
Rumble Strip	X			
Rapid Rectangular Flashing Beacon			X	Motion Activated - Less intrusive
Left-turn Improvements			X	
Level 3 - Significant Traffic Flow Changes (60-79 points)				
Curb Extensions	X		X	Intersections
Mid-Block Chokers	X		X	Segments
Center Island Narrowing/Pedestrian Refuge			X	
Stop Signage		X		If stop sign warrant is met
Traffic Circle	X	X		
Roundabout	X	X		
Realigned Intersection	X	X		
Speed Hump/Speed Cushion	X	X		Segments
Speed Table/Raised intersections	X	X		Intersections
Level 4 - Street Closures (80-100 points)				
Median & Partial Medians	X			
Median Barrier		X		Cut-through traffic
Forced Turn Island		X		Cut-through traffic
One-Way to Two-Way Street Conversion		X		
Two-Way to One-Way Street Conversion		X		

* The list of traffic calming measures above is not exhaustive. While many of the most common traffic calming measures are listed it is possible the Village will want to use improvements not previously considered. In these cases the new improvement type should be reviewed by a Village engineer who will then classify the level of the improvement consistent with the table above. Scoring will then be conducted at the study location normally.