Neighborhood Traffic Calming

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City Of Sumner

Contributing Departments:

Public Works
Fire Department
Police Department
Community Development

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EXECUTIVE SUMMARY

Traffic calming can be summarized as traffic engineering techniques that physically slow the speed and/or volume of traffic on public streets. Traffic calming for the City of Sumner includes a variety of methods, primarily aimed at reduction of speed.

The effectiveness of traffic calming in terms of speed and accident reduction has been well documented. Typically, the effect of traffic calming on emergency vehicle access is in question prior to the installation of a traffic calming device. When a problem area is addressed properly, the desired reduction of speed can be achieved with minimal effects on emergency vehicle times.

Traffic calming relies heavily on technical analysis, public input, education, and enforcement. Successful traffic calming involves all of the public service sectors that use the streets as well; the fire department, police department, schools, etc. Gaining insight and input from these agencies, as well as from the public, is critical for success.

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I. POLICY AUTHORITY FOR TRAFFIC CALMING

Both the Sumner Comprehensive Plan and Transportation Plan support the provision of traffic calming.

Sumner Comprehensive Plan

Community Character Element: Maintain and enrich the quality of life encompassed in its friendly, small town atmosphere

> *1.1 Encourage development which enhances the human, pedestrian scale, creating a sense of community and place.*
>
> *4.2 Encourage pedestrian scale streetscape improvements and promote pedestrian and bicycle oriented centers at existing civic and community uses.*
>
> *7.1 Streets should be designed to accommodate vehicles and emergency access, but not at the expense of pedestrians. Community streets, pedestrian paths, and bike paths should contribute to a system of fully-connected and interesting routs to all destinations. Their design should encourage pedestrian and bicycle use and discourage high speed traffic. Traffic calming techniques certainly fit with these policies.*

Sumner Transportation Plan

The overall transportation goal as stated in the newly adopted Transportation Plan is to provide an efficient and safe transportation system while maintaining the small town quality of life.

3.13 Neighborhood Traffic Control Program

> *Implement a systematic program for defining, designing, and implementing traffic control and pedestrian safety improvements in residential areas of the City. The City will define and prioritize locations for such programs based on:*
>
> - *Traffic engineering studies*
> - *Traffic Speeds*
> - *Safety and accident data*
> - *Truck impacts*
> - *Input from the community*

The transportation plan defines the streets within Sumner, outlines existing levels of service as well as level of service (LOS) goals, and sets forth not only the support for a Traffic Calming program, but the necessary background information on which to build it.

II. WHAT IS TRAFFIC CALMING?



Traffic calming consists of various techniques for physically slowing and potentially reducing traffic on public streets. The techniques employed in successful traffic calming projects yield a safer environment for pedestrians, bicyclists, and even automobiles. Other benefits of traffic calming are a greater sense of community and a reclaiming of neighborhood livability. Traffic calming began as a grassroots movement in the late 1960s in Europe. In the U.S., traffic calming was practiced as early as the late 1960s and early 1970s in such places as Berkeley, California, Seattle, and Eugene, Oregon. The use of traffic calming has become local, and is being used in Auburn, Puyallup, University Place, and Tacoma





Drivers are much more likely to adjust their speed in response to physical conditions they experience on the roadway — including the amount of traffic, weather, number of pedestrians, lane width, lane striping, road surface, physical objects (such as speed bumps) and other visual cues — than in response to posted speed limits. In fact, research has found that traffic signs and signals are the least effective methods for reducing and slowing traffic. Speeding drivers are also likely to be residents of the areas where they speed, rather than outsiders or persons cutting through a section of town. Traffic calming has been endorsed by planners, environmentalists, and engineers, including the Institute of Traffic Engineers.

Traffic calming can be broken into two basic groups: **Volume Control and Speed Control**. Volume control techniques are used to address cut-through traffic problems by blocking or diverting traffic to other streets better able to handle it. Speed control techniques are used to address speeding by adding physical barriers such as circles or speed humps, or by narrowing the roadway.

Traffic calming techniques can be used in order to successfully reduce speeds, reduce traffic volumes, or a combination of both. There are over 20 types of traffic calming that can be used to treat problem streets. The next two sections summarize the broad range of traffic calming options that could be considered.

III. SPEED CONTROL METHODS

1. Speed Humps & Speed Tables

Speed humps are rounded raised areas placed across the road. It is important to note that they are not the same thing as "speed bumps" such as those you would find in a shopping center parking lot. Speed humps are designed with a specific length (commonly 14 feet to 22 feet) and spacing depending on the level of speed reduction desired. The maximum height at the peak of speed humps is typically 3 inches.



2. Traffic Circles

Traffic circles are islands located in the center of an intersection, around which traffic circulates. Traffic circles are a popular method of slowing traffic in neighborhood streets. It is important to note that intersections utilizing traffic circles are not stop controlled.



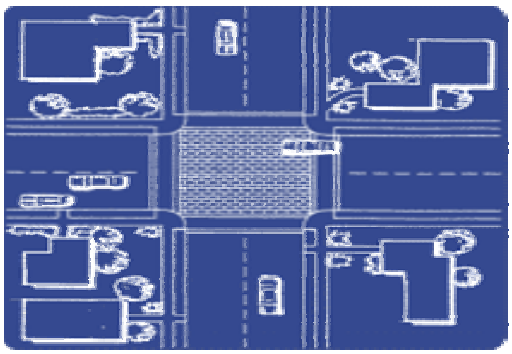
3. Roundabouts

Roundabouts require traffic to circulate counterclockwise around a center island. Unlike traffic circles, roundabouts are usually larger and primarily used on higher volume streets to allocate rights-of-way among competing movements.



4. Raised Intersections

Raised intersections are flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section.



5. **Textured Pavements**

Textured Pavements, such as brick or stone surfaces, cause drivers to have a slightly bumpy ride over an extended distance, while improving the aesthetic quality of the street environment.



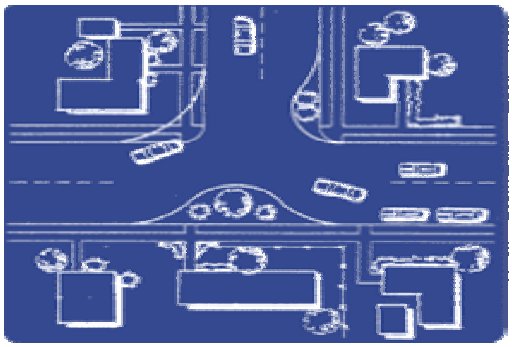
6. **Chicanes**

Chicanes are curb extensions or islands that alternate from one side of the street to the other, forming S-shaped curves.



7. **Realigned Intersections**

Realigned intersections are changes in alignment that convert T-intersections with straight approaches into curving streets meeting at right angles - a straight shot along the top of the T becomes a turning movement.

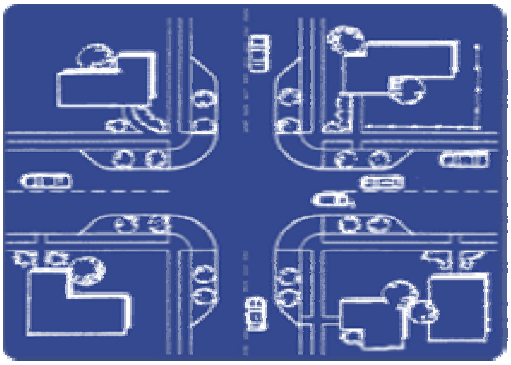


8. Center Island Narrowing

Center island narrowing, also known as mid-block medians, median slow points, or median chokers are islands located along the centerline of a street that narrow the street at that location.



9. **Neckdowns**



Neckdowns are curb extensions at intersections that reduce roadway width curb-to-curb. Neckdowns are also known as bulb-outs, curb bulbs, corner bulges, and safe crosses. This technique greatly enhances pedestrian safety by narrowing the crossing distance.

There are several other forms of traffic calming, from re-striping an existing street to complete realignments of existing intersections. It is also possible to combine several traffic calming elements together to gain roadways that are not only safe for the automobile and pedestrian, but are at the peak of aesthetic quality.

IV. VOLUME CONTROL METHODS

1. **Half-Closures**

Half closures are barriers that block travel in one direction for a short distance on otherwise two-way streets.



2. **Forced Turn Islands**

Forced turn islands are islands on approaches to an intersection that block certain movements.



V. METHOD COMBINATIONS

The images below show where a combination of traffic calming methods has been used for increased effectiveness and/or aesthetics.



Center Island & Neckdown
Eugene, OR



Raised Intersection & Neckdown
Toronto, Ontario



Center Island with Chokers
Tallahassee, FL



Center Island with Tables
Boulder, CO



Center Island with Humps
Montgomery County, MD



Raised Crosswalk with Choker
West Palm Beach, FL

VI. TRAFFIC CALMING EFFECTIVENESS

The following tables are some of the effects that have been detected after the installation of traffic calming measures with regard to speed, volume, and overall safety. (From trafficcalming.org) The City of University Place has also independently studied the effectiveness of their traffic calming measures, and seen a 52% reduction in accidents, and a 14% reduction in speeding.

Speed Impacts of Traffic Calming Measures (standard deviations in parentheses)				
	Sample Size	**85th Percentile Afterward**	**Average Change in Percentile Speed**	**Average %**
12' Humps	179	(4.0 mph)	ph (3.5 mph)	-22% (9%)
14' Humps	15	(2.1)	(2.1 mph)	(6)
22' Tables	58	(2.7)	(3.2)	(8)
Longer Tables	10	(2.8)	(2.4)	(7)
Raised Intersections	3	(6.0)	(3.8)	(10)
Circles	45	(4.3)	(3.2)	(10)
Narrowing	7	(2.8)	(5.5)	(22)
One-Lane Slow Points	5	(3.1)	(1.3)	(4)
osures	16	(5.2)	(3.6)	(11)
Diagonal Diverters	7	(5.2)	(4.7)	(17)

Volume Impacts of Traffic Calming Measures (standard deviations in parentheses)			
	Sample Size	Average Change in Volume	Average % Change
One-Lane Slow Points		-392 vehicles per day (384 vehicles per day)	-20% (19%)
Full Closures		(786)	-44 (36)
Half Closures	53	-1611 (2444)	-42 (41)
Diagonal Diverters		-501 (622)	-35 (46)
Other Volume Controls		-1167 (1781)	-31 (36)

Safety Impacts of Tr Calming ures (U.S. Experience)				
	Number of Observations	Average Number of Collisions		% Change in lisions
		Treatment	After Treatment	
12' Humps		2.7	2.4	-11%
14' Humps	5	4.4	2.6	-41%
22' Tables	8	6.7	3.7	-45%
Circles	17	5.9	4.2	-29%
Circles (w/ Seattle)	130	2.2	0.6	-73%

As the data indicates, traffic calming can reduce speeds, reduce volume where necessary, and can reduce the number of collisions. The proper selection of traffic calming locations and what technique to use is crucial to achieving desired speed reductions.

VII. ELEMENTS OF SUCCESSFUL TRAFFIC CALMING

In order to properly implement a traffic calming program, there are several factors to consider. Traffic calming is, in essence, changing an established system that many residents have grown accustomed to. This change requires a good combination of technical analysis, policy, education, and enforcement.

Technical

The first consideration for any proposed traffic calming project should be an evaluation of the existing conditions. This would include a physical evaluation of the street as well as a monitoring period to determine speed levels, volumes, etc. These problem areas could be designated by the police department, fire department, or possibly by a citizen committee that would work cooperatively with the police, fire, planning, and public works departments to outline a comprehensive traffic calming plan that prioritizes potential problem areas. Of course, any resident could, and should be encouraged to bring up traffic issues that may need investigating.

Policy

The policy aspect of a traffic calming program would set forth the preferred types of traffic calming in Sumner, and outline the qualifying criteria for potential traffic calming projects.

Education & Enforcement

Should a street or intersection be selected for a traffic calming project, local residents of the affected area would be invited to become part of the process, and be educated on some of the various traffic calming methods and why some may work better than others. Indeed, this process may yield solutions other than traffic calming.

Enforcement and education are also tools that can be used prior to the installation of permanent traffic calming measures. Chicanes, alternative pavements, and raised intersections are more specialized traffic calming techniques, and are more expensive retrofits than adding speed humps or traffic circles. The use of these techniques could possibly be added into new developments.

In summary, traffic calming is the most effective way to reduce speed in neighborhood residential streets. Yet to be effective, the selection process for traffic calming locations should be comprehensive in examining the street grid within the entire vicinity of a potential project. How will other intersections be affected? At a minimum, traffic calming procedures should consist of a submittal for a project, project feasibility study and assessment, citizen participation, and project evaluation. Given the time that staff as well as local citizens will contribute to these projects, one problem should not be fixed only to create another one block away. This comprehensive approach will ensure an even distribution of effective traffic calming devices.

REFRENCES:

City Of Sumner Comprehensive Plan Community Character Element, 1994

City Of Sumner Transportation Plan – Neighborhood Traffic Control Program, 2003

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Federal Highway Administration "**State of the Art: Residential Traffic Management**" , 1980

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PHOTO AND TABLE CREDITS:

Traffic Calming photo examples: http://www.trafficcalming.org/

City of University Place: Traffic Calming Program