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**TO: Mayor & Council**  
**FROM: Mitch Wasserman**  
**DATE: January 6, 2017**  
**SUBJ: TRAFFIC INFORMATION FROM MUKILTEO**

Rick Hill, our new PW Director, attended the last Traffic Sub-Committee meeting and followed-up by obtaining some related information from the City of Mukilteo, his former employer. This is good overall information so I've included it for your review as well.

**Subject:** Traffic Calming - Speed Bumps

Hi Rick,

I got your message and thought I would send these over. The speed bumps decreased the speed only slightly, but they weren't warranted based on our adopted traffic calming policy (put in place later than these were installed). What has really worked are the radar signs, which has decreased the speeds on 48<sup>th</sup> Ave and 44<sup>th</sup> Ave as follows:

	Avg Before	Avg After	85 <sup>th</sup> percentile before	85 <sup>th</sup> percentile after
44 <sup>th</sup>	31	21	36	28
48 <sup>th</sup>	28	21	33	26

If you are interested in some further information on related topics, here are a few articles that our Traffic Engineer, Eric Shimizu shared with us:

**Speed Control References:**

- IOWA research:  
<http://www.ctre.iastate.edu/research/roadhump/>
- Good technical analysis of various speed control devices:  
[http://nacto.org/docs/usdg/study\\_speed\\_humps\\_speed\\_slots\\_and\\_speed\\_cushions\\_johnson.pdf](http://nacto.org/docs/usdg/study_speed_humps_speed_slots_and_speed_cushions_johnson.pdf)
- NACTO guidelines for speed humps:  
[http://nacto.org/docs/usdg/updated\\_design\\_guidelines\\_for\\_the\\_design\\_and\\_application\\_of\\_speed\\_humps\\_parkhill.pdf](http://nacto.org/docs/usdg/updated_design_guidelines_for_the_design_and_application_of_speed_humps_parkhill.pdf)
- FHWA reference on traffic calming:  
[http://safety.fhwa.dot.gov/ped\\_bike/univcourse/pdf/swless11.pdf](http://safety.fhwa.dot.gov/ped_bike/univcourse/pdf/swless11.pdf)
- Good situational opponent side to speed humps. Information is for the sale of speed signs instead of speed humps but they do include the majority of reasons I've discussed previously:  
<http://www.radarsign.com/why-municipalities-are-moving-away-from-speed-humps/>

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Safe Streetscapes

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Authentic Participation

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Public Safety

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EDUCATION • ENCOURAGEMENT •  
ENFORCEMENT

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Neighborhood  
Character  
Preservation

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Pedestrian &  
Bicycle Safety

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Historic Small Town

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CITY OF  
**MUKILTEO**

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*Traffic Calming Program*

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# HOW THE TRAFFIC SAFETY PROCESS WORKS

**\* You and your neighbors become an active part in helping to identify Traffic concerns, develop recommendations, and implement solutions. \***

**Step 1:**

Submit a **Request for Action** form describing your concerns in as much detail as possible including if there is a specific time of day or day of the week you notice the problem to be at its worst. The more information we have as we assess the situation, the better prepared we are to address your concern.

**Step 2:**

Staff visits the location and reviews traffic conditions. Speed and volume counts may be conducted and/or staff will review previous traffic studies or reported accidents.

**Step 3:**

A **Traffic Action Plan** is developed. This plan is specifically tailored to your concern based on the findings in step 2 and other citizen observations. The plan includes a list of tools selected from those available in this guidebook which are best suited to address your concerns.

**Step 4:**

Together, citizens work with staff on implementing the **Traffic Action Plan**. This is your opportunity to become an active partner in helping to solve your neighborhood traffic concerns.

**Step 5:**

The effectiveness of the plan is evaluated through additional follow-up studies and citizen input, if needed.



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There are a number of tools that have been identified to address specific traffic conditions occurring in your neighborhood. These tools are categorized into two areas:



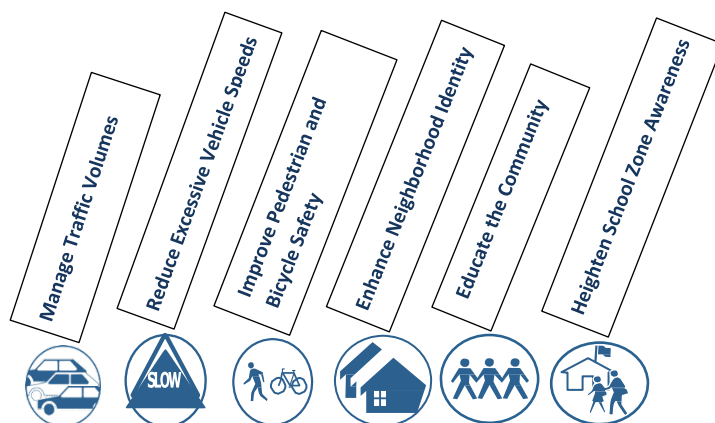
### **EDUCATION, ENCOURAGEMENT AND ENFORCEMENT:**

Educating the community on transportation issues is an important first step in addressing traffic concerns in neighborhoods. One of the most frequent comments made to the Public Works Department is the need to address speeding along residential streets. Our studies show that the majority of speeders on neighborhood streets in Mukilteo are local residents. By educating the community and encouraging safe driving, we can begin to change driver behavior and reduce vehicle speeds. Enforcement, such as police citations, can also help to alleviate speeding concerns.

### **MODIFYING STREETScape:**

Physically changing how the road looks – whether with signing, curbing, or other traffic calming measures – works to alter the behavior of motorists, pedestrians, and bicyclists. These tools help to manage traffic volumes, reduce vehicle speeds, and improve sight distance. Engaging the community in developing the Traffic Action Plan and garnering support are key elements to the success of any project that modifies the streetscape.

# TRAFFIC SAFETY TOOLKIT



## Page Education, Encouragement, and Enforcement

7	Neighborhood Speed Watch Program		•			•	
7	Neighborhood Traffic Safety Newsletters		•	•	•	•	
8	Radar Trailer/Dolly		•			•	
8	Traffic Enforcement		•			•	
9	Trips to School			•		•	•

## Page Modifying Streetscape

10	Chicanes/Slow Points	•	•				
11	Brush Trimming			•			
12	Curb Extensions		•	•			•
13	Full Closure	•	•	•	•		
14	Lane Striping		•	•			
16	Medians		•	•	•		•
17	Neighborhood Entrance Signs	•	•		•		•
18	Partial Closure	•	•	•	•		
19	Raised Crosswalk	•	•	•			•
20	"Residential Area" Signs			•	•		
21	School Zone Flashing Beacons		•				•
22	Speed Cushions	•	•				•
23	Speed Dots	•	•				•
24	Speed Humps	•	•				•
25	Speed Limit Pavement Markings		•				
27	Speed Mounds		•	•			•
28	Stationary Radar Sign		•				

Traffic Conditions are different for each location resulting in numerous tools that can address your specific neighborhood concern. In addition, some tools are only applied after guidelines have been met. The above chart lists the tools available to residents. The presence of a black dot (•) indicates which tools best address specific area of concern. For each tool, specific information and guidelines for their use are defined on subsequent pages.

\*For each tool, a set of guidelines has been established based on the level of public participation needed, requirements needed to approve the tool, and traffic considerations.

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## PUBLIC PARTICIPATION

**The Requestor** for traffic calming tools is expected to work alongside City staff to resolve the issue and serve as the conduit between the City and his/her neighbors.

**Community and Neighborhood Associations** are often asked to participate in the traffic safety process when tools affect the neighborhood as a whole. Board members help to share information with the neighborhood and/or may assign a member to the Traffic Committee.





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## APPROVAL REQUIREMENTS

**NOTIFICATION** of a project is needed when tools minimally impact adjacent properties, such as the installation of signs.

**ADJACENT PROPERTY** support is needed whenever a tool directly impacts a property. This support is needed before a project moves to the next step.

**MAJORITY NEIGHBORHOOD SUPPORT (65%)** approval by residents is needed when a tool will impact a community at large. Through a petition process conducted by the requestor, 65% of residents must show support for the proposed action.

**SCHOOL DISTRICT** support may be needed if a project is adjacent to or affects the traffic operations of the school.



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## TRAFFIC CONSIDERATIONS

**VEHICLE SPEEDS** listed in the tools are minimum 85<sup>th</sup> percentile speeds required for that tool to be effective; this means 85% of the vehicles are traveling at or below a specific speed.

**AVERAGE DAILY TRAFFIC** refers to the average number of vehicles passing a specific point during a 24-hour period. There are minimum and maximum traffic volume limits for when different tools may be implemented.

In addition to the guidelines listed on the previous pages, the following are considerations that may apply to every tool and help to determine the appropriateness tool to be implemented:

- Is the street a school, bus, or transit route?
- Are there adjacent arterials to divert traffic?
- Is the roadway grade less than 8%?
- Are there horizontal or vertical curves?
- Where are driveways and intersections located?
- Are streetlights needed?
- Are larger vehicle's turning movements affected?
- Are there drainage and maintenance issues?
- Will parking be affected?
- How many reported accidents have occurred in the area?
- Do the streets have sidewalks?
- Do the streets carry through traffic or a thoroughfare to other neighborhoods?



We are always looking for ways to improve how we work with residents on traffic safety issues. As such, to ensure we are providing innovative and effective services, this document is subject to change based on the ongoing review of our process. While we make every effort to keep the guidelines listed in this document current, there may be some instances where the guidelines are subject to change based on the specific context and location of the traffic safety concern, current regulations, or changes to engineering standards. Additionally, there may be opportunities for alternative tools not listed in this guidebook on a pilot basis.



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## NEIGHBORHOOD SPEED WATCH PROGRAMS



The Neighborhood Speed Watch is a public awareness program that provides citizens with partnership opportunities in solving speeding problems in their neighborhood. Residents monitor the speed of vehicles with radar equipment on loan from the Police Department. Police staff trains residents on how to use the radar unit to record the license plate numbers of those motorists driving at least 5 mph above the posted speed limit. A letter is sent from the Police Department to the registered owners of those vehicles informing them of the observed violation and encourages them or the other drivers of their vehicle to drive at or below the posted speed limit. Since this is a community awareness program, no formal citations or fines are issued.

### PUBLIC PARTICIPATION

A short 1 hour training session is provided to the requestor by City staff. The requestor collects motorists' data and submits the results to City staff.

## NEIGHBORHOOD TRAFFIC SAFETY NEWSLETTERS



Neighborhood Traffic Safety Newsletters are published by the City and contain personalized information about your neighborhood's traffic safety concerns. This newsletter also explains the results of the Public Works Department's speed and volume studies and recommends actions that may alleviate the traffic concern. Additionally, traffic and pedestrian safety basics are covered. Although City staff develops this newsletter, the local neighborhood association is welcome to assist with newsletter content and distribution. Staff can also provide homeowner associations with traffic safety articles to include in their newsletters or on their website.

### PUBLIC PARTICIPATION

The neighborhood association may provide content and help to distribute the newsletters to neighborhood residents.

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## RADAR TRAILER/DOLLY



The radar trailer/dolly is a portable trailer equipped with a radar unit which detects the speed of passing vehicles and displays the speed on a reader board. The goal is to heighten driver's awareness of both the speed at which they are traveling and the posted speed limit. This encourages drivers to adjust their speeds, if needed.

Police Officers or Police Volunteers will place the radar trailer or dolly at locations as requested. The Police Department may use the trailer as a "speed checkpoint" and have an officer present to issue citations to violators.

### PUBLIC PARTICIPATION

To request a radar speed trailer be placed at a particular location, call (425) 263-8100.

## TRAFFIC ENFORCEMENT



The Public Works Department works closely with the Police Department to enforce speed limits and other traffic laws in neighborhoods. Using key traffic data provided by Public Works staff, officers focus their scheduled patrols on the times and places where speeding most often occurs. Typically, targeted enforcement occurs during a one-week timeframe. Enforcement is also available by request to Mukilteo residents.

### PUBLIC PARTICIPATION

The requestor alerts the Police to areas where traffic enforcement needs emphasis.

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## MODIFYING STREETSCAPE

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### TRIPS TO SCHOOL



The Trips to School program encourages elementary school students to walk, bike, carpool, and ride the bus to and from school. City staff coordinates with participating schools to develop a customized plan to enhance traffic safety for their school. The plan can include informational campaigns about school travel options; walking, school buses, incentive-based programs, carpool coordination efforts, assemblies, opportunities for State and Federal grants, and encouraging students to walk to school every week on a specific day.

#### PUBLIC PARTICIPATION

A school volunteer or faculty/staff member is needed to serve as a primary contact and be willing to work with the City to develop and implement the customized plan.

#### APPROVAL REQUIREMENTS

School administration approval is required.





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# MODIFYING STREETSCAPE

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## CHICANES/SLOW POINTS

Chicanes are a series of two to three curb extensions that alternate from one side of the street to the other forming S-shaped curves on what would be an otherwise straight roadway. Slow points are curb extensions that narrow a roadway, sometimes allowing only one car at a time to pass. This treatment is used to reduce vehicle speeds.

In some cases, this tool can be designed as a one lane zone which allows only one vehicle at a time to pass, requiring vehicles at both ends to stop or yield before proceeding through. This creates delay for motorists and can reduce cut-through traffic as a result.



Seattle, Washington (Courtesy of Seattle – DOT)



Austin, Texas (Courtesy of LADOT Bike Blog)

## PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and also serve as a member of the Traffic Committee, if one is formed.

## APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

## TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- Average daily traffic of 300-6500 vehicles
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Moderate impact to emergency response
- On street parking may need to be restricted



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# MODIFYING STREETSCAPE

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## BRUSH TRIMMING

Overgrown brush and trees - At intersections, driveways, sidewalks, and along roadways limits motorist's ability to safely navigate neighborhood streets. Overgrown brush can block important signs and limit a driver's ability to see on-coming traffic at intersections.

Brush Trimming targets those trouble areas and increases the visibility of pedestrians, bicyclists, and motorists. The City has guidelines for sight-lines based on posted speed limits. When brush trimming is required, City staff will notify adjacent households of the concern and requesting they do the maintenance required within a specified period of time. If the landscaping does not get sufficiently trimmed back, City crews complete the trimming at the property owner's expense.



### Public Participation

The requestor alerts City staff to areas of concern in the neighborhood.

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300 – 3500 vehicles
- Moderate impact to emergency response



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# MODIFYING STREETSCAPE

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## CURB EXTENSIONS

Curb extensions narrow the roadway by extending the curb toward the center of the street helping to reduce vehicle speeds. Curb extension can be used at intersections or mid-block locations to increase sight-distance. They can also be installed in conjunction with speed humps to create planting areas or raised crosswalks to shorten pedestrian crossing distances.



**Curb extensions can also be used with:** partial closure, medians, neighborhood entrance, “residential area” signs, raised crosswalks, speed humps, traffic circles.

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and also serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300-6500 vehicles
- Moderate impact to emergency response
- On-street parking may need to be restricted





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## MODIFYING STREETSCAPE

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### FULL CLOSURE

A full closure physically closes a roadway in a neighborhood and is considered the most restrictive and severe form of traffic calming. These installations eliminate or reroute cut-through traffic but come with significant trade-offs for residents including increased travel time to and from their homes. Typically the City installs a temporary closure to provide an opportunity for residents to live with the restriction before determining if it becomes permanent.



A full closure can be designed to accommodate non-motorized travel such as pedestrians and bicyclists, as well as access for emergency response vehicles.

#### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

#### APPROVAL REQUIREMENTS

Adjacent property support is needed. This tool significantly impacts driving patterns in a neighborhood by forcing residents to find alternative routes to and from their home. Through a petition process conducted by the requestor, sixty-five percent (65%) of all residents in the neighborhood must support the restriction for it to be considered for implementation. The project may include an initial demonstration project before determining whether the closure is installed permanently.

#### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic <2000 vehicles
- 20% of traffic during peak hours is cutting through the neighborhood to avoid adjacent arterial streets
- Significant impact to emergency response



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# MODIFYING STREETSCAPE

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## LANE STRIPING

Lane striping helps to define the roadway. Whether installed with paint or buttons, it can delineate parking areas, travel lanes, bike lanes, and even walking areas. It can be used to narrow travel lanes in an effort to reduce vehicle speeds.



### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- Average daily traffic >300 vehicles
- Parking may be restricted



## MODIFYING STREETSCAPE

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### LANE STRIPING cont.



Seattle, Washington (Courtesy of Seattle PI)

**Lane striping can help define the roadway alerting drivers, cyclists, and pedestrians to the correct travel lanes.**



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# MODIFYING STREETSCAPE

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## MEDIANS

Medians are raised islands placed in the center of a roadway to separate opposing traffic. They can be placed mid-block or at entrances into neighborhoods. Medians are used to narrow the roadway and are often landscaped to provide a visual enhancement and create a perception of a narrower roadway. They can be used in conjunction with a pedestrian crossing to provide a refuge area.



**Medians can also be use with:** curb extensions, neighborhood entrances, speed cushions, split speed humps.

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic >300 vehicles
- Limited impact to emergency response vehicles, depending on location
- Should not be located where they affect driveway access
- Parking may be restricted



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## MODIFYING STREETSCAPE

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### NEIGHBORHOOD ENTRANCE SIGNS

A neighborhood entrance is a raised island in the center of a roadway and/or a raised pavement treatment, such as a patterned brick pavement, that identifies the entrance into a neighborhood.

Neighborhood entrances notify drivers that they are entering a neighborhood or residential area and thus encourage slower vehicle speeds. They may also discourage cut-through traffic. In addition, opportunities may exist for additional enhancement by adding landscaped medians and/or “residential area” signs.



**Neighborhood entrances can also be used with:** curb extensions, medians, “residential area” signs, and speed mounds.

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Average daily traffic >300 vehicles
- Parking may be restricted



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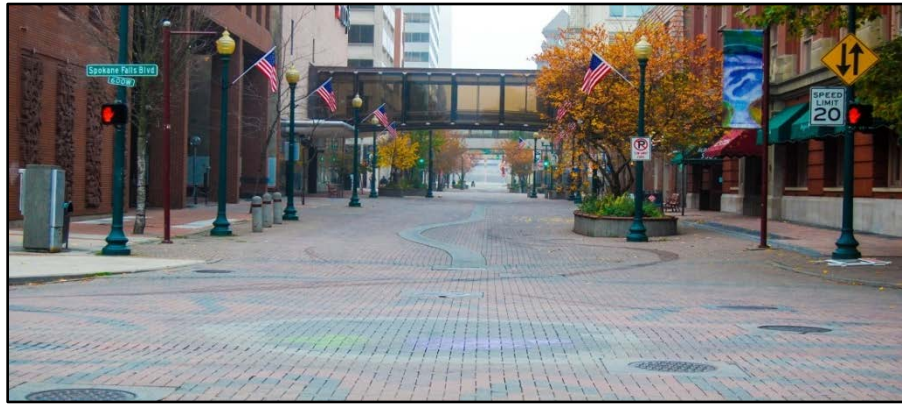
# MODIFYING STREETSCAPE

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## PARTIAL CLOSURE

Partial closures restrict the roadway to one direction of travel. They limit vehicular access into neighborhoods while still providing residents with either an exit or entrance depending on the restriction.

Partial closures permanently change traffic patterns for residents within a neighborhood sometimes resulting in longer travel times and traffic shifts within the residential area. Design features can include landscaping.



Spokane, Washington

*Can also be used with:* Curb extensions

## PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

## APPROVAL REQUIREMENTS

Adjacent property support is needed. This tool significantly impacts driving patterns in a neighborhood by forcing residents to find alternative routes to and from their home. Through a petition process conducted by the requestor, sixty-five percent (65%) of all residents in the neighborhood need to support the restriction to be considered. The project may include an initial demonstration project before determining whether the closure is installed permanently.

## TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- Average daily traffic <2000 vehicles
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- 20% of traffic during peak hour is cutting through the neighborhood to avoid adjacent arterial streets
- Significant impact to emergency response
- May restrict parking





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## MODIFYING STREETSCAPE

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### RAISED CROSSWALK

A raised crosswalk is an area of roadway pavement that has been raised approximately 3" and includes crosswalk markings on top. Raised crosswalks are typically implemented on streets where speed control at pedestrian crossing is desired, such as in school zones or adjacent to neighborhood parks. Raised crosswalks can be used in conjunction with other tools such as curb extensions which narrow the crossing distance for pedestrians.



Seattle, Washington (Courtesy of Seattle - DOT)

*Can also be use with:* Curb Extensions

#### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

#### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be designed and constructed.

#### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300 – 3500 vehicles
- Should not be located where they affect driveway access
- Potential noise impacts from motorist traversing the raised crosswalk

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## MODIFYING STREETSCAPE

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### “RESIDENTIAL AREA” SIGNS

“Residential Area” signs are blue and will identify the entrance to a residential area. The sign is designed to promote a sense of community by showing pictures of homes, bicyclists, pedestrians, and vehicles. It has a supplemental plaque that states “Residential Area”.



These signs are placed in areas where traffic improvements have been implemented and/or where there needs to be a definition between a neighborhood and a commercial or business area.

*Can also be use with:* Neighborhood Entrance.

#### PUBLIC PARTICIPATION

Some signs may require adjacent household support. If so, the requestor should be proactive throughout the process of obtaining adjacent property owner support for the project.

#### APPROVAL REQUIREMENTS

Adjacent property support may be needed.

#### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph





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## MODIFYING STREETSCAPE

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### SCHOOL ZONE FLASHING BEACONS

To reinforce reduced speed limits near schools, the City posts flashing yellow beacons near some elementary schools as funding allows. These signs are installed in school zones alerting drivers to slow to 20 mph during school start and dismissal times. Typically, the signs are programmed to flash 30 minutes before start time and 10 minutes following. For dismissal, they begin to flash 10 minutes before dismissal time and 30 minutes following.



School zones are defined as 300 feet from school property or a marked school crosswalk. Traffic fines in school zones are doubled.

***Can also be used with:*** Stationary radar signs

#### PUBLIC PARTICIPATION

Schools or school districts can qualify for traffic safety grants when available.

#### APPROVAL REQUIREMENTS

Residents are notified when school zone flashing beacons are installed.



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# MODIFYING STREETSCAPE

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## SPEED CUSHIONS

Speed cushions are different from speed humps in that they have gaps to allow for the expedient passing of emergency vehicles. Typically speed cushions consist of two or more raised and rounded areas of pavement placed laterally across a road. There are gaps for emergency vehicles to pass through without significant jostling or displacement. Non-emergency vehicles are generally too narrow to travel through the gaps and must drive over the bump helping to reduce vehicle speeds.



Seattle, Washington (Courtesy of Seattle – DOT)

*Can also be used with:* Medians

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300-3500 vehicles
- Moderate impact to emergency response vehicles
- Should not be located where they affect driveway access



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# MODIFYING STREETSCAPE

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## SPEED DOTS

A speed dot is a small circular or oval island located in the center of the road at mid-block locations. It reduces vehicle speeds by narrowing the roadway and redirecting vehicles around the circle. The effect on vehicle speeds depends on the roadway width, in addition to the size and number of speed dots. They can be used in a series resulting in a raised median effect but includes better driveway access. They can also be landscaped.

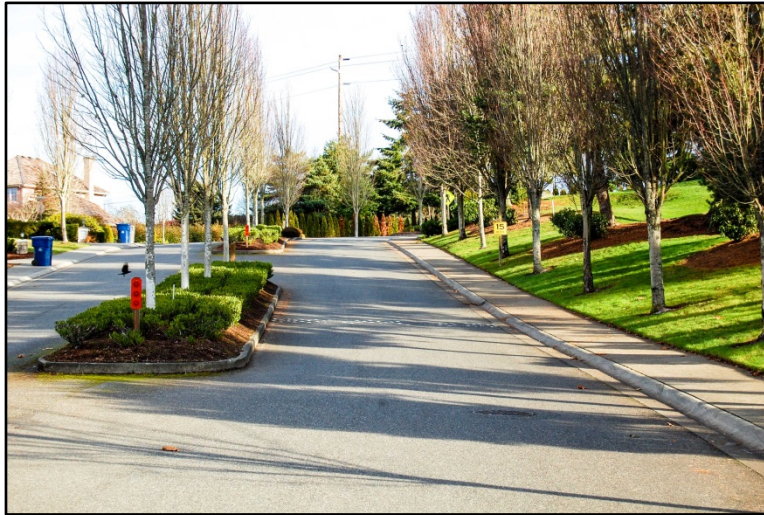


Photo from One Club House Lane Subdivision

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

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- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300-3500 vehicles
- Moderate impact to emergency response vehicles
- Should not be located where they affect driveway access
- May restrict parking
- May require removal of some landscaping in the right-of-way adjacent yards



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## MODIFYING STREETSCAPE

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### SPEED HUMPS

A speed hump is a raised area of roadway pavement approximately 3 inches in height. They are different from the more severe speed humps you may find in a parking lot. A speed hump causes a vehicle to produce a rocking motion, creating an uncomfortable sensation for the occupants of speeding vehicles thus encouraging the driver to reduce their speed.



The City can use two different designs based on roadway characteristics. The first is a 12' long (in the direction of travel) with a gentle raise to 3 inches at the center and the other a 22' long design that is 3" in height, with a 10' flat top. The latter design is used for raised crosswalks and in areas with transit and higher traffic volumes.

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300-3500 vehicles
- Significant impact to emergency response vehicles
- School bus or transit route
- Potential noise impacts from motorists traversing the speed hump





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## MODIFYING STREETSCAPE

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### SPEED LIMIT PAVEMENT MARKINGS

The City uses pavement marking noting the speed limit at locations where drivers may need to be reminded of the posted speed limit. These pavement markings are typically eight feet long and are either painted onto the pavement or applied with a special tape. Locations are selected based on field review and speed study results.



North Bend, WA (Courtesy of NorthBendnews.com)

#### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project.

#### APPROVAL REQUIREMENTS

Residents are notified when speed limit pavement markings are installed.

#### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- Vehicle speeds > 30 mph



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## MODIFYING STREETSCAPE

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### SPEED LIMIT PAVEMENT PARKINGS



**Shown are some examples of markings that have been installed throughout Bellevue. Courtesy of: City of Bellevue.**

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## MODIFYING STREETSCAPE

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### SPEED MOUNDS

Speed mounds are slightly raised areas of pavement that guides drivers through a designated area. Unlike traffic circles which force drivers around the device, speed mounds allow vehicles to pass over the raised pavement. They may be built with colored and/or textured pavement. Speed mounds are used as an alternative to curb extensions or medians and are successful when existing driveways and turning movements restrict physical curbed treatments, such as traffic circles.



Location Unknown (Courtesy of City of Bellevue)

***Can also be used with:*** Curb extensions, neighborhood entrance

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor, sixty-five percent (65%) of residents must support the project for it to be considered for design and construction.

### TRAFFIC CONSIDERATIONS

- Posted speed limit of 25 mph
- The 85<sup>th</sup> percentile speed for traffic must be over 33 mph in residential areas and near parks and over 30 mph in school zones
- Average daily traffic of 300-3500 vehicles
- Moderate impact to emergency response vehicles
- School bus or transit route



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## MODIFYING STREETSCAPE

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### STATIONARY RADAR SIGN

Stationary radar signs direct a driver's attention to the posted speed limit and digitally display the speed of the driver's vehicle on a large message board. This instant feedback results in a greater awareness of the speed limit and encourages motorists to adjust their speed accordingly, if needed. Typically, these signs are installed where other physical traffic calming measures are not appropriate. These installations have been shown to reduce vehicle speeds by 6-8 mph.



Locations are selected based on prioritized scoring criteria and available funding. Scoring criteria considers vehicle speed, traffic volume, street conditions, proximity to parks and school, and reported accident history.

After locations are determined, residents in the proposed locations for the sign must support the installation before proceeding to final design and construction.

***Can also be used with:*** School zone flashing beacons

### PUBLIC PARTICIPATION

The requestor should be proactive throughout the process in assisting the City in obtaining support for the project and serve as a member of the Traffic Committee, if one is formed.

### APPROVAL REQUIREMENTS

Adjacent property support is needed. If this tool is part of a neighborhood-wide plan, the community will determine the level of support. Through a petition process conducted by the requestor sixty-five percent (65%) of residents must support the project in order for consideration of having the signs to be installed.

### TRAFFIC CONSIDERATIONS

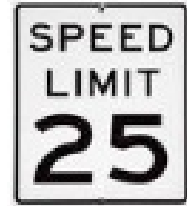
- Score based on predetermined criteria
- Should be placed where on-street parking is minimal



### WHAT'S NOT IN THE TOOL KIT?

#### **Will lowering the speed limit alleviate speeding in my neighborhood?**

Engineering studies show that speed limit signs are not the most significant factor influencing driver speeds. Research indicates that a reasonable and prudent driver will drive the speed suggested by roadway and traffic conditions, to the extent of disregarding the posted speed limit. A speed limit that is unrealistic invites the majority of drivers to disregard posted speeds.



#### **How are speed limits established?**

Washington State Law allows cities and counties to set speed limits that differ from the standard speed limits set under the Revised Code of Washington (RCW) 46.61.400 which states 25 mph on city streets unless otherwise posted. Higher or lower speed limits are determined through traffic review by considering speed studies, roadway geometry, sight distance, and accident history. If these factors are not limiting, the 85<sup>th</sup> percentile speed is used to set the speed limit. The 85<sup>th</sup> percentile speed is the speed at which 85% of vehicles are traveling at or under. It is generally accepted that this speed is considered reasonable for the roadway. Lowering the posted speed limit does not significantly lower traffic speed and can lead to unreasonable ticketing for acceptable driving behavior.

#### **Why are stop signs not used for speed control?**

It seems like an obvious, inexpensive way to reduce vehicle speeds. However, what seems to be a perfect solution can actually create a less desirable situation. When stop signs are used as “nuisances” or “speed breakers”, there is a high incidence of drivers intentionally violating the stop. When vehicles do stop, the speed reduction is effective only in the immediate area of the stop sign, since a large percentage of motorists then increase their speed to make up for lost time. This results in increased mid-block speeds. For these reasons, we do not use stop signs for speed control solutions. Instead, they are used to improve safety at intersections where traffic volumes or accidents require their installation



Some parents believe that the safety of their children playing in or near the street can be enhanced through the installation of “Slow - Children” or “Children at Play” signs. Traffic studies have shown that “Children at Play” signs do not increase a driver’s attention to the point of reducing vehicles speeds or reducing pedestrian accidents. In fact, placement of these signs can increase the potential for accidents by conveying to children and parents a sense of a protected area, which does not exist and cannot be guaranteed. For these reasons, the City does not install these types of signs, and instead encourages parents to find alternative play areas for children, such as a backyard or local park.

