

# Local Traffic Safety Program (LTSP)

## Objectives

The overall objectives of the Local Traffic Safety Program are derived from existing County policy and the mission of the Public Works Department. They are:

1. Improve neighborhood livability by mitigating the impact of vehicular traffic on residential neighborhoods.
2. Promote safe and pleasant conditions for residents, motorists, bicyclists, pedestrians, and transit riders on residential streets.
3. Promote and support the use of transportation alternatives to the single-occupant vehicle.
4. Encourage citizen participation in all phases of LTSP activities.
5. Make efficient use of County resources by prioritizing traffic calming projects.
6. Support the policies contained in the *Transportation Element of the County Comprehensive Plan* to “Develop innovative roadway design standards which enhance neighborhood identities but do not infringe on the safety of motorized and non-motorized traffic”, and “develop a traffic management strategy that minimizes through traffic in residential neighborhoods”.

## Policies

The following policies are established as part of the **LTSP**:

1. Through traffic should be encouraged to use higher classification roadways, as designated in Table 1, titled County Roadway Functional Classifications in the transportation element Comprehensive Plan.
2. A combination of education, enforcement, and engineering methods should be employed. Traffic calming devices should be planned and designed in keeping with sound engineering and planning practices. The County Traffic Engineer shall direct the installation of traffic control devices (signs, signals, and markings) as needed to accomplish the project, in compliance with the MUTCD.
3. Emergency vehicle access should be accommodated in keeping with the existing Fire Departments response standards. If current emergency vehicle access does not meet the existing response standard, traffic calming efforts should not further degrade the response time.
4. Transit service access, safety, and scheduling should not be significantly impacted.
5. Reasonable automobile access should be maintained. Pedestrian, bicycle, and transit access should be encouraged and enhanced wherever possible and within budget limitations. Projects should be coordinated with the Bicycle and Pedestrian programs where appropriate.
6. Parking removal should be considered on a project-by-project basis. Parking needs of residents should be balanced with the equally important functions of traffic circulation, emergency vehicle access, transit, bicycle, and pedestrian movement.

7. Application of the LTSP shall be limited to minor collector roads, which are those neighborhood collector streets that are primarily residential, and to local access streets. Where appropriate, projects on neighborhood collector streets should be coordinated with projects on local access streets.
8. Traffic calming projects on neighborhood collector streets shall not divert a significant amount of traffic off the project street through the use of traffic diversion devices. As a result of a project on a neighborhood collector, the amount of traffic increase acceptable on a parallel local access street shall not exceed 100 vehicles per day.
9. Traffic may be rerouted from one local access street to another as a result of a traffic calming project. The acceptable traffic increase should be defined on a project-by-project basis. An “impact threshold curve” established by the Public Works Department shall serve as a guideline to determine the amount of rerouted traffic that is acceptable on local service streets.
10. To implement the LTSP, certain procedures should be followed by the Public Works Department in processing traffic calming requests in accordance with applicable codes and related policies and within the limits of available resources. At a minimum, the procedures shall provide for submittal of project proposals; project evaluation and selection; citizen participation; communication of any test results and specific findings to project area residents and affected organizations before installation of permanent traffic calming devices; and appropriate review.

**Table 1: Kitsap County Roadway Functional Classifications**

Principal Arterial provides either full or semi-controlled access and includes the freeway system and all State routes. Principal arterials form the backbone of the highway system and should be designed to provide as high a level of service as is practical. Principal arterials provide for movement between urban and rural intra-County population centers. As such, this roadway facility classification predominantly serves “through” traffic with minimum direct service to abutting land uses. In Kitsap County, the Washington State Ferry system routes act as principal arterials connecting one urban area within the Region to another.

Minor arterials provide access to the principal arterial and freeway systems. They provide a lower level of travel mobility than principal arterials to major communities within the County. They provide primary access to or through communities of high density residential, commercial or retail, or industrial land areas. They provide access to abutting properties at pre-determined locations. Trip lengths on minor arterials generally exceed five miles. Minor arterials provide routes for public transit systems between major communities within the County.

Collector provides the primary access to a minor arterial for one or more neighborhoods or non-residential areas. Collectors distribute trips to and from the arterial system. They provide a limited amount of travel through neighborhoods and non-residential areas which originates and terminates externally. Collectors provide direct connections to local roads and minor collectors. They provide collection and distribution routes for public transit systems. The basic trip length is generally between 2 and 10 miles.

Minor Collector provide direct access to local roads and driveway access points to abutting properties. They provide for internal distribution of trips within a neighborhood or nonresidential area, or part of a neighborhood or non-residential area. Minor collectors contain a limited amount of through traffic; traffic is primarily local in nature.

Local Access streets provides access immediately to adjacent properties. Characteristics of local streets include: low traffic volumes, maximum of two travel lanes, no medians, no shoulders, no access control and no preference at signals. Sidewalks and parking may be permitted. Local streets should connect local properties to minor collector streets and in-turn, to higher class facilities. Fixed-bus routes along local streets should generally be discouraged.

## **Traffic Operations Process**

The **Local Traffic Safety Program** represents the commitment of Kitsap County to the safety and livability of residential neighborhoods throughout unincorporated Kitsap County. The program addresses neighborhood traffic safety concerns while enabling citizens and community groups to become involved with the improvement process.

The Local Traffic Safety Program is a three-phase program, with each phase containing specific techniques for addressing traffic concerns in neighborhoods.

Phase I, or “Neighborhood Enhancement Phase” uses passive, less restrictive measures.

Phase II, or “Physical Devices Phase” uses more restrictive physical devices if needed.

Phase III, or “Major Projects” uses County Road Improvement District (CRID), Local Improvement District (LID), or other special funding.

### **Phase I — Neighborhood Enhancement Phase**

Phase I strives to educate the residents on traffic safety issues, reinforcing these through enforcement and engineering measures. Phase I concentrates on less restrictive traffic operation improvements, such as signing, select pavement markings, brush trims, and passive measures such as the Radar/Readerboard Program and the enforcement of traffic laws. The tools are explained in more detail below.

#### ***Signing***

Some citizen requests can be satisfactorily handled with the installation of traffic signs. Some that are frequently used are speed limit, “Road Narrows”, “Pedestrian Advisories” or “No Outlet” signs.

#### ***Brush Trims***

Limited sight distance at intersections or curves may be solved by trimming excess vegetation. If the trees or shrubs appear to be located in the public right-of-way, the County road maintenance crews will notify the adjacent homeowner prior to trimming. If the trees or shrubs are on private property, efforts will be made to have the property owner do the trimming.

#### ***Pavement Markings***

Some traffic information, such as school crossing, crosswalk, edge of road, and stop point at intersections, is communicated by painting appropriate markings directly on the roadway.

#### ***Radar/Readerboard Project***

This actively involves citizens in addressing their speeding concerns. It also provides a mechanism which allows residents to witness first hand whether the speeding problem is real or perceived.

The Radar/Readerboard Project consists of a vehicle that is equipped with an electronic sign connected to a speed radar unit. This equipment is then made available to citizens and/or citizen groups. Residents set up and use the equipment in their neighborhood, and motorists traveling by see their vehicle speed prominently displayed. In addition to enhancing driver awareness, the equipment operators collect data that is returned to the traffic enforcement unit for possible follow-up activities.

### ***Traffic Law Enforcement***

If the radar/readerboard indicated a need for enforcement, the Sheriff's Department may be notified for an emphasis patrol.

### ***Education***

The Local Traffic Safety Program includes the distribution of brochures, flyers and other materials to neighborhoods, homeowners associations and other groups. The materials describe techniques motorists, residents, pedestrians, and parents can use to help address speeding issues and become aware of driver habits. A Local Traffic Safety Coordinator is available to meet with neighborhoods at their request and can address a variety of operational traffic issues and concerns.

## **Phase II — Physical Devices Phase**

Phase II focuses on physical traffic control devices placed in the roadway to control speed, reduce traffic volumes, or reduce accidents. The devices available are speed humps, traffic circles, curb extensions/chokers, and chicanes. These measures may be used after Phase I measures prove ineffective.

There are minimum criteria that must be met to invoke Phase II improvements. If Phase I measures prove ineffective, the community's traffic data is matched against the following minimum criteria:

- 1** Average Daily traffic (ADT) volumes greater than 200 daily vehicles
- 2** 25% of the vehicles must be exceeding the posted speed limit by at least 10 miles per hour, as determined from speed studies, with at least 50 samples (over a 24 hour period) at a given location.
- 3** At least 70% of the residents in the proposed location (residing on the street in question and within one block in all directions) must sign the petition requesting the improvement.
- 4** The street designated for a Phase II device must be a local access or neighborhood collector road, as defined in the current edition of the Kitsap County Transportation Plan.
- 5** The roadway grade where physical devices are to be installed shall not exceed 5%.
- 6** The stopping sight distance standards contained in the current edition of MUTCD will be considered when installing devices on or near horizontal curves.

The Traffic Engineering Section will advise the neighborhood contact person whether or not the minimum criteria is met.

### **Phase II Tools**

Many different tools are used when Phase II intervention is required. These are listed below.

#### **Speed Humps**

Speed humps are designed to allow most vehicles to drive over them at 20 mph. At higher speeds greater discomfort is experienced by drivers and passengers. Speed humps differ markedly from speed bumps used in parking lots, which are an abrupt pavement feature generally three to four inches in height and less than two feet long.

The recommended spacing for speed humps is 200 to 450 feet apart. Two or more humps should be placed in series along a given street. To be most effective several humps should be used in series. Fewer humps or longer spacing between humps will decrease their effectiveness. Improperly spaced humps can result in vehicle speeds higher than the existing speeds prior to installation.

Care must be taken in using humps on streets without curbs so that drivers do not simply avoid them by driving around them on the shoulder. Humps are most effective on streets with vertical curbs and sidewalks.

#### *Advantages of Speed Humps*

- Reduces vehicle speeds in the immediate vicinity of the device.
- Can reduce volumes if there is an adjacent arterial.

#### *Disadvantages of Speed Humps*

- Not attractive.
- Inconveniences neighborhood residents.
- Impedes fire, police and paramedic emergency vehicle access and response time.
- Increase in noise.
- Could divert traffic to other nearby residential streets.

### **Traffic Circles**

These are circular raised islands placed in the center of intersections. They are usually landscaped to provide a visual impression that the street is not a through street. Traffic circles work best where there is a regular grid pattern of local streets with arterials nearby. Vertical curbs, gutters and sidewalks are recommended for pedestrian safety.

#### *Advantages of Traffic Circles*

- Reduces right-angle accidents.
- May reduce vehicle speeds in the immediate vicinity of the device.
- Can be landscaped.

#### *Disadvantages of Traffic Circles*

- Inconveniences neighborhood residents.
- Impedes fire, police and paramedic emergency vehicle access and response time.
- Increases risks to pedestrians and corner residents.
- Can be expensive to install.
- Truck and busses have difficulty with them.

### **Curb Extensions/Chokers**

Chokers narrow a street either at an intersection or at mid block in order to reduce the width of the traveled roadway. Chokers narrow the roadway crossing for pedestrians, reducing their exposure to moving traffic.

#### *Advantages of Curb Extensions/Chokers*

- Can decrease traffic volumes.
- Improves safety for pedestrians.
- Slows traffic.

#### *Disadvantages of Curb Extensions/Chokers*

- Cars, busses, and trucks hit curbs.
- Bicyclists consider them a barrier inhibiting their freedom of movement.
- Expensive to install.

### **Chicanes**

Chicanes are barriers placed in the roadway generally extending from the shoulder to (or past) the centerline. They are placed on opposing sides of the street and force drivers to follow a “serpentine” route through the area of installation. They essentially narrow the roadway to one lane of travel. Chicanes may be landscaped areas or simple barriers. They work best when they are designed into the streetscape and where the streets have curbs and sidewalks.

#### *Advantages of Chicanes*

- Slows traffic.
- Can decrease traffic volume.

#### *Disadvantages of Chicanes*

- Inhibit access by larger vehicles such as trucks, busses, fire trucks.
- Can be dangerous if improperly designed.
- Expensive to install.
- Some drivers may view them as a “race track” challenge.
- The right-of-way for opposing vehicles is unclear.
- Cars and trucks hit curbs.

### **Guidelines For Selecting Devices**

In determining which traffic control device is most appropriate, and in designing each installation, a number of factors shall be considered. In some cases the nature of the problem will determine the most appropriate solution. However, the most obvious choice may need to be modified or excluded depending on the physical conditions of the problem site. The following factors provide some guidance in selecting appropriate LTSP devices.

#### **Emergency Access**

Devices should not be installed on principal emergency access roads for police, fire and aid stations due to the impact on response times and safety.

#### **Kitsap County Transit Bus Routes**

In general, Phase II type devices should not be installed on roads with bus routes since it is difficult for large vehicles to negotiate around some devices. If transit use of the street is necessary, the design should be modified to accommodate them.

#### **School Bus Routes**

Phase II devices should not be installed on roads used as a school bus route

**Presence/Absence of Curbs and Gutters**

The design of individual traffic control devices may need to be modified if the problem roadway does not have curbs or sidewalks. If there are no vertical curbs, drivers may drive onto the shoulders to avoid devices. In extreme cases, it may be necessary to install curbs, gutters and sidewalks as part of the overall LTSP treatment.

**Roadway Width**

In general, Phase II devices should be limited to two way roads, one lane in each direction.

**Drainage Provisions**

All devices must be designed to ensure adequate drainage so that water will not pool around the devices and contribute to unsafe driving conditions.

**Pavement Condition**

Phase II devices should be limited to paved roadways with good surface conditions. If poor surface conditions exist, the roadway should be repaired or overlaid prior to or during installation of any traffic control devices.

**Pedestrian or Bicycle Facilities**

Adequate provisions must be made for nonmotorized travel through any area where Phase II devices are installed. This may include special cuts for bicycles or even off-road pathways around the LTSP device.

**Surrounding Roadway Conditions**

The traffic operation on the arterial facilities in the area surrounding the community may influence the type of improvement, as well as the level of congestion in the community. LTSP devices shall not displace traffic from one neighborhood to another.

**Phase III — Major Projects**

Phase III projects are large and address critical traffic problems in entire neighborhoods. To be considered for Phase III treatment utilizing CRID funds, a neighborhood must have exhausted all other avenues for traffic calming. Neighborhoods must be experiencing persistent and chronic cut-through driving and severe speeding or volume increases that are affecting the livability of the community. Because of costs and the need for fairness, qualified neighborhoods are placed on a priority list.

**Starting the Phase III Process**

Every neighborhood must start with Phase I. Have your neighborhood representative or contact person make contact with a Kitsap County Public Works Local Traffic Safety Coordinator in the Traffic Engineering Section, (360)337-5777.

# Protecting Neighborhoods Through Traffic Calming

Traffic conditions on residential streets can greatly affect neighborhood livability. When our streets are safe and pleasant, the quality of life is enhanced. When traffic problems become a daily occurrence, our sense of community and personal well-being are threatened.

Local Traffic Safety Program is one part of the County's commitment to the safety and livability of residential neighborhoods. Under the program, the Traffic Operations Division works with residents to identify traffic problems in their neighborhoods and find solutions that are acceptable and appropriate.

*Citizen involvement is an important part of all traffic calming projects. The people who live and work in the project area have the opportunity to become actively involved in the planning and decision making process.*

## What Are Speed Hump Projects?

Speed hump projects are appropriate for local access streets that have high traffic speeds, but relatively low traffic volumes. Two types of projects are possible: **streamlined speed hump projects** and **residential speed hump purchase projects**.

Local access streets make up the great majority of the Kitsap County street system. They serve local circulation needs - auto, bicycle, and pedestrian - and provide access to local residences or businesses.

Local access streets that have complicated traffic issues require complex engineering solutions.\* Relatively simple speeding problems, however, can be effectively addressed with speed humps alone. These projects cost less and require less planning and design time than the more complex projects. This traffic calming option enables LTSP to undertake more projects each year and reduces the time residents must wait to have a project constructed on their street.

## How Speed Hump Projects Are Selected

The Local Traffic Safety Program (LTSP) can undertake a limited number of speed hump projects each year. The LTSP has established the following process for deciding which streets are selected for a project.

### Initiating A Project

Speed hump projects are initiated when citizens or neighborhood associations ask for help with traffic problems on their street. If the problem is speeding, the Kitsap County Sheriff's Department, Traffic Division first provides speeding enforcement. If enforcement alone is not effective, the Traffic Division can refer the street for further evaluation.

*\*The Traffic Calming Program also includes projects for complex local access streets and neighborhood collector streets. Those projects have different guidelines and procedures.*

## Qualifying For A Project

LTSP collects and analyzes data about existing conditions on all street segments forwarded by the Traffic Division or through citizen complaints. To be eligible for a speed hump project, a street must meet the following qualifications:

- It must be classified as a local access street, as defined in the Transportation Element of the County Comprehensive Plan (*see Table 1*).
- It cannot be a designated fire response route or transit route.
- It cannot be more than two travel lanes wide.
- It must be paved, and maintained by the County.
- 25% of the traffic speeds must be at least 10 mph over the posted speed limit.
- Traffic volumes must be over 200 vehicles per day, but less than 3,000 vpd.
- The street must meet design requirements for installing speed humps.

Street segments that do not meet these qualifications are not further considered for a project.

## Ranking The Eligible Streets

Street segments that qualify for a project are then scored, based on the scoring chart shown below, and compared with each other. Street segments with the most total points are ranked the highest.

Criteria	Points	Basis For Point Assignment
Speed	0 TO 50	Traffic speeds more than 5 mph over the posted limit (5 points assigned for each mph over the limit, based upon the 85th percentile)
Volume	0 TO 30	Average daily traffic volumes (for volume levels between 200 and 3,000, 1 point assigned for every 40 vehicles over 200; for volumes levels between 1,400 and 3,000, 30 points assigned)
Sidewalks	0 OR 5	5 points assigned if there is no continuous sidewalk on at least one side of the street.
Total Points Possible	85	

## Selecting Streets For A Project

**Streamlined speed hump projects** are selected from the segments with the highest rankings. In identifying projects, compatibility with other transportation projects, budget availability, and other factors are considered.

**Residential speed hump purchase projects** give residents the option to purchase speed humps if their street has not scored high enough for LTSP to undertake a project. In this way, residents do not need to wait until their street is ranked at the top of the project list.

## **Project Procedures For Streamlined Speed Hump Projects**

All traffic calming projects provide for and encourage citizen involvement. The LTSP maintains a close dialogue with neighborhood residents and works with them to develop an acceptable traffic calming plan.

The procedures for streamlined speed hump projects ensure that residents show support for a project before it is constructed. At the same time, they allow projects to be efficiently developed and implemented, with an average time frame of only 6 to 8 months. This minimizes the time residents must wait to have a project constructed and increases the number of projects constructed each year. The following steps are taken for all streamlined speed hump requests received:

### **1. Resident Notification**

LTSP notifies the project requestor or contact resident(s) of the proposed project and schedules an open house. All households and businesses on the project street are notified of the open house.

### **2. Preliminary Design**

LTSP staff members prepare a preliminary project design.

### **3. Open House**

An open house is held. LTSP staff members present project information, such as the number and placement of speed humps, and answer residents' questions. Minor adjustments to the proposed plan can be considered at this step.

### **4. Petition Of Support**

Before the project can go forward, LTSP must receive a petition of support. At least 70% of the households and businesses on the project street must sign the petition. Each household or business is entitled to one signature.

The petition is available at the open house for residents to sign. After that point, residents are responsible for circulating the petition along the project street. They have up to 4 weeks to return the completed petition.

If the petition is not returned, or is returned without the required number of signatures, the project ends at this point. If the petition is returned with the required number of signatures, LTSP notifies residents along the project street of the approximate construction date.

### **5. Project Construction**

The Kitsap County Public Works Department constructs the speed humps.

### **6. Project Evaluation**

Six months after construction is completed, LTSP evaluates the effects of the project (for example, traffic speeds and traffic diversion onto other local service streets). If any unacceptable impacts are identified, corrective measures are taken.

## **7. Speed Hump Removal**

Speed humps can be removed only if the Traffic Engineer determines that they are ineffective or unsafe, or if they have created a negative impact that cannot be corrected.

### **Project Procedures For Residential Speed Hump Purchase Projects**

Two different processes can be followed for residential speed hump purchase projects, depending on the payment method selected. One is the **permit process** and the other is the **local improvement district (LID) process**. The primary differences between them are: the LID process gives property owners the opportunity to give testimony before the County Commissioners and provides a funding mechanism, and the permit process does neither.

Both processes ensure that property owners show support for a project before it is constructed. At the same time, they allow projects to be efficiently developed and implemented. This minimizes the time property owners must wait to have a project constructed and increases the number of projects constructed each year.

The permit process consists of the following steps:

#### **1. Property Owner Notification**

LTSP notifies the project requestor or contact person(s) that the street does not rank high enough for the Kitsap County Public Works to undertake a project. If property owners want to pursue the purchase of speed humps, staff member discuss the available options and provide additional information.

If property owner decide to proceed LTSP schedules an open house. All property owners on the project street are notified of the open house.

#### **2. Preliminary Design**

LTSP staff members prepare a preliminary project design.

#### **3. First Open House**

An open house is held. LTSP staff members present project information, such as the number and placement of speed humps, estimated project costs, and property owners' financial responsibilities if they choose to proceed with the project.

#### **4. Petition Of Support**

Before the project can go forward, LTSP must receive a petition of support. At least 70% of the property owners on the project street must sign the petition. Each property owner is entitled to one signature.

The petition is available at the open house for property owners to sign. After that point, property owners are responsible for circulating the petition along the project street. They have up to 4 weeks to return the completed petition. If the petition is not returned, or is returned without the required number of signatures, the project ends at this point.

## **5. First Deposit**

Property owners return the completed petition, and LTSP verifies that it has the required signatures. Property owners deposit 50 percent of the estimated project costs with the Kitsap County Public Works. Once the deposit is received, LTSP completes the project design.

## **6. Second Open House**

After the design is completed, LTSP notifies property owners of a second open house. At the open house, staff members present the final design and obtain input from property owners. Based on this input, staff may make minor design modifications.

## **7. Second Deposit**

Property owners deposit the remaining 50 percent of the estimated project costs with the Kitsap County Public Works before construction begins. The property owners determine how to collect the money; all property owners are not required to contribute.

If the final project cost is less than the total deposits made by property owners, the Kitsap County Public Works refunds the difference. If the cost is greater, the property owners are billed for the difference.

## **8. Project Construction**

LTSP notifies property owners of the approximate construction date, and the Kitsap County Public Works constructs the speed humps.

## **9. Project Evaluation**

Six months after construction is completed, LTSP evaluates the effects of the project (for example, traffic speeds and traffic diversion onto other local service streets). If any unacceptable impacts are identified, corrective measures are taken.

## **10. Speed Hump Removal**

Speed humps can be removed if the Traffic Engineer determines that they are ineffective or unsafe, or if they have created a negative impact that cannot be corrected. There are no refunds.

## **Local Improvement District (LID) Process**

The process for Local Improvement District differs slightly from the permit process. This procedure is described in the steps outlined below:

### **1. Property Owner Notification**

LTSP notifies the project requestor or contact person(s) that the street does not rank high enough for the LTSP to undertake a project. If property owners want to pursue the purchase of speed humps, staff members discuss the available options and provide additional information.

If property owners decide to proceed, LTSP schedules an open house. All property owners on the project street are notified of the open house.

## **2. Preliminary Design**

LTSP staff members prepare a preliminary project design.

## **3. First Open House**

An open house is held. LTSP staff members present project information, such as the number and placement of speed humps, estimated project costs, and property owners' financial responsibilities if they choose to proceed with the project.

## **4. Petition Of Support**

Before the project can go forward, LTSP must receive a petition of support. A majority of the property owners on the project street must sign the petition. Each property owner is entitled to one signature.

The petition is available at the open house for property owners to sign. After that point, property owners are responsible for circulating the petition along the project street. They have up to 4 weeks to return the completed petition.

If the petition is not returned, or is returned without the required number of signatures, the project ends at this point.

## **5. Signature Verification**

After the signatures are verified, the petition is filed with the Auditor.

## **6. County Commissioners Formation Hearing**

The LID goes forward to the County Commissioners formation hearing. Property owners on the project street have the opportunity to give public testimony.

## **7. Second Open House**

If Commissioners form the LID and authorize project construction, LTSP completes the final design. LTSP holds a second open house to present the final design and obtain input from property owners. Based on this input, staff may make minor design modifications.

## **8. Project Construction**

LTSP notifies property owners of the approximate construction date, and the Kitsap County Public Works constructs the speed humps.

## **9. Final Cost Accounting And Assessment**

After the speed humps are constructed, a final cost accounting and assessment are completed. Although LTSP gives property owners a close estimate of project costs earlier in the process, final costs are not known until the project is complete.

All property owners on the project street are required to pay for the project under the LID. The County Commissioners allocate the project costs.

The Auditor's Office works with individual property owners to determine a suitable payment schedule for them. Property owners have the option of a 5-year or 10-year payment schedule and can pay the complete balance at any time.

An advantage of the LID process is that it provides a funding mechanism for property owners. A disadvantage is that an assessment fee and interest are applied to the balance, raising the total cost of the project.

### **10. Project Evaluation**

Six months after construction is completed LTSP evaluates the effects of the project (for example, traffic speeds and traffic diversion onto other local service streets). If any unacceptable impacts are identified, corrective measures are taken.

### **11. Speed Hump Removal**

Speed humps can be removed if the Traffic Engineer determines that they are ineffective or unsafe, or if they have created a negative impact that cannot be corrected.

## **How Speed Hump Projects Affect Traffic Volumes**

Neighborhood residents often have questions about how a traffic calming project may affect traffic volumes on the project street and other nearby streets. For example, will the number of vehicles using the project street decrease? If so, where does that traffic go? Will traffic on adjacent local service streets increase?

The intent of speed hump projects is to reduce traffic speed and its associated problems. However, traffic volumes may also decrease to some extent as a result of a project. The choices that motorists make as a result of speed humps are listed below.

### **Using An Alternative Transportation Modes**

One of the goals of the Traffic Calming Program is to educate people about alternative transportation modes (public transit, walking, or bicycling) and the benefits they provide. Traffic on the project street may decrease if people decide to use these other transportation choices instead of driving.

### **Using Other Arterial Streets**

Some drivers may prefer not to use the project street after speed humps are installed. For example, drivers who have been using the street as a through-street (rather than just for local access) may choose to use arterial streets instead. This is an appropriate use of the arterials, since they are intended to serve through-traffic.

### **Using Local Service Streets**

Another option drivers may choose is to use adjacent local service streets instead of the project street. For example, residents may turn onto their own local service street earlier than before. This is an appropriate use of the residential street system by local residents. However, some drivers may start using adjacent local service streets as their new through-route. This is not an appropriate use of the street system, and projects are designed to limit its occurrence.

It is not acceptable for a traffic calming project to result in excessive traffic increases on adjacent local service streets. The LTSP has developed an “impact threshold curve” that identifies the allowable range of increased traffic. The curve is applied to each adjacent local service street to show how much additional traffic is appropriate, based in part on the street’s existing traffic levels.

The impact threshold curve is a guideline only, and may be modified to respond to particular street or neighborhood characteristics. In general, however, it establishes the following limitations:

- The maximum amount of traffic increase on any local service street is 100 vehicles per day.
- The total traffic volume on any local service street (the existing volume plus the increased volume resulting from the project) should not exceed 3,000 vehicles per day.

The following measures are taken to ensure that a project will keep within the allowable limits:

- Projects are planned and designed to avoid unacceptable impacts.
- Traffic volumes on adjacent local service streets are monitored before and after the project is constructed.
- Corrective measures are taken if the allowable limit is exceeded.

### **Choosing Traffic Calming Solutions For Speed Hump Projects**

Speed humps are the only engineering tool used for speed hump projects. However, the LTSP also employs education and enforcement as traffic calming solutions.

**Education** alerts people to ways they can help ease traffic problems - for example, by reducing their speed or traveling by bus or bicycle instead of automobile. LTSP has a variety of educational materials and activities that can be targeted to both the specific project area and the general public.

**Enforcement** enlists the help of the Kitsap County Sheriff’s Office Traffic Division to focus enforcement efforts on the project street and increase community awareness of speeding problems.

**Speed Humps** are used in a series to reduce vehicle speeds along a length of street. They are 12 to 14 feet wide (from where they start to where they end in the direction of travel) and 3 to 4 inches tall at their highest point.

There are several advantages to using speed humps. These include:

- Effectively reduce vehicle speeds
- Do not require parking removal
- Pose no restrictions for bicycles
- Do not affect intersection operations

Speed humps do have some disadvantages. The biggest disadvantage is that they can possibly increase traffic noise from braking and acceleration of vehicles, particularly buses and trucks. This should be considered in the overall effectiveness of a speed hump installation.

**Stop Signs** are often considered by residents as a traffic calming device. Stop signs are used to assign right-of-way at an intersection. They are installed at intersections where an accident problem is identified, where unremovable visibility restrictions exist (such as buildings or topography), and/or where volumes are high enough that the normal right-or-way rule is potentially hazardous.

Stop signs are generally not installed to reduce speeding. Studies from Kitsap County Public Works and other jurisdictions show that such use of stop signs seldom has the desired effect. In fact, the use of stop signs solely to regulate speed may cause negative traffic safety impacts (non-compliance with the signs and increased accidents).

### **Protecting Neighborhoods Through Traffic Calming**

Traffic conditions on residential streets can greatly affect neighborhood livability. When our streets are safe and pleasant, the quality of life is enhanced. When traffic problems become a daily occurrence, our sense of community and personal well-being are threatened.

# Neighborhood Collector Street Projects

Local Traffic Safety Program is one part of the County's commitment to the safety and livability of residential neighborhoods. Under the program, the Local Traffic Safety Program works with residents to identify traffic problems in their neighborhoods and find solutions that are acceptable and appropriate.

*Citizen involvement is an important part of all traffic calming projects. The people who live and work in the project area have the opportunity to become actively involved in the planning and decision-making process.*

## What Is A Neighborhood Collector Street?

Neighborhood collector streets are intended to distribute traffic between more principal traffic routes and local service streets within the neighborhood. In other words, they are what are commonly called "through-streets." All of them serve as fire response routes, many are transit streets, and most are designated bike routes. A few are designated truck routes. The neighborhood collector streets that are eligible for traffic calming projects are residential in nature.

Because neighborhood collectors serve multiple purposes, their use must strike a balance between efficiently moving traffic on the one hand, and preserving neighborhood livability on the other.

## What Are The Problems?

The most common problem on residential neighborhood collectors is high vehicle speeds. This in turn can lead to related problems such as traffic noise, accidents, and difficulties for pedestrians and bicyclists.

Since neighborhood collectors are meant to serve as through-streets, traffic calming projects are not designed to decrease traffic volumes.

## What Are The Solutions?

Traffic calming projects look at three kinds of possible solutions: education, enforcement, and engineering.

**Education** alerts people to ways they can help ease traffic problems - for example, by reducing their speed or traveling by bus or bicycle instead of automobile.

**Enforcement** enlists the help of the Sheriff's Office Traffic Division to focus enforcement efforts on the project street and increase community awareness of speeding problems.

**Engineering** tools include a variety of traffic calming devices that can reduce speed or improve safety. For example, speed humps can be used to slow traffic, and curb extensions can improve pedestrian safety.

All of these approaches can be considered when designing a traffic calming project. Resi-

dents also help identify specific neighborhood characteristics that should be taken into account when deciding what to do. The LTSP works closely with all interested citizens to find solutions that best serve the many uses of the neighborhood and the street system.

### **How Neighborhood Collector Street Projects Are Selected**

The Local Traffic Safety Program can undertake a limited number of traffic calming projects for neighborhood collector streets each year. The LTSP has established the following process for deciding which streets are selected for a project.\*

#### **Qualifying For The Program**

To be eligible for the Local Traffic Safety Program, a street must meet the following two qualifications:

- It must be classified as a neighborhood collector street, which is defined as a Minor Collector in the *Transportation Element of the Kitsap County Comprehensive Plan*.
- It must be primarily residential. This means at least 75 percent of the properties with frontage on the street must be in residential zoning.

LTSP will screen all neighborhood collectors by segment. (A segment is that portion of a neighborhood collector that lies between two higher classification streets.) Segments that do not meet the two primary qualifications will be eliminated from further consideration.

#### **Ranking The Eligible Streets**

LTSP will collect data about existing conditions on all eligible street segments. The criteria shown on the next page will be used to score the streets and compare them with each other. Street segments with the most total points will be ranked the highest.

<b>Criteria</b>	<b>Points</b>	<b>Basis For Point Assignment</b>
Speed	0 TO 30	Extent by which traffic speed exceeds posted speed mph (2 points assigned for every 1 mph) based on the 85th

\*The Local Traffic Safety Calming Program also includes projects for local service streets. Those projects have a different selection process.

		percentile speeds
Volume	0 to 25	Average daily traffic volumes (8.33 points assigned for every 1,000 vehicles per day)
Residential Density	0 to 10	2 points assigned for every 100 dwelling units per mile (10 points max.)
No Sidewalks	0 to 10	10 points assigned if there are no continuous sidewalks on either side.
		5 points if there are continuous sidewalks on one side.
Elementary School Crossing	0 or 10	10 points assigned if children must cross the street to an elementary school.
Pedestrian Generators	0 or 5	5 points assigned if pedestrian generators (retail commercial uses, institutional uses, parks, or other schools) occur along or within 1,000 feet of the street
Roadside Paved Shoulders	0 to 6	6 points assigned for no paved shoulders. 3 points for paved shoulder on one side.
Special Circumstances	0 to 4	Accident history, geometrics, etc.
Total Points Possible	100	

**Speed** is given the most importance, since high speed usually affects safety and livability the most. It is also the condition that can be most improved by traffic calming devices.

**Volume** is considered because it contributes to the general traffic conditions on the street. For example, conditions on a street with both high volumes and speeds will be worse than on a street with high speed but lower volumes.

**Residential density** also affects general traffic conditions. For example, higher densities tend to generate more pedestrians and vehicle turn movements. In addition, projects on high-density streets benefit more people than projects on lower-density streets.

The other criteria - **sidewalks, elementary school crossings, shoulders, special circumstances** and **pedestrian generators** - are important considerations because they relate to pedestrian safety and roadway safety.

### Selecting Streets For A Project

Projects are selected from among those that received the highest ranking. In identifying projects, other considerations include the project size and complexity, compatibility with other transportation projects, and budget availability.

LTSP then proposes the project to the neighborhood. All residents and businesses along the project street are asked to fill out a survey, indicating whether or not they would like a traffic calming project to proceed. A project is only undertaken if the survey results are favorable.

### **Project Procedures For Neighborhood Collector Streets**

All traffic calming projects provide for and encourage citizen involvement. The LTSP maintains a close dialogue with neighborhood residents and works with them to develop an acceptable traffic calming plan. A project can be undertaken only if it has the support of residents. The steps below outline the procedures followed for each traffic calming project.

#### **1. Survey To Proceed**

LTSP sends a brochure to all households and businesses within a defined project area to provide background information about the proposed project. The project area depends on the specific project, but generally includes all properties on the project street, on the cross streets, and on the next parallel local service street(s).

For people who occupy a household or business on the project street, a survey is enclosed with the brochure. As residents of the street, these people are most familiar with the problems and issues and will be most affected by any measures that are implemented. The survey asks their opinions about traffic conditions on the street, and whether they would like a project to proceed.

Each household and business is entitled to one response. Nonresident property owners are not included in the survey.

The project can only go forward if at least 30 percent of the surveys are returned, and only if the majority of those responses are favorable.

#### **2. Plan Development**

LTSP staff members work with interested residents to develop a traffic calming plan. Everyone in the project area is invited to participate in this process. The following public meetings are held to exchange information and ideas:

- An initial meeting is held to report on the survey results, identify the issues, and discuss possible solutions. A “working group” may be formed at this meeting, consisting of people who want to take a more active role in developing the project.
- LTSP staff collect and analyze data about the traffic issues that have been identified and present this information at a second public meeting. Meeting participants give staff ideas about possible solutions they would like to see pursued.
- Staff develop possible traffic calming alternatives and present them at a third public meeting for review and comment.

#### **3. Project Ballot**

An open house is held to present the proposed traffic calming plan. Everyone in the

project area is notified of the open house. In addition, households and businesses along the project street receive a ballot asking if they support the project. Both residents and nonresident property owners are included in this ballot.

A majority of those ballots that are returned must be in favor of the project for it to proceed.

#### **4. Design And Construction/Implementation**

If the project is approved by the Commissioners, the County designs and constructs traffic calming devices. Speed humps can usually be constructed within 6 months of approval. If the project involves other engineering devices, design and construction generally takes about 1 year. Education and enforcement tools are also implemented.

#### **5. Project Evaluation**

Six months after construction is complete, LTSP evaluates the effects of the project (for example, traffic speeds and traffic diversion to local service streets). If any unacceptable impacts are identified, corrective measures are taken.

### **How Neighborhood Collector Street Projects Affect Traffic Volumes**

Neighborhood residents often have questions about how a traffic calming project may affect traffic volumes on the project street and other nearby streets. For example, will the number of vehicles using the project street decrease? If so, where does that traffic go? Will traffic on adjacent residential streets (local service streets) increase? The following addresses some of these questions.

#### **Choosing Alternative Transportation Modes**

One of the goals of the Local Traffic Safety Program is to educate people about alternative transportation modes (public transit, walking, or bicycling) and the benefits they provide. Traffic on the project street may decrease if people decide to use these other transportation choices instead of driving.

#### **Diverting Traffic Intentionally Onto Other Streets**

Devices that intentionally divert traffic away from the project street **cannot be used** on neighborhood collectors. This is because the diverted traffic would likely use adjacent local service streets, placing an unacceptable traffic burden on them. Since neighborhood collectors are meant to serve as through-streets, traffic calming projects are not designed to decrease traffic volumes. Instead, the emphasis is on reducing traffic speed and its associated problems.

#### **Choosing To Use Other Arterial Streets**

Although traffic is not intentionally diverted away from the project street, some decrease in traffic volumes may occur as a result of a project. For example, some drivers may prefer not to use the project street after traffic calming devices (such as speed bumps) are installed. One option these drivers may choose is to use other arterial streets instead. This is an appropriate use of these arterials, since they are intended to serve through traffic.

### **Choosing To Use Local Service Streets**

Another option drivers may choose is to use adjacent local service streets instead of the project street. For example, residents may turn onto their own local service street earlier than before to avoid traveling along the neighborhood collector. This is an appropriate use of the residential street system.

However, some drivers may start using local service streets as their new through-route. This is not an appropriate use of the street system, and projects are designed to limit its occurrence.

It is not acceptable for a traffic calming project to result in excessive traffic increases on adjacent local service streets. The maximum allowable increase on any one local street is 100 vehicles per day. The LTSP takes the following measures to ensure that a project will keep within these limits:

- Projects are planned and designed to avoid unacceptable impacts.
- Traffic volumes on adjacent local service streets are monitored before and after the project is constructed.
- Corrective measures are taken if the allowable limit is exceeded.

### **Choosing Traffic Calming Solutions For Neighborhood Collector Streets**

The Local Traffic Safety Program employs three kinds of traffic calming solutions: **education enforcement, and engineering**. All of these approaches are considered when designing a traffic calming project. The LTSP works closely with all interested citizens to select the solutions that best serve the many uses of the neighborhood and the street system.

#### **Education**

Education alerts people to ways they can help ease traffic problems - for example, by reducing their speed or traveling by bus or bicycle instead of automobile. LTSP has a variety of educational materials and activities that can be targeted to both the specific project area and general public. An example is the Radar/Readerboard Program.

#### **Enforcement**

Enforcement enlists the help of the Sheriff's Office Traffic Division to focus enforcement efforts on the project street and increase community awareness of speeding problems. Traffic officers use two tools: traditional enforcement (issuing tickets) and public awareness.

#### **Engineering**

Engineering tools include a variety of traffic calming devices that can reduce speed or improve safety. In deciding which traffic calming devices will work best for a particular street, a number of considerations must be weighed:

- Devices can have both benefits and disadvantages. For example, a device that effectively slows traffic may also have some impact on emergency vehicle response time. Some tradeoffs may have to be made.
- Some devices can never be used on neighborhood collector streets. For example, traffic circles may create unacceptable conflicts with bicycles. Devices that intentionally divert traffic away from the project street also cannot be used. This is because the diverted traffic would likely use adjacent local service streets, placing an unacceptable traffic burden on them.
- Some devices may be generally appropriate for neighborhood collectors, but cannot be used on particular streets because of traffic or physical conditions.
- Specific neighborhood characteristics must be taken into account. Residents may want to consider how traffic devices might affect visual aesthetics, parking needs, or other issues important to the neighborhood.

The types of traffic calming devices that are most often appropriate for neighborhood collector streets are briefly described below. LTSP will continue to identify and evaluate potential new devices that could possibly be incorporated into the program.

### Speed Humps

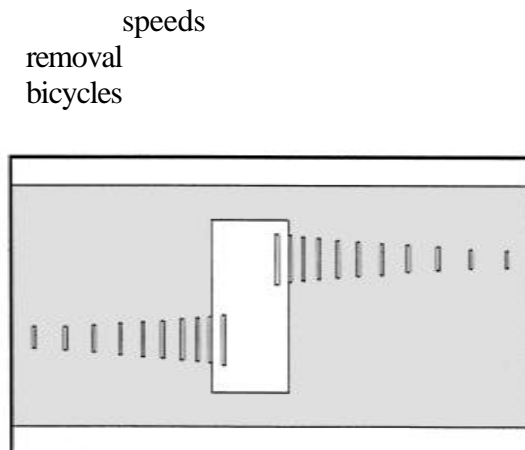
Speed humps are used to slow vehicle speeds. The humps used on neighborhood collectors are approximately 12 to 14 feet wide (from where they start to where they end in the direction of travel) and 3 to 4 inches tall at their highest point. They are used in a series to reduce speeds along a length of street.

#### *Advantages of Speed Humps*

- Effectively reduce vehicle speeds
- Do not require parking removal
- Pose no restrictions for bicycles
- Do not affect intersection operations

#### *Disadvantages of Speed Humps*

- Can possibly increase traffic noise from braking and acceleration of vehicles, particularly buses and trucks
- Slow response time for emergency vehicles
- May increase speeds if improperly placed



*12-14 Foot Hump Cross Section*

### Slow Points

Slow points are small islands in the middle of the street with marked bike lanes on both sides. They serve to narrow the vehicle travel lanes. They can be installed either at intersections or midblock. Slow points are used to enhance pedestrian crossing points and provide a visual narrowing along the

roadway. Depending on their location, they may also result in small to moderate reductions in traffic speed.

*Advantages of Slow Points*

- May reduce vehicle speeds
- Make pedestrian crossing points more visible to drivers
- Prevent vehicles from passing other vehicles that are turning
- Include striped bike lanes along their length

*Disadvantages of Slow Point*

- Require some parking removal
- Could increase speeds if not properly placed
- May require additional lighting
- Restrictive to wide loads

**Curb Extensions**

Curb extensions narrow the street by widening the sidewalk and/or the landscaped parking strip. They are used to make pedestrian crossings easier and to provide a visual narrowing along the roadway that helps increase driver awareness. They can be installed either at intersections or midblock.

*Advantages of Curb Extensions*

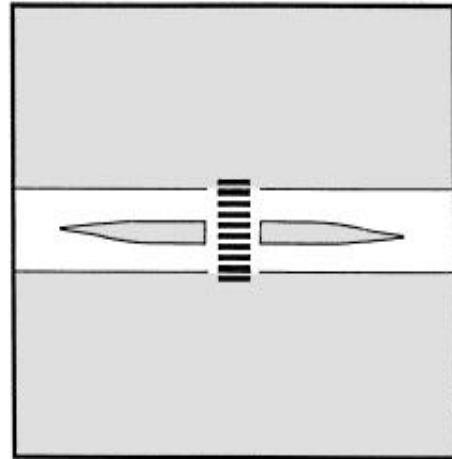
- Reduce pedestrian crossing distance and time
- Make pedestrian crossing points more visible to drivers
- Prevent vehicles from passing other vehicles that are turning
- May visually enhance the street

*Disadvantages of Curb Extensions*

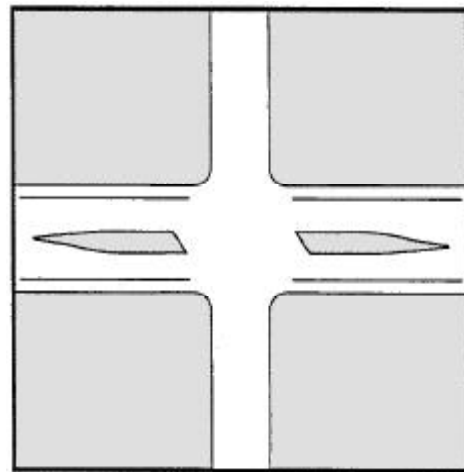
- May make it difficult to accommodate full bicycle lanes
- Require some parking removal
- May cause encroachment of vehicle into oncoming lanes.

**Protecting School Children Through Traffic Calming**

Traffic conditions near schools can seriously affect the safety of school children. Although school zones have a 20 mph speed limit when children are present, these limits alone do not ensure the safety of the children crossing streets within a school zone. The purpose of this program is to improve traffic safety for children in school zones at public and private

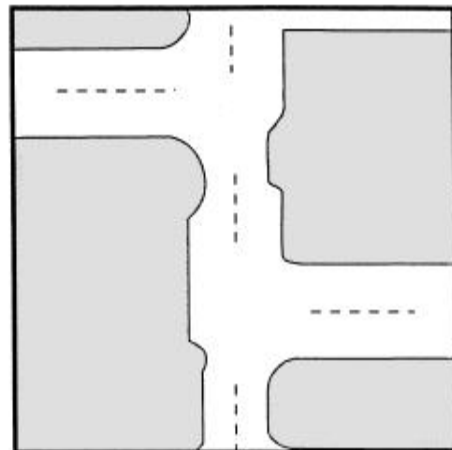


*Midblock*



*Intersection*

visible to drivers  
vehicles that are turning  
through landscaping



*Curb Extension*

# Elementary School Safety Program

*As with all Traffic Calming Projects, citizen involvement is built into the School Safety Program. Parents, school administrators, residents, and neighborhood associations all have opportunities to provide input to the planning and decision-making process for all school safety projects.*

## What Is A School Safety Project?

A school safety project first collects and analyzes data on traffic conditions in specific school zones. This information is then used to design and implement appropriate safety enhancement measures, such as speed humps or curb extensions.

## What Are The Problems?

The most common problems in school zones are excessive vehicle speed and traffic volume in areas where students must cross streets and where they are picked up and dropped off.

## Solutions

Like all traffic calming projects, school safety projects look at three kinds of possible solutions: education, enforcement, and engineering.

**Education** alerts people to ways they can help ease safety problems - for example, by reducing their speed in school zones.

**Enforcement** enlists the help of the Sheriff's Office, Traffic Division to focus enforcement efforts in the project area and increase community awareness of school safety problems.

**Engineering** tools include a variety of traffic calming devices that can reduce speed and improve safety. For example, speed bumps can be used to slow traffic, and curb extensions can improve pedestrian safety.

All of these approaches may be considered when designing a school safety traffic calming project. School administrators, parents and neighborhood residents also help to identify specific traffic characteristics that should be taken into account when deciding what to do. The Local Traffic Safety Program works with all interested citizens to find solutions that best serve the school and the neighborhood.

## How Schools Are Selected For Safety Projects

The LTSP Elementary School Safety Program can undertake a limited number of school safety projects each year. A two-tier method was developed to select schools for safety projects.

## The Two-Tier Selection Method

The first step in this selection method is to develop a list of school zones. This list includes the street classifications, the existing marked crosswalks, and traffic signal locations. Using this information about the characteristics and functional use of streets within the school

zones, a two-tier scoring system is implemented. The first tier assigns points based on street classifications and existing marked crosswalks. These point scores identify and prioritize possible locations for school safety projects. The second tier uses speed and volume data to determine whether traffic conditions are creating a safety problem for school children and, if so, how serious that problem is.

### **Ranking The School Zones**

Criteria for first-tier scoring are based on street classification and the presence or absence of marked crosswalks. A street's classification provides an indication of traffic volume and speeds in the school zone. Because crosswalks are installed at the school's request and require the commitment of the school to provide student crossing guards, the presence of a school crosswalk indicates a popular student crossing area. The table on the following page lists the criteria for awarding points to school zones.

<b>Criteria</b>	<b>Points</b>	<b>Basis For Point Assignment</b>
For each collector street with a marked crosswalk	7	<ul style="list-style-type: none"><li>• The school zone is located on a through street</li><li>• Traffic volume and speed are typically greater on collector streets than on local streets.</li><li>• Crossing a collector street is usually more complicated than crossing a local street.</li></ul>

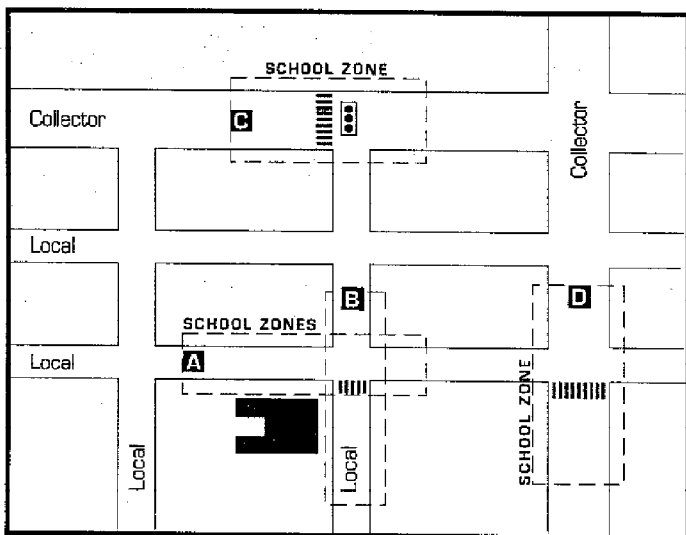
For each collector street without a crosswalk	5	<ul style="list-style-type: none"> <li>• The school zone is located on a through street.</li> <li>• The collector street's high traffic volume and speed are in proximity to a high concentration of students and pickup and drop-off activity</li> </ul>
For each local street with a marked crosswalk	3	<ul style="list-style-type: none"> <li>• The school zone is located on a street where traffic volume and speed are relatively low, but</li> </ul>
For each local street without a crosswalk	1	<ul style="list-style-type: none"> <li>• there is typically a high concentration of student pedestrians and pickup and drop-off activity.</li> <li>• The school zone is located on a street where traffic volume and speed is relatively low, and</li> </ul>
For each crossing with a signal	0	<ul style="list-style-type: none"> <li>• there is typically a lower concentration of student pedestrians and pickup and drop-off activity.</li> <li>• A signal is the highest level of traffic control available.</li> <li>• Priority is given to schools with fewer improvements.</li> </ul>

**The Second Tier**

A short list of schools is chosen based on preliminary scores and on geographic location. For purposes of this program, the County is divided into four districts: north, south, east, and west. Geographic location is taken into account to ensure that one area of the County does not receive a disproportionate number of projects.

Speed and volume data are then collected for the short list of school zones, and points are assigned. The highest priority school safety projects will be selected by comparing each school's point totals.

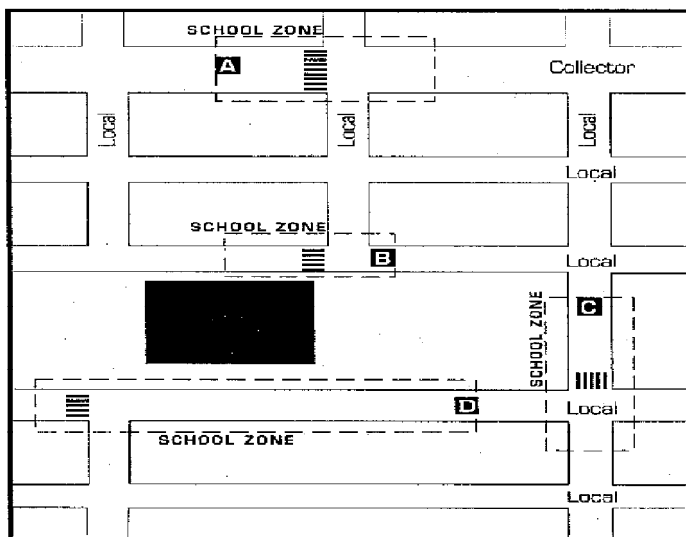
## Examples of First-Tier Scores



**School A**

- A** Local street without crosswalks 1 point
- B** Local street with crosswalks 3 points
- C** Neighborhood collector with crosswalk and signal 0 points
- D** Neighborhood collection street with crosswalk 7 points

**Tier 1 Total 11 points**



**School B**

- A** Neighborhood collector street with crosswalks 7 points
- B** Local street with crosswalks 3 points
- C** Local street with crosswalk 3 points
- D** Local street with crosswalk 3 points

**Tier 1 Total 16 points**

## **Advantages Of The Two-Tier Selection Process**

The two-tier school safety project selection method is designed to be an efficient and cost-effective way to identify and prioritize problematic school zones. By using existing information to develop a project short list, it minimizes the more costly process of new data collection. This conserves program resources for the implementation of school safety projects.

## **Project Procedures For School Safety Projects**

All school safety projects provide for and encourage the involvement of parents, school administrators and the neighborhood association in the development of the project.

The steps below outline the procedures followed for each school safety project.

### **The Project Committee**

A project committee is established for each elementary school safety project to identify problems, suggest possible solutions, and review the project designs developed by the LTSP staff. The project committee typically includes representatives from the project school's administration, the school parent group, the neighborhood association, the Local Fire Department, the local transit authority (when appropriate), and LTSP staff.

### **The Open House Review**

When the project committee has agreed to a design for a school safety project, an Open House is held to allow review of the project by a wider group, including local residents, parents, and other interested parties. Notice of the Open House is sent to residents of the streets affected by the project. The Open House creates an opportunity for exchange of information between all interested parties and LTSP staff. Project plans are then completed and scheduled for final design and construction.

## **Choosing Traffic Calming Solutions For School Safety Projects**

The Traffic Calming Program employs three kinds of traffic calming solutions: **education, enforcement, and engineering**. All of these approaches are considered when designing a school safety project. LTSP staff works with the project committee to select the solutions that best serve the many uses of the neighborhood and the street system.

### **Education**

Education alerts people to ways they can help improve traffic safety - for example, by reducing their speed or traveling by bus or bicycle instead of automobile. LTSP has a variety of educational materials and activities that can be targeted to both the specific project area and the general public. One example is the Neighborhood Speed Watch Program.

### **Enforcement**

Enforcement enlists the help of the Kitsap County Sheriff's Office, Traffic Division to focus enforcement efforts on the project area and increase community awareness of speeding problems. If the radar readerboard indicates a need for enforcement, the Sheriff's Office will be notified and an emphasis patrol will be requested.

## Engineering

Engineering tools include a variety of traffic calming devices that can reduce speed and improve safety. In deciding which traffic calming devices will work best for a particular school zone, a number of considerations must be weighed:

- Devices can have both benefits and disadvantages. For example, a device that effectively slows traffic may also have some impact on emergency vehicle response time. Some tradeoffs may have to be made.
- Some devices may be appropriate for certain streets, but cannot be used on others because of traffic or physical conditions.
- Specific neighborhood characteristics must be taken into account. Parking or other issues important to the neighborhood may have to be considered when choosing traffic devices.

## KITSAP COUNTY TRAFFIC CALMING PROGRAM

The types of traffic calming devices that are most often appropriate for school safety projects are briefly described below.

### School Beacons

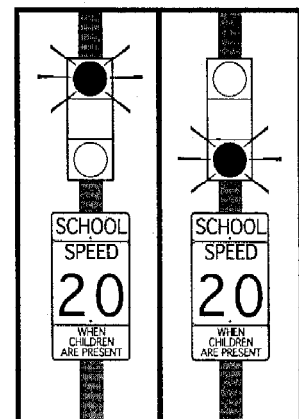
School beacons are flashing lights placed above school zone traffic signs at marked, patrolled elementary school crosswalks. They are activated at specific times during the day when students will be using the crosswalk. Flashing beacons enhance driver awareness of school zones and improve compliance with school safety measures. Their use has been shown to result in reduced traffic speed in school zones.

### Curb Extensions

Curb extensions narrow the street by widening the sidewalk and/or the landscaped parking strip. They are used to reduce pedestrian crossing distance and to provide visual narrowing along the roadway that helps increase driver awareness. They can be installed either at intersections or midblock.

#### *Advantages of Curb Extensions*

- Reduce pedestrian crossing distance and time
- Make pedestrian crossing points more visible

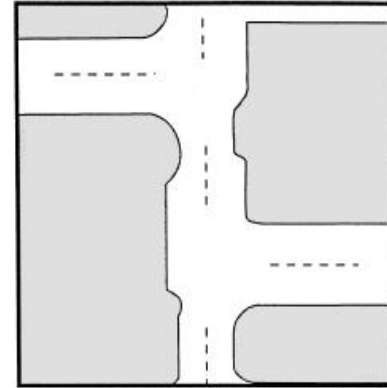


to drivers

- Prevent vehicles from passing other vehicles that are turning
- May visually enhance the street through landscaping

#### *Disadvantages of Curb Extensions*

- Require some parking removal
- May make it difficult to accommodate full bicycle lanes



## Speed Humps

Speed humps are used to slow vehicle speeds. They are used in a series to reduce speeds along a length of street. The design of the speed humps vary somewhat, but the overall effect is the same; to slow vehicular traffic.

The choice of design is based on street and traffic characteristics, neighborhood input, and engineering judgement.

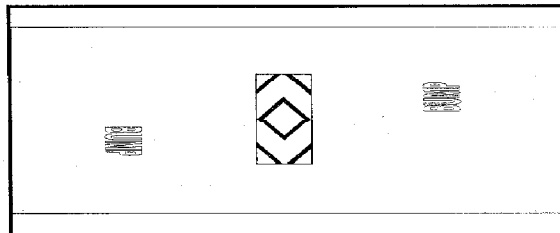
#### *Advantages of Speed Humps*

- Effectively reduce vehicle speeds
- Do not require parking removal
- Pose no restrictions for bicycles
- Do not affect intersection operations

#### *Disadvantages of Speed Humps*

- Can possibly increase traffic noise from braking and acceleration of vehicles, particularly buses and trucks

speeds  
removal  
bicycles  
operations



*14-Foot Hump Cross Section*

## Slow Points

Slow points are small islands in the middle of the street with marked bike lanes on both sides.

They serve to narrow the vehicle travel lanes.

They can be installed either at intersections or midblock. Slow points are used to enhance pedestrian crossing points and provide a visual narrowing along the roadway. Depending on their location, they may also result in small to moderate reductions in traffic speed.

#### *Advantages of Slow Points*

- May reduce vehicle speeds
- Make pedestrian crossing points more visible to drivers

- Prevent vehicles from passing other vehicles that are turning
- Include striped bike lanes along their length

*Disadvantages of Slow Point*

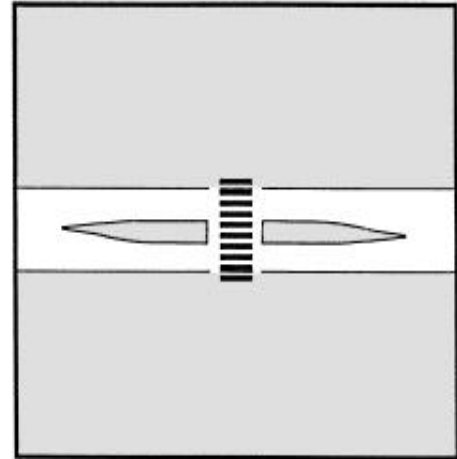
- Require some parking removal
- Could increase speeds if not properly placed
- May require additional lighting
- Restrictive to wide loads

**Stop Signs**

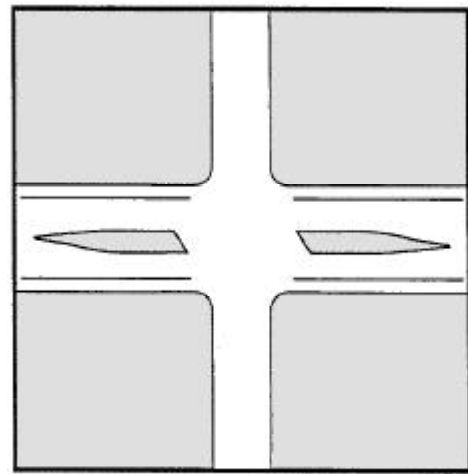
People often ask why stop signs are not used as a traffic calming device.

Stop signs are used to assign right-of-way at an intersection. They are installed at intersections where a crash problem is identified, where unremovable visibility restrictions exist (such as buildings or topography), and/or where volumes are high enough that the normal right-of-way rule is potentially hazardous.

Stop signs are generally not installed to reduce speeding. Studies from Kitsap County and other jurisdictions show that such use of stop signs seldom has the desired effect. In fact, the use of stop signs solely to regulate speed may cause negative traffic safety impacts (non-compliance with the signs and more crashes).



*Midblock*



*Intersection*