



# City of Spokane Traffic Calming Toolbox

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## What is Traffic Calming?

The Institute of Transportation Engineers (ITE) definition of traffic calming is:

'Traffic calming is the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users.'

By design, traffic calming is a self-enforcing traffic management approach that forces motorists to alter their speed or direction of travel. The purpose of traffic calming is to improve safety, especially for pedestrians and bicyclists, and to improve the environment or 'livability' of streets for residents and visitors.

### Objectives of Traffic Calming

- Slow vehicular travel speeds where appropriate
- Reduce the frequency and severity of certain types of collisions
- Enhance the street environment
- Reduce cut-through motor vehicle travel patterns
- More carefully consider safety for non-motorized street users

Traffic Calming techniques may include education, enforcement, or engineering to shift traffic patterns and/or reduce speeds. Most traffic calming measures focus on engineering changes to alter driver behavior. Traffic calming techniques may include physical changes such as roadway narrowing, traffic circles, and signage, among other things. Education and enforcement efforts should be considered prior to engineering alternatives and as a complement to engineering efforts.

## **Toolbox:**

The following pages describe and illustrate each of the traffic calming tools included in this resource guide. There is not a single tool to solve all traffic issues and one tool that may work well in one area for a particular issue may not be effective in another situation. Keys to successful traffic calming is community acceptance and municipal support/maintenance.

Effective traffic calming should be designed with a systematic approach with appropriate and frequent enough spacing of measures and consideration for secondary effects of the installations.

### **Traffic Calming Options:**

- Landscaping/Street Trees
- On-street Parking
- Stationary Radar Sign
- Speed Display Board
- Signage
- Marked Crosswalks where warranted by a traffic study
- Flashing School Zone Devices
- Gateway
- Traffic Circle
- Traffic Island/Median
- Bike Lanes

**Included in the toolbox:**

In addition to describing the measures for traffic calming, a list of general pros and cons associated with each measure is also presented. The intent is to provide the reader with a quick indication of what might be expected if this measure is implemented. Remember, certain measures may or may not realize their full advantage or drawbacks depending on site specific conditions or circumstances. Also included for each measure is a rough estimated cost which is not binding and may vary significantly depending on economic conditions and project details. The costs as presented do not include maintenance of the measures after they are installed.

There is also a statement of whether a study needs to be done. For example, there could be a more complex traffic analysis for a traffic circle as opposed to a less complex analysis for a bump out. This is important to acknowledge due to the fact that the traffic analyses can be expensive and time consuming. When applying for traffic calming projects it is very important to take this into consideration.

Finally, applicants must remember that projects submitted may not be accepted. There must be an identifiable and substantiated reason for the project proposed. There must also be an analysis that shows the need for the project, which is identified as a “warranted” project. Not all projects submitted may be warranted.



# On-Street parking: Parallel & Angled Parking Where Safe and Reasonable

## Description:

On-street Parking, both parallel and angles (where it is warranted and can fit within City of Spokane standards) helps to narrow roadways and calm traffic. The proximity of parked vehicles and necessity to watch for exiting vehicles and opening doors slows traffic.

## Pros:

On-street parking creates a buffer between pedestrians and motorists, improving the walking environment. On-street parking in business districts is generally welcomed.

## Cons:

On-street parking impedes traffic flow. Angle parking creates more right-of-way impacts. Drivers have reduced visibility backing out of angled parking spots, posing a greater risk to bicyclists. Angle parking is required by City of Spokane standards to be signed and have on street painted parking stalls to identify where angle parking can occur.

## Costs:

- \$15.00 per linear foot
- \$200 per sign
- Perpetual maintenance to keep the pavement painted and the signs installed
- Purchase for additional right-of-way could be very expensive.

## Study:

- Traffic Study





# Traffic Circles

## Description:

Traffic circles are used to slow driving speeds approaching intersections. Motorists must reduce speed to maneuver around the circle which can help reduce the frequency and severity of crashes as well as discourage neighborhood cut through traffic

## Pros:

Permanent installation forces reduced speeds at subject intersection. Can provide gateway or identify to a neighborhood.

## Cons:

A single traffic circle used in isolation will not significantly calm traffic and can in fact create another traffic problem on adjacent intersections. A coordinated system of multiple traffic circles or other calming measures is required. Motorists may ignore painted traffic circles, and drive right over them. Raised traffic circles may interfere with snow plowing operations.



## Costs:

- \$35,000.00-\$70,000 depending on location

## Study:

- Traffic Study



## Neckdown/Bulb Out/Curb Extension

### Description:

Neckdowns or bulb outs narrow the roadway by extending the curb at intersections and at warranted and appropriate mid-block locations.

### Pros:

Neckdowns and bulb outs can potentially slow traffic, reduce turning speeds, and can enhance pedestrian safety by reducing crossing distance.

### Cons:

- Relatively high initial costs
- Loss of on-street parking
- Increased maintenance costs
- Complicates plowing and street sweeping operations
- Requires new and additional catch basins to mitigate drainage

### Costs:

- \$30,000 to \$45,000 per bump out

### Study:

- Traffic Study



# Traffic Islands & Medians

## Description:

Concrete or landscaped islands typically located down the center of a roadway or at a roadway entrance.

## Pros:

Landscaped or concrete traffic islands and medians can potentially reduce speeds by narrowing drivable travel lane widths. They can improve pedestrian accommodation by providing a mid-block pedestrian refuge at crossings. They complement improved crosswalks and reduce pedestrian crossing width. They can be used to provide a visual enhancement or gateway to promote neighborhood identity.

## Cons:

- Traffic islands and medians may reduce parking and driveway access, and also narrower road may increase motor vehicle/bicycle conflicts.
- Impedes Left turns
- Landscaping must be perpetually maintained
- Landscaping must meet the City of Spokane standards as to not create an unsafe visual barrier

## Costs:

- \$20,000 to \$40,000

## Study

- Traffic Study



## Landscaping:

### Description:

Landscaping is used in conjunction with other traffic calming measures such as roadway narrowing, traffic islands, and sidewalk improvements to improve the pedestrian environment, define pedestrian and vehicle areas, and provide separation between motor vehicles and pedestrians.

### Pros:

Landscaping increases motorists' awareness and can help define a neighborhood identity. Its installation is long term and increases the quality of life of a community.

### Cons:

Depending on the design, the installation and maintenance costs can be high. Right-of-way impacts may be significant as well.

**Landscaping must be perpetually maintained and meet the City of Spokane standards as to not create an unsafe visual barrier.**

### Costs:

- Trees: \$500.00each
- Shrubs (5 gal.)- \$55.00 each
- Sod: \$10.00 Square Yard

### Study:

- Sight Triangle analysis
- None needed unless impeding right-of-way



## Gateways

### Description:

A signing and/or landscaping treatment to alert motorists they are entering a special area can be used at entrances to neighborhoods, commercial areas, town centers, or busy places of activity. Gateways are typically supplemented with other traffic calming measures.

### Pros:

- Can be visually aesthetic and heighten awareness

### Cons:

- Generally expensive and can require routine maintenance
- Can be potentially distracting to drivers and create potential traffic problems.

### Costs:

- Varies on size, material and maintenance

### Study:

- Sight Triangle analysis
- None needed unless impeding right of way



# Speed Feedback Signs

## Description:

Radar signs are interactive sign that draw motorists' attention to their speed and the road's legal speed limit. They work by alerting motorists when they're exceeding the speed limit. They can be used in residential areas, school zones, construction zones, or other safety zones.

Radars can be permanently mounted on signposts or temporary installations using self-contained trailers.

Radar signs must be warranted and should be used only in areas that show by a traffic study to have a speeding problem.

## Pros:

Radar signs have proven to slow down traffic, even years after their initial installation. They are particularly effective on high volume arterials and highways, where physical measures would restrict traffic flow.

## Cons:

Radar signs do not slow traffic as much as physical measures. Motorists' compliance is voluntary. Enforcement is necessary. Signs require long sight lines to be effective.

## Costs:

- \$30,000-50,000 per pair of signs

## Study:

- Warrant Analysis



# Signage

## Description:

Traffic signs can be used to alert or inform motorists of a condition or a potential situation. Signs need to be selected and placed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD).

Pedestrian/bicycles/school crossing signs and in-street pedestrian crossing signs have been used by municipalities to warn motorists of high pedestrian activity, and help to reduce speeds. Signs are also used in conjunction with other measures such as pavement markings.

## Pros:

- Low cost
- Increases awareness

## Cons:

- Can be considered to clutter the roadway especially on residential streets
- Overall effectiveness can vary

## Costs:

- Varies, depending on type and amount of signage, vertical signs typically are \$500 per sign
- Any school crossing signs must be endorsed by the school

## Study:

- Depends on type of sign and placement



# In-fill Sidewalks

## Description:

Sidewalks are not generally seen as a traffic calming mechanism, however, they do improve pedestrian safety but they do not generally calm traffic on a stretch of road.

## Pros:

- Increases pedestrian safety

## Cons:

- Does not calm or slow traffic

## Costs:

- \$125 - \$200 linearfoot
- \$250.00 linear foot for separated sidewalks
- Add \$2,000 each driveway
- Add \$2,500 to \$5,000 each ADA ramp

## Study:

- Warrant Analysis



## Bike Lanes

### Description:

Designing a portion of the existing roadway cross-section exclusively for bicycle use. Bike lanes are used only on arterial streets and where constant.

### Pros:

- Potentially help to slow speed of vehicles
- Provides for bicycle access

### Cons:

- Reduces roadway capacity
- If not designed well, they can create safety concerns

### Costs:

- \$20 Linear Foot for thermoplastic (heat applied)
- \$500 per sign (2 min. per block, 8 blocks per mile)

### Study:

- Must be in the City of Spokane Master Bike Plan





# Crosswalks

## Description:

Marked crosswalks are a tool for helping pedestrians move safely, conveniently and predictably across roadways. Marked crosswalks alert drivers to expect crossing pedestrians and to direct pedestrians to desirable crossing locations. Marking crosswalks at every intersection is not necessary or desirable. Although many motorists are unaware of their precise legal obligations at crosswalks, it is required that drivers yield to pedestrians in a crosswalk, whether marked or unmarked.

Streetscape design should recognize crosswalks as a part of the pedestrian streetscape. Marked crosswalks are typically used on arterial streets.

## Pros:

- Communicates to the pedestrian where the preferred crossing is.
- Makes drivers aware of pedestrian presence

## Cons:

- Does not accomplish traffic calming
- May give pedestrians false sense of safety
- ADA ramps must be present before a marked crosswalk can be installed which can significantly increase costs

## Costs:

- \$500 for painted parallel bars
- \$2,000 for thermoplastic parallel bars (last longer)
- \$3,000 for thermoplastic piano style bars (last longer)
- \$2,500 to \$5,000 each ADA ramp installed

## Study:

- Warrant analysis

