



TRAFFIC CALMING Handbook

Final
June 2, 2023

PURPOSE

The purpose of the Traffic Calming Handbook is to provide residents and community leaders with information about the City of Greenfield's policies on traffic calming. Effective traffic calming can be achieved through education, engineering, and enforcement. This handbook is designed to provide community leaders with a model to guide residents towards a better understanding of the available tools and the necessary steps to seek basic and comprehensive traffic calming services.

WHAT IS TRAFFIC CALMING

High traffic speeds and volumes, as well as inappropriate driver behavior, can adversely impact neighborhoods. These conditions can also have a negative effect on pedestrians and bicyclist, particularly near schools, community centers, libraries, or parks. The City responds to these conditions by conducting traffic engineering studies which may result in lowering the speed limit, installation of traffic control devices, pedestrian and bicycle improvements, or physical roadway features. Greenfield's Police Department may also deploy officers to enforce traffic and parking regulations and to provide education to school children and communities. These efforts are referred to as traffic calming.

WHO DECIDES WHAT TRAFFIC CALMING IS APPROPRIATE

Every request made to the City of Greenfield for traffic calming is first assessed by the Traffic Safety Committee (TSC) to decide on a course of action. The Traffic Safety Committee (TSC) is comprised of the Director of Public Works, Public Works Superintendent, City Engineer, Police Chief, Traffic Sergeant, and two members of the community, and meets quarterly. If a basic request is made that aligns with the California Manual on Uniform Traffic Control Devices (MUTCD) and vehicle code, then traffic calming devices such as curb markings, street signs, etc. can be installed with the approval of the TSC.

If the solution is outside of the TSC scope, then the TSC will report and recommend traffic calming measures to the City Council. The City Council will ultimately approve or deny a request for traffic calming measures within the City, when appropriate. This Handbook can be used as a guide for both requesting residents and the TSC. The TSC meets quarterly.

For questions or concerns about a traffic calming request, please call or email the Public Works Department at (831) 674-2635 or email at publicworks@ci.greenfield.ca.us

COMMUNITY SUPPORT

Substantial community support is required for the installation of physical roadway devices on either a trial or permanent basis. Utilizing relevant data and community input, the TSC will review proposed traffic calming options. Based on the potential impacts of the proposed options, Public Works staff will determine the affected project area.

PROJECT SCHEDULE

Most projects requiring physical roadway devices will require a trial installation, which will generally occur within four (4) to six (6) months from the date the plan was finalized and supported by the community or approved by the City Council. The duration of the trial will normally be six (6) months, during which time City staff will evaluate the effectiveness of the installation. Minor adjustments may be made to the installation based upon review by City staff and input from the community. Based on all relevant data and community input, the TSC will develop a proposed plan and schedule for permanent installation of the project that will be presented to the City Council for approval.

Projects approved by the City Council will be programmed for installation. Installation of final projects will be dependent on the complexity of the project and the available resources for construction and ongoing maintenance of installed devices.

COMMUNITY FUNDING

The City works within its existing budget for the installation of minor traffic calming devices; however, projects that are not within the City's budget or that require long-term operations and maintenance costs, may require additional community funding. Should a neighborhood choose to install a traffic calming device that is not within the City's Budget, an assessment district may be formed as another mechanism for collecting revenue for the installation and long-term operations and maintenance costs.

OUTREACH REQUIREMENTS

Residents, businesses, and schools that may be affected by the outcome of traffic calming projects that involve physical features must be notified in writing of any planned actions or schedule. Projects that involve the installation of physical roadway features will normally require at least one community meeting with households, businesses, and schools in the project area. Notices for any community meeting must be distributed at least ten (10) calendar days in advance. Projects will also be coordinated with providers or emergency response services, transit services, utilities, and related services.

TRAFFIC CALMING DEVICES

Traffic calming consists of those traffic control devices and programs that can be implemented on a day-to-day basis to regulate, warn, guide, enforce, and educate motorists, pedestrians, and bicyclists. They include standard striping and signing elements as found in the MUTCD, minor roadway design elements to improve visibility and safety, enforcement by police and parking compliance officers, and safety education programs.

Approved traffic calming measures:

Traffic Safety Education Programs

Police Enforcement

Parking Enforcement

Curb Markings

Crosswalks

Radar Trailer(s)

Bulb outs

Striping

High-Visibility Signs

Stop Signs

Traffic Signage

Signed Turn Restrictions

Truck Restrictions

Botts Dots

Rumble Strips

ENGINEERING

CURB MARKINGS

Curb marking are special curb paintings that restrict or limit parking along the curb to enhance safety and/or increase visibility of pedestrians and bicyclists or provide specific parking based on an area's parking needs. Curb marking applications include:

- Red curb at pedestrian ramps
- Red curb at crosswalk or intersection to increase visibility
- Blue curb for disabled-accessible parking
- White and yellow curbs for passenger and freight loading zones Green curb for timed parking



An abundance of painted curb markings creates costly maintenance for City staff. Because of this, City policy recommends that any recommendations for curb markings are painted in accordance with the Vehicle Code of California, per municipal code section 10.04.030:

Considerations in evaluating painted curb requests include:

- Vehicles blocking access to a driveway
- Reoccurring parking citations in an area where parking is not permitted Line of sight issues at an intersection

Positive Aspects

- Provide safer conditions for motorists, pedestrians, and bicyclists
- Easy to install

Negative Aspects

- Could result in loss of parking, increasing parking demand nearby
- Could put an extra burden on City crews to maintain painted curbs

TRAFFIC SIGNAGE

Traffic signs may be installed to make roadway users aware of roadway conditions, to fully utilize parking capacity or to restrict vehicular traffic. Examples include:



- Speed Limit Sign
- Curve Warning
- Sign
- Stop Sign
- Stop Ahead Sign
- Turn Restriction
- Sign Parking Sign
- Dead End Road Sign

Considerations in evaluating traffic signage requests include:

- Reoccurring citations in location
- Signs meet MUTCD warrants
- Narrow road with frequent U-turns
- School crossings
- History of accidents in the area
- New Traffic Study Data

Positive Aspects

- Increases driver awareness of roadway conditions
- Parking signage maximizes utilization of available parking
- Turn restrictions can reduce cut-through traffic
- "Dead End" signs can restrict traffic U-turns

Negative Aspects

- Too much signage may cause drivers to "tune out" most or all signs
- Signage is not self-enforcing

CROSSWALKS

Pedestrians may legally cross any City street, except midblock between signalized intersections or where expressly prohibited by signage. A marked crosswalk (at intersection or mid-block) may be installed to help pedestrians to cross a street. The primary function of marked crosswalks is to guide and channelize pedestrians to a preferred crossing location. Marked crosswalks are most appropriate near schools, recreational facilities, and other pedestrian generators.

Consideration:

- Meets MUTCD Warrants
- History of collisions
- Meets City Policy
- Located near a school

Positive Aspects

- Provides centralized location for pedestrians to cross a street
- Increases driver awareness of pedestrians

Negative Aspects

- Can provide false sense of security to pedestrians entering traffic
- May require removal of parking near crosswalk



RADAR SPEED DISPLAY SIGNS

Radar speed display signs are a permanent version of the radar trailer (see page 11), where drivers are informed of their speeds. These signs are intended for multi-lane streets with higher speed limits and moderate volumes.

Considerations:

- Enforcement only effective when Police are present
- Recent Lowered Speed Limit

Positive Aspects

- Increases Driver awareness of reduced speed limit
- Can be activated only during school pick-ups and drop-off times
- Educational tool

Negative aspects

- Added cost to install and maintain
- Long-term effectiveness may be limited for everyday drivers, who are typically the motorists driving with excessive speeds

STOP SIGNS AND MULTI-WAY STOP SIGNS

The MUTCD states that "Stop signs should not be used for speed control." Stop signs are intended to assign the right-of-way among motorists, pedestrians, and cyclists at an intersection. Although many citizens believe that stop signs help reduce speeds on their street, numerous studies have shown that speeds are as high or higher at mid-block than those locations without stop signs. To address speeding concerns, other measures may be available. Stop Signs are installed based on the MUTCD. If a stop sign is installed and does not meet MUTCD warrants, then it cannot be enforced by the Police Department.

Section 28.06 MUTCD Criteria for stop signs include:

At intersections where a full stop is not necessary at all times, consideration should first be given to using less restrictive measures such as YIELD signs (see MUTCD Sections 28.08 and 28.09).

The use of STOP signs on the minor-street approaches should be considered if engineering judgment indicates that a stop is always required because of one or more of the following conditions:

- A. The vehicular traffic volumes on the through street or highway exceed 6,000 vehicles per day;
- B. A restricted view exists that requires road users to stop in order to adequately observe conflicting traffic on the through street or highway; and/or
- C. Crash records indicate that three or more crashes that are susceptible to correction by the installation of a STOP sign have been reported within a 12-month period, or that five or more such crashes have been reported within a 2-year period. Such crashes include right-angle collisions involving road users on the minor-street approach failing to yield the right-of-way to traffic on the through street or highway.

Section 2B.07 MUTCD Criteria for multi-way stop sign include:

Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal.

The restrictions on the use of STOP signs described in Section 2B.04 also apply to multi-

way stop applications.

Guidance:

The decision to install multi-way stop control should be based on an engineering study.

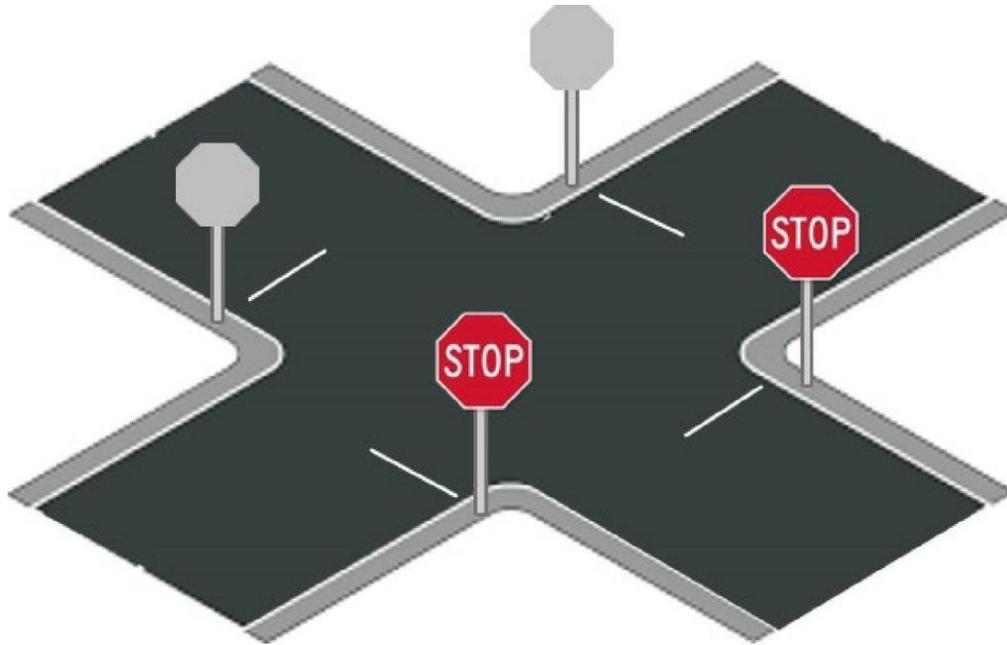
The following criteria should be considered in the engineering study for a multi-way STOP sign installation:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:
 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but
 3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

Option:

Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts;
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.



Considerations

Meets MUTCD Warrants

Positive Aspects

- Reduce right-of-way conflicts at an intersection
- Increases opportunities for pedestrians to cross the roadway
- May discourage cut-through traffic

Negative Aspects

- Unwarranted stop signs increase unnecessary delay for the main approached
- Pedestrian safety compromised if motorists do not comply
- Penalizes all motorists on the main street, even those obeying the speed limit
- Potential traffic diversion onto other streets
- May increase speeds mid-block, as drivers attempt to make up perceived "lost - time" from stopping
- Potential increase in noise and air pollution in the vicinity of the stop from added stops/starts

More MUTCD Stop sign information is available at:

<https://mutcd.fhwa.dot.gov/htm/2009/part2/part2b.htm>

Traffic count data can be found on the websites listed below. Should a street require a new traffic study, arrangements can be made with the Public Works Department by emailing publicworks@ci.greenfield.ca.us or calling (831) 674-2635.

TRUCK RESTRICTIONS

Trucks over 10,000 pounds are restricted on streets specified under Greenfield's municipal code section 10.32. Posting a sign with weight limits may help reduce cut-through traffic of commercial vehicles not doing business within that area.

Considerations:

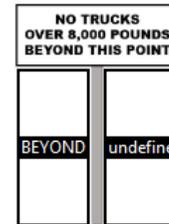
- Residential streets are seeing high truck traffic
- Trucks are using residential streets to cut through traffic

Positive Aspects

- Redirects commercial traffic onto main streets
- Reduces noise, air pollution and street degradation due to trucks on residential streets

Negative Aspects

- Not self-enforcing
- Does not apply to local trucks doing business in the area



BOTT DOTS AND RUMBLE STRIPS

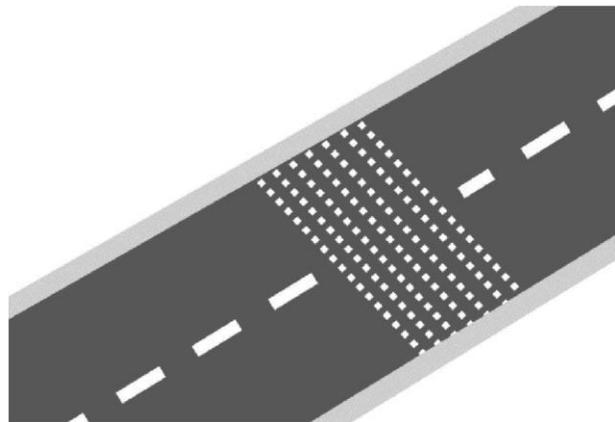
Botts' dots and raised reflectors, or raised pavement markers, are small bumps lining the centerline or edge line of a roadway. Botts dots can be arranged into a rectangular array across the roadway, creating a rumble strip, which causes a rumbling sensation to drivers as they cross. These can reduce travel speeds but also increase roadway noise considerably. Consequently, rumble strips are not ideal for residential neighborhoods.

Considerations:

- Observed speeding traffic
- Data showing an increase in moving violations
- Signage and neighborhood education not helping

Positives Aspects

- Slows speeding traffic
- May decrease volume of vehicles
- Minimal cost to install



Negative Aspects

- Increase in traffic noise in the vicinity

MEDIANS

Medians are raised islands in the center of the roadway that separate traffic directions. Medians are used on wide streets to narrow the travel lanes and ease pedestrian crossings. The Fire Department must approve this type of feature prior to being discussed by the TSC, as it may limit accessibility and response time.



Considerations:

- Data showing an increase in incident reports Data showing an increase in moving violations Need to beautify area
- Need for a barrier between travel lanes
- Location within a commercial or mixed-use area

Positive Aspects

- Narrowed Travel Lanes can slow vehicle speeds
- Provides shorter distance for pedestrians to cross travel lanes
- Breaks up driver's sight-line
- Opportunity for landscaping and visual enhancements

Negative Aspects

- May interrupt driveway access and result in U-turns
- Likely loss of parking
- High cost to construct and maintain

BULB-OUTS

Blub-outs narrow the street width at intersections, creating a shorter and safer pedestrian crossing while encouraging drivers to slow down. These may contain special paving or landscaping and are generally used at intersections where parking is already restricted. The Fire Department must approve this type of feature prior to being discussed by the TSC, as it may limit accessibility and response time.

Considerations:

- Data showing an increase in incident reports
- Data showing an increase in moving violations
- Need to narrow a wide roadway
- Location within a commercial or mixed-use area

Positive Aspects

- Pedestrian crossing distance is reduced
- Narrowed roadway section may contribute to reduction of speeds
- Breaks up driver's sightline
- Opportunity for landscaping and visual enhancements



Negative Aspects

- May reduce visibility for cyclists who are less visible to turning and cross traffic
- May require partial or total loss of parking
- High cost to construct and maintain
- May increase emergency response times
- Debris can collect in gutter and crosswalk in detached bulb-out installations
- Care should be taken to keep motorists from hitting bulb-outs

STRIPING

Striping as a Strategy

Addition of striping, or modifications to existing striping can be an effective strategy to calm traffic. Traffic tends to slow when the lane width is perceived to be narrow. The typical travel lane is 12' wide, but can be narrowed via striping to 10' with the addition of a yellow Centerline Stripe and solid white Fog Line Stripe along the right side of the lane effectively reducing the comfortability of the driver to speed. This often has the added benefit of providing added buffer for cyclists and parked cars for door-opening.

Adding a hatched buffer along bike lanes, or creating islands or bulb-outs with cross-hatched paint can also be effective in "narrowing travel lanes.

Considerations:

- Use striping to effectively narrow travel lanes
- Use hatched striping pattern to create the appearance and feel of bulb-outs and islands
- Use colored paint for bike lanes or pedestrian trails

Positive Aspects

- Relatively inexpensive
- Can be implemented on short notice
- Proven effective

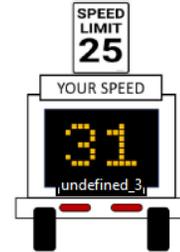
Negative Aspects

- Requires frequent re-painting or less-frequent re-placement of thermo-plastic striping
- short traffic control disruptions for maintenance

ENFORCEMENT

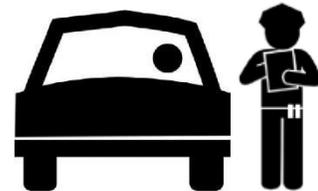
Police Enforcement

Police Enforcement entails the presence of police to monitor speeds and other inappropriate driving behavior and issue citations when necessary. This method is used as an attempt to increase driver compliance on streets where there is adequate signage posted. It is most applicable on streets with documented speeding problems or notable stop sign/red light violations. It can also be used during the learning period when new devices or restrictions are first implemented. For requests for police enforcement, contact the Police Dispatch (Non-Emergency calls) at (831) 385-8311.



Considerations:

- Increase in moving violations
- Observed speeding
- Recent change in roadway speed
- New location for a stop sign



Positive Aspects

- Effective while officer is present at the location
- Allows Police to collect data for future use on traffic calming measures
- Can target specific times deemed to be most problematic
- Can be implemented on short notice
- Targets violators without affecting normal traffic

Negative Aspects

- It is a temporary measure
- Enforcement may be delayed and/or limited, due to police availability and other policing duties

RADAR TRAILER

A mobile radar display trailer informs drivers of their speeds. The radar trailer is applicable on any street where speeding is a problem and there is adequate roadside capacity to accommodate the trailer without creating a hazard.

Considerations:

- Observed speeding traffic
- Enforcement only effective when Police are present

Positive Aspects

- Educational tool
- Good public relations for neighborhoods
- Effective for temporary speed reduction

Negative Aspects

- Not self-enforcing
- Duration of effectiveness is limited
- May require temporary loss of parking

The City has limited trailers that are available for traffic calming throughout the City of Greenfield. If you are interested in having a radar trailer parked on a local street, please contact the City's Police Department at 831-674-5111. Due to limited supplies, the radar trailers move locations based on demand.

Parking Enforcement

Parking Enforcement entails the presence of police to issue citations for non-compliant parking throughout the City. This action is typically implemented when vehicles are repeatedly parked in non-compliant areas that may or may not require striping or signage. For parking enforcement, contact the Police Dispatch (non-emergency calls) at (831) 385-8311.

Considerations:

- Vehicles blocking driveway aprons
- Vehicles parking in a illegal spaces
- Vehicles parking in areas listed in the California Vehicle Code

Positive Aspects

- Effective while officers are present at the location
- Can be targeted to specific time periods that are deemed to be most problematic
- Can reduce maintenance costs by illuminating the need for additional signs or striping

Negative Aspects

- It is a temporary measure
- Enforcement may be delayed and/or limited, due to police availability and other policing duties



**CITY OF GREENFIELD TRAFFIC
SAFETY COMMITTEE**
599 El Camino Real, Greenfield, CA 93927
Phone: (831) 674-2635
Email: publicworks@ci.greenfield.ca.us

Please Print

Date: _____ Name: _____

Address: _____

Email: _____

Daytime Telephone Number: () _____

TRAFFIC SAFETY COMMITTEE REQUEST FORM

STOP CONTROL

1-Way Stop Control 4-Way Stop Control

2-Way Stop Control Traffic Signal

3-Way Stop Control Other _____

At the intersection of _____

Please Note: The City of Greenfield DOES NOT install stop signs to control speeding. Speeding is an enforcement issue. If this is your concern, please contact the City's Police Department at (831) 674-5111.

RESTRICTED PARKING

No Parking / No Stopping Loading Zone

Time Restricted Parking Zone Other _____

On _____ between/at/near _____

Reason: _____

SIGN REQUEST

Requested Sign: _____ Location: _____

Reason: _____

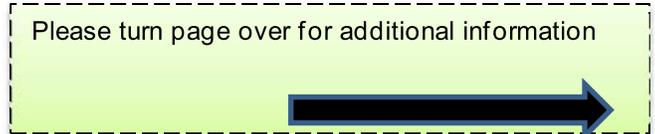
OTHER REQUEST

Request: _____

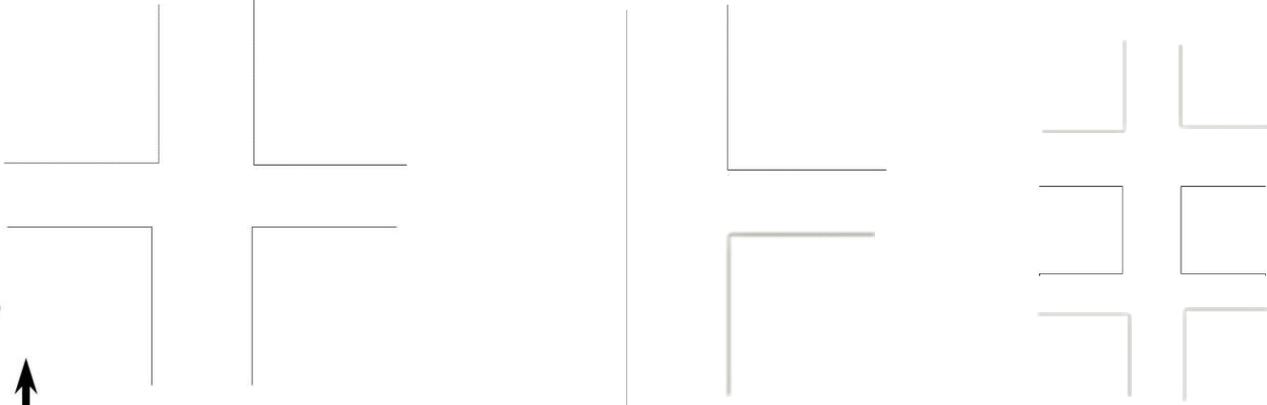
Reason: _____

Public Works Staff Use Only

Sent by: _____ on _____



YOU MAY USE ONE OF THESE SAMPLE MAP INTERSECTIONS.
BE SURE TO INDICATE STREET NAMES.



Additional Information:

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

Signature: _____

Date: _____

Printed Name: _____

Please Note:

- *The City of Greenfield, as a practice, does NOT install speed bumps on City-maintained roads.*
- *The City of Greenfield does not install "Children at Play" signs on a public roadway.*
- *This request is being taken to the Traffic Safety Committee, which meets on a quarterly basis. For information regarding the Traffic Safety Committee's next meeting, please contact the Public Works Department at 831-674-2635*
- *When there is no speed limit posted on a road, the Basic Speed Law as stated in Section 22350 of the California Vehicle Code applies.*

Speeding is an enforcement issue. Past experience has shown the most effective tool to curtail speed violators is active law enforcement. Should you observe habitual speed violators in your community, it is recommended you contact our local Police Department. Information relating to vehicle description, time of day, direction of travel, and license plate number is very useful for the Police Department in prioritizing limited manpower and resources.

Please email this form and any additional information to
publicworks@ci.greenfield.ca.us

Thank you for your interest in traffic safety.