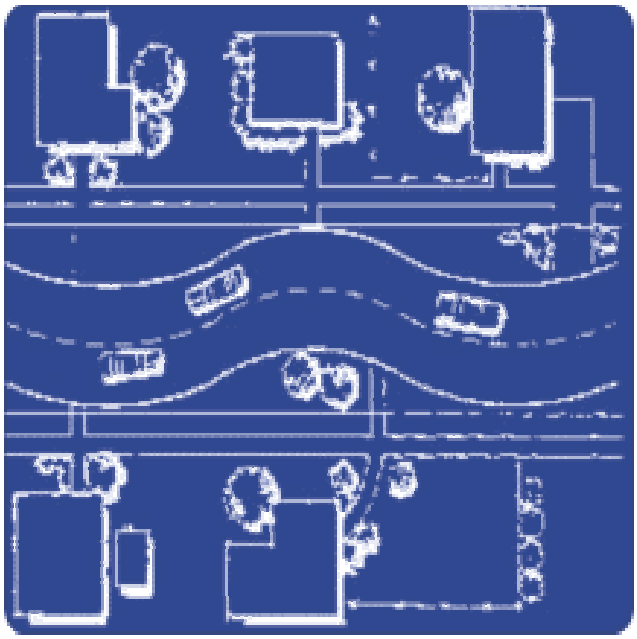
CITY OF MANTECA

NEIGHBORHOOD TRAFFIC CALMING PROGRAM



Prepared by
Public Works Department
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CITY OF MANTECA

NEIGHBORHOOD TRAFFIC CALMING PROGRAM

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NEIGHBORHOOD TRAFFIC CALMING PROGRAM

EXECUTIVE SUMMARY

The primary goal of the Neighborhood Traffic Calming Program (NTCP) is to speed the process whereby residents and property owners may obtain relief from traffic-related concerns; specifically the negative aspects of traffic speed and volume on neighborhood streets and give the Public Works Department the ability to move forward with certain measures to address these negative aspects of traffic without the necessity of consulting the City Council in every instance.

The purpose of the NTCP is to reduce the speed and/or amount of traffic on local streets through specific management techniques, possibly including the temporary or permanent installation of traffic control devices. In this instance, traffic management devices will only be recommended for local neighborhood streets; no collector or arterial streets will be included in the traffic calming program.

The NTCP does not mean that actions will not be taken to address residents or property owners concerns regarding collector and arterial streets. The City of Manteca recognizes that collector and arterial streets typically serve a very large area or population and special treatment of these types of facilities is appropriate.

Why Traffic Calming?

The City of Manteca adopted this approach to neighborhood traffic calming as a result of much concern about neighborhood traffic and the increased staff workload to investigate request for service from citizens. It has become ineffective and inefficient to bring every issue to the City Council as though it were a unique and unusual circumstance. Many requests for service are of the same nature and similar responses to most circumstances is appropriate. Staff spends considerable time collecting data, authoring memoranda and ancillary reports to the City Council and conducting follow-up studies. The City Council spends much time considering the same issues, reports and studies from residents and homeowners of different streets, even though the issues are common to many streets. The concern about traffic is not uncommon but widespread. A neighborhood traffic calming program is an effective, systematic and fair method to efficiently resolve such problems.

Major consideration in neighborhood traffic calming programs should include the establishment of police guidelines, public participation, education and enforcement strategies, recommended traffic control devices and criteria for their use.

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The 13 steps of the Neighborhood Traffic Calming Program (NTCP) are briefly listed below and are more fully discussed in the Policy Guidelines Element. The planning process includes a minimum request requirement, a preliminary analysis by City staff of the issue or request, identification of the problem, an education and enforcement effort, identification of other possible solutions, a citizens committee, a mail-back poll of residents and property owners and several public meetings. In some cases, it may be necessary to follow every step, depending on the particular circumstances present.

1. Receipt of an inquiry from a single resident/property owner would result in a request by City staff for a petition from the street or neighborhood.

2. Receipt of a petition from a 20 percent of the residents and property owners of a street or neighborhood.

3. Staff identifies clearly the issue or problem through technical study.

4. The neighborhood affected by the traffic problem, and or proposed solutions is determined for notification and polling purposes.

5. Staff initiates the education and enforcement program as appropriate. Further steps are based on a determination that education and enforcement have not been completely successful.

6. Staff identifies the technically and economically feasible traffic calming measures and devices.

7. Staff conducts an informational meeting with affected residents and homeowners.

8. A citizens committee is formed to establish the objectives and parameters of the project.

9. Staff develops and discusses with the citizen's committee alternatives plans or devices, to arrive at recommended solution(s).

10. A neighborhood meeting is conducted by staff to present recommendation of the citizens committee.

11. Staff polls the neighborhood to gauge acceptance of the proposed traffic control measures.

12. Implement the selected plan or device is implemented if appropriate, or forwarded to the City Council if supported by the neighborhood.

13. Staff conducts an after study to measure the success of the project.

The education and enforcement element of the program is the first action item. It is implemented prior to any other traffic calming measures, including physical devices such as signs or pavement markings. It includes a brief, concentrated period of police enforcement of speed limits, the use of the radar display unit, and education of residents and motorists. Should the education and enforcement effort not have lasting effects on the identified problem, then further steps would be taken, possibly including traffic control devices.

Staff would analyze which traffic control devices would be effective on the street in question. A neighborhood meeting then would be conducted and a citizens committee would be appointed. The citizens committee and staff would establish the objectives of the group and examine the appropriate traffic control measures and then make a recommendation to the neighborhood. A super majority (two-thirds) neighborhood approval would be required for installation of any device.

Particular criteria are required for the installation of each device, both technical criteria and procedural criteria. Table 1 provides a brief overview of possible traffic control measures. Criteria also establish the level of neighborhood support needed to initiate a response and recommend a solution. The Appendix describes the neighborhood traffic calming devices in more detail.

Funding

The City has allocated an initial budget of $25,000. A list is created on a first-come, first-served basis, and if the budget is exhausted, then the list would be carried over to the next year. No additional funds would be expended on the program at this time. The purpose of this requirement is both to contain costs and insure that traffic calming measures are selectively and strategically implemented. Partial resident or property owner financing of traffic calming devices also may be considered.

Neighborhood Traffic Calming Devices

The following list consists of possible neighborhood traffic calming devices. A complete description of the devices and criteria under which items from this list could be implemented is included in the Appendix.

Pavement Markings	Forced Channelization	Traffic Signal
Speed and Warning Signs	One-Way Streets	
Turn Restrictions	Street Closing	
Street Trees	Chicanes	
Chokers and Bulb-outs	Traffic Circles	

Emergency Response Routes

To insure unrestricted response by emergency vehicles, traffic calming measures will only be recommended for local neighborhood streets; no collector or arterial streets will be included in the traffic calming program. A complete list of those streets is shown on the Federal-Aid Functional Classification System Maps. In addition, it may be necessary to limit the number and type traffic calming measures which can be installed on the following streets:

Agate Avenue	Alpine Avenue	Argonaut Street
Birchwood Street	Buena Vista Drive	Bridewell Avenue
Brookdale Way	Cherry Lane	Davis Street
Devonshire Avenue	El Capitan Avenue	El Portal Avenue
Empire Avenue	Foxfire Drive	Hastings Avenue
Jason Street	Kelly Drive	Linden Way
Lupton Avenue	Martha Street	Mylnar Avenue
Nana Place	Oak Street	Park Avenue
Parkview Street	Pheasant Hollow Way	Phillips Drive
Placer Avenue	Poplar Avenue	Sand Castle Way
Sequoia Avenue	Silverado Drive	Springtime Avenue
Sprague Street	Stonum Lane	Swan Drive
Tahoe Street	Veach Avenue	Wetmore Avenue
Windgate Drive		

NEIGHBORHOOD TRAFFIC CALMING PROGRAM

POLICY GUIDELINES ELEMENT

The following policy guidelines are recommended as a guide to the implementation of local street traffic calming projects.

- The first action component of the NTCP is to address neighborhood concerns and to reduce the speed and volume of traffic on local residential streets in local residential neighborhoods.

- The NTCP is limited primarily to local streets. Local streets provide direct access to adjacent properties only, while collector streets also carry traffic to other collector and arterial streets. The NTCP does not apply to roadways designated as arterial streets or above and may not be appropriate for many collector streets.

- Traffic calming measures on collector streets, if deemed appropriate, will be designed primarily to address speed and must be taken to the City Council for approval. No traffic diversion devices shall be used on collector streets.

- Some diversion of traffic from a traffic calmed street to an adjacent street will be unavoidable. An increase of up to 25 percent of existing vehicles or 500 vehicles per day, whichever is less, would trigger an automatic analysis of that street. The analysis could be preformed at a lower level of impact, if deemed appropriate. Some diversion of traffic from a local street to a collector street is appropriate, based on the functional definitions of the two types of streets.

- Traffic not generated by and related to a specific residential neighborhood (nonneighborhood or cut-through traffic) should be encouraged to use arterial streets that are designed for such purposes. The General Plan designates street types and will be used as a guide.

- A low ambient level of nonneighborhood traffic on local streets usually exists and is virtually unavoidable. Ambient through traffic is estimated at between 10 percent and 20 percent of total daily traffic volume.

- Emergency vehicle access will be maintained in all traffic calming plans. Emergency vehicle travel lanes will also be considered when evaluating traffic calming measures.

- Reasonable automobile, pedestrian and bicycle access should be maintained to streets with traffic calming plans.

- Removal of some on-street parking spaces may be necessary to install some traffic calming measures. Parking loss at specific locations will have to be balanced with the neighborhoods desire for the traffic calming device.

- Due to excessive noise, no rumble strips will be installed on local residential streets.

- Installation of stop signs and traffic signals will be used only when warrants or City standards are met.

- A combination of education, enforcement and engineering methods should be used to calm traffic. Traffic calming devices will be planned, designed and used in keeping with sound engineering and planning practices. The Public Works Director shall direct the installation of traffic control devices such as signs and pavement markings, as needed to accomplish traffic control and traffic calming projects, in compliance with the State of California Vehicle Code.

- Requests for traffic calming devices shall be considered on a first-come, first-serve basis and implemented up to the limit of funds available.

- Only approved signs from the State of California Traffic Manual and the Manual on Uniform Traffic Control Devices shall be installed.

- Some traffic calming measures require approval by the affected residents/property owners and the City Council prior to implementation.

NEIGHBORHOOD TRAFFIC CALMING PROGRAM

PLANNING PROCESS AND PUBLIC PARTICIATION ELEMENT

Procedure

The total planning process time for project that do not divert traffic to other streets should not take more than six months and projects that do divert traffic should not take more than nine months. The City of Manteca believes that it is important to act responsibly and with all deliberate speed. A diligent effort has been made to streamline this procedure as much as possible while still including the vital elements of education and citizen and City Council participation.

Planning Process

To be successful, the NTCP includes a structured planning process. A traffic calming project should be responsive to the needs of the residents and property owners of a street and neighborhood. An education and enforcement component will be the initial action item to any request. The main components of the traffic calming planning process are:

1. A inquiry is received from a single resident or property owner: (a) if an incidental request, then the Traffic Engineer will address the issue without further requirements; (b) if a larger issue, then City staff would request a petition from the street or neighborhood. An incidental request is would involve those traffic control devices shown in Category I.

2. The petition is received from a representative number of residents or property owners (10 percent to 25 percent) of a street or neighborhood or from a neighborhood association.

3. The issue or problem is clearly identified through technical study by City staff.

4. The neighborhood affected by the traffic issue is determined for notification and polling purposes.

5. Staff initiates the education and enforcement program as appropriate. Further steps as described below are based on a determination that education and enforcement have not been completely successful as determined by criteria described later in this document.

6. Staff identifies the technically and economically feasible traffic calming measures and devices.

7. An informational meeting with the effected and adjacent residents and property owners is held.

8. A citizens committee of residents and or property owners is formed. A committee may only be necessary in the case of larger problems or neighborhoods.

9. Alternate plans are developed and discussed with the citizens committee to arrive at a recommended solution.

10. A neighborhood meeting is held to present the recommendation(s) of the staff and citizens committee to the residents and or property owners.

11. The neighborhood is polled to gauge acceptance of traffic calming measures. The level of neighborhood support will be based on the number of respondents to neighborhood polling and not on the neighborhood population of residents or properties.

12. Following neighborhood approval of a selected plan, implement the selected plan or device. Should the selected plan require the approval of the City Council, then proceed as necessary.

13. Conduct an after study to measure the success of the project.

Description of Steps: Step 1 – Initiation

Step 1 is the initiation of the process with an inquiry from one or more residents or property owners. A single resident or property owner request for service would be directed to obtain the signatures on a petition of a minimum of 20 percent of the affected residents or property owners. In this manner, some agreement by the neighborhood that a problem actually exists can be expected. There would be an assurance that the individual's concerns also reflect the concerns of the neighborhood. However, a simple or incidental request can be addressed by the Traffic Engineer without the necessity for a petition.

Step 2 through 4 – Identification of Issue

Step 2 would be the petition. Upon receipt of a request from 20 percent of the residents or property owners of a street or neighborhood or from a neighborhood association, staff would initiate Step 3 to identify the issue or problem. Identifying the problem could require data gathering such as vehicle counts or speed surveys. Sometimes a problem can be misidentified or a simple problem can be mitigated independently by staff without further investigation. If a simple solution does not present itself, staff will proceed through the remainder of the process. Staff would make every effort at this step to mitigate the identified problem(s) without the necessity to proceed further. If it is possible to solve or mitigate the situation at this time, it would be preferable to do so.

The identification of the issue or problem also facilitates Steps 4 through 5: neighborhood determination, education and enforcement, and identification of technically and economically feasible traffic calming measures. Steps 3, 4, 5 or 6 may lead to the elimination of any street within a neighborhood from implementation of actual traffic calming devices. Step 3 may reveal that the issue has been misidentified and could be easily resolved through some other means. Step 4 involves the determination of the boundary of the effected area or neighborhood and will be approved by the Director of Public Works. Step 5, education and enforcement, may be sufficiently effective to reduce the problem or situation and Step 6 may determine that no other measures would be effective or that the situation does not meet the criteria for traffic calming devices.

Step 5 – Education and Enforcement

Step 5 of the NTCP is one of the most important; it would constitute the first action component of the NTCP. As an example, in the event of a concern about speeding, Step 5 could consist of letters to drivers advising them of there speed as an education tool, letters to area residents and property owners to advise them that their is concern about speeding in the neighborhood, heightened police enforcement of speed limit on the affected local street(s) and the use of the radar display unit. An initial speed survey will have been completed by staff in Step 3 that confirms that the 85th percentile speed is at or above 32 miles per hour on a residential street or at or above 30 miles per hour in a school zone or near a park area.

Although not an actual citation, the letters may draw the attention of motorist to their excessive speed and help to alert them that they need to slow down, particularly on residential streets. Next, the Police Department would concentrate enforcement of the speed on the affected street. According to the Police Department, this element is typically the most effective portion of the education and enforcement step. The Police Department would first employ the radar display unit, followed by focused speed enforcement to further alert drivers of their speed. A second speed survey would be preformed by staff to determine if these measures have been successful in reducing the 85th percentile speed. Success would be determined to be an 85th percentile speed of not more than 30 miles per hour in a school zone or park area and not more than 32 miles per hour on other residential streets.

Following education and enforcement, staff would perform a third speed survey in approximately one month to determine if the speed has changed from the last survey. This survey would show whether or not there has been a lasting effect from the education and enforcement effort and if that effort needs to be repeated. More than one education and enforcement effort may be necessary to maintain a reduced 85th percentile speed on most streets. Following two attempts at education and enforcement efforts, the process would advance to Step 6, identification of other technically and economically feasible traffic calming measures and devices.

Step 6 – Traffic Calming Measures Evaluation

Following two unsuccessful attempts at the education and enforcement effort, City staff would analyze and identify those traffic calming measures appropriate for the street or neighborhood. The list of criteria for each neighborhood traffic calming measure is included in Table 1. Not all measures are appropriate for all streets, and some streets may not be appropriate for any measure. For example, residents of a collector street may ask for traffic reduction measures. Upon evaluation of the street, staff would recognize that the collector type of street does not qualify for traffic reduction measures as they are intended to carry larger traffic volumes. Staff would explain the criteria to the residents and the decision not to proceed with a traffic calming process. In another example, residents of a neighborhood street may request speed reduction measures but upon a speed survey evaluation, the street does not satisfy the requirement of an 85th percentile speed of 30 or 32 miles per hour for speed reduction measures. Should none of the measures prove to be technically feasible, then staff would inform the neighborhood.

Step 7 – Public Meetings and Public Participation

Should one or more of the measures qualify technically, then staff would proceed to Step 7 and hold the first meeting of the street or neighborhood to explain what has occurred to date. The public noticing guidelines state that for the initial neighborhood meeting and for all City Council meetings, notices are to be sent to all residents and property owners on the effected street or neighborhood as well as to cross-street and parallel streets within 500 feet and any cul-de-sac or dead-end street with access only from the affected street. If applicable, notices also will be sent to residents and property owners of any adjacent intersection or any street onto which traffic could be diverted, depending upon the type of complaint and possible traffic calming measure.

The NTCP recognizes that although traffic issues are not typically unique, neighborhoods often are. Therefore, the NTCP includes a process whereby the affected "neighborhood" can be determined. When traffic problems appear to involve an entire neighborhood or ultimately may require City Council approval or proposed solutions, staff will confirm the affected neighborhood boundary with the City Manager. Staff will review, with the City Manager, the nature of the traffic problem as well as the street configuration and utilization within the area to establish the neighborhood for notification and polling purposes.

Step 8 – Citizens Committee

At the initial neighborhood meeting, staff would ask for volunteers to serve on an ad hoc neighborhood traffic committee with a limited number of participants. Should the neighborhood have an association, then the association would be asked to appoint a committee. The size of the citizen committee would depend on the size of the street or neighborhood requesting traffic calming, but would be a maximum of five members. An

odd number of committee members is recommended in case there is need for any tie-breaking votes.

When traffic calming measures are enacted, some diversion of traffic may occur and would be expected. The Policy Guidelines account for this consequence and accept it, within limits, as normal. Therefore, the boundaries of the neighborhood and who may serve on a citizens committee should be defined such that only the neighborhood residents and property owners should vote on the measure.

Step 9 – Development of Alternative Plans

Once the citizen committee is established, staff would meet with the members to discuss and explain the various traffic calming devices. This process of educating the residents about traffic control in general and specific traffic calming devices is very important. The objective of the process would be to educate the residents and to help everyone understand the principles of traffic calming, the economic feasibility of each measure and the established City Council policies on traffic calming. The results of the staff analysis as to which measure would be technically and economically feasible and which measures would not be technically and economically feasible would also be explained. It is very important at this point to explain the costs of each of the measures to the committee and later at the neighborhood meeting. Should a neighborhood strongly support a solution beyond the funds available, then they would have to go to the City Council with a request for a separate Capital Improvement Project or provide direct dollar support from within the neighborhood. A limit of $10,000 has been established as an equitable amount. Even this amount substantially limits the number of devices that can be implemented should several neighborhoods request expensive items.

Comments from the committee would be sought to enhance the process and provide some guidance to staff. The committee is also very important as a way to educate citizens about the concept of traffic calming and to engender a sense of ownership into the process of selecting the appropriate traffic calming devices. Committee members will be able to communicate with their neighbors about the program.

During the process of selecting a specific neighborhood traffic calming plan, staff will use articles in the newspaper and informational flyers sent directly to the neighborhood residents and property owners in an attempt to educate them about neighborhood traffic calming and other traffic issues in general.

Following the education period, the citizens committees would also participate in the establishment of the objectives and parameters of the project. Understanding the concept of traffic calming will make the setting of objectives and parameters move more quickly and help the neighborhood and committee to be more realistic about what can be accomplished. Agreement as to the project's aim will be essential in evaluating and comparing alternative plans and their relative success.

As Step 9 is to develop and discuss alternative plans, the citizens committee or neighborhood may suggest alternatives that were not evaluated by staff, but the amount of analysis will be less than it would have been without prescreening. It will be necessary to help guide the selection of alternatives. Infeasible or unsound alternatives will not be allowed to proceed. The professional judgement of the Public Works Department staff on technical engineering and safety issues is available for both the neighborhood residents and the City Councilmembers as a guide to the most appropriate solutions to the traffic problems of the area.

Step 10 – Neighborhood Meeting

Once the citizens committee has developed the alternative plans, another neighborhood meeting would be held to explain the process to date and to present the selected alternatives. Staff should present the alternatives, though, it may be beneficial if the citizens committee presents the decision-making process that led to the selection of the specific options. Their understanding of the process that led to the particular options will help to build a sense of ownership with both the process and alternatives.

Steps 11 and 12 – Polling and Notification

Residents and property owners would be polled via a postcard survey to select the most favored alternative(s) in Step 11. At this point, all of the selected options are technically feasible and any of them could be implemented. Upon an approval rate of 67 percent, staff may automatically proceed to installation with some, but not all, measures. A letter would be sent to all residents and property owners describing the results of the poll. For a measure that can be implemented at staff discretion, the anticipated implementation schedule would be included. For measures that require City Council approval, that schedule would be supplied.

The various step outlines are not all required to resolve any specific neighborhood traffic problem but are intended to provide residents and staff with a general framework upon which neighborhoods can build solutions to traffic problems. In smaller neighborhoods, a committee may not be necessary as staff could possibly work with a majority of residents and property owners. In larger neighborhoods with complex traffic problems, a longer process involving additional neighborhood and City Council meetings may be required.

Step 13 – After Study

Should a measure be implemented, a study would be preformed after 12 months. The after study is Step 13. It would gauge the success of the measure on the particular street or neighborhood in which it was installed. The after study also provides staff with real world experience regarding effectiveness to improve decisions at other locations.

NEIGHBORHOOD TRAFFIC CALMING DEVICES BY CATEGORY

Category I Simple Devices to be Installed at the Discretion of the Public Works Director

- Pavement Markings
- Speed and Warning Signs
- Minor Street and Multiway Stop Signs
- Drive 25 Signs

Category II Devices to be Installed at the Discretion of the Public Works Director and with Resident/Property Owner Approval

- Turn Restriction Signs
- Street Trees

Category III Devices that Require City Council Approval, Approval of Residents/Property Owners and Approval of City Staff as to Safety, Technical and Financial Feasibility

- Chokers and Bulb-outs
- Forced Channelization
- One-Way Streets
- Street Closings
- Chicanes
- Traffic Circles
- Traffic Signals

TABLE 1
NEIGHBORHOOD TRAFFIC CALMING PROGRAM

Category I

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Resident Approval or Removal Rate	Cost	After Study
Pavement Markings	Centerlines, Legends and Markings	Speed	Yes	At the Discretion of the Public Works Director	None Required	Varies	No
Speed and Warning Signs	Speed and Warning Signs	Speed	Yes	At the Discretion of the Public Works Director	None Required	$150	No
Stop Signs	Stop Signs	Neither	Not Recommended as a Traffic Calming Device	N/A	N/A	$200	No
Drive 25 Signs	Advisory Sign	Speed	Yes	At the Discretion of the Public Works Director	None Required	$150	No

TABLE 1
NEIGHBORHOOD TRAFFIC CALMING PROGRAM
Category II

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Resident Approval or Removal Rate	Cost	After Study
Rumble Strips	Raised Markers Across the Roadway	Speed	Not Recommended as Traffic Calming Device	N/A	N/A	N/A	N/A
Turn Restrictions	Signs	Volume	Yes	At the Discretion of the Public Works Director with Resident Approval	67%	$150	Yes
Street Trees	Street Trees Every 30 to 50 feet	Speed	Yes	At the Discretion of the Public Works Director, Approval of the Director of Parks and Recreation, with Resident Approval	67%	$150 per tree	No

TABLE 1
NEIGHBORHOOD TRAFFIC CALMING PROGRAM
Category III

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Resident Approval or Removal Rate	Cost	After Study
Chokers and Bulb-Outs	Narrowed Intersections	Speed	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$2,500 Up	Yes
Forced Channelization	Left or Right Turn Prohibitions with Islands	Volume	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$1,000 Up	Yes
One-Way Streets	Directional Assignment of Roadway, Including Turn Prohibition	Volume	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$1,000 Up	Yes

TABLE 1
NEIGHBORHOOD TRAFFIC CALMING PROGRAM
Category III (Continued)

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Resident Approval or Removal Rate	Cost	After Study
Street Closings (Cul-de-Sac)	Complete Closure of Street at Intersection or Midblock	Speed and Volume	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$1,000 Up	Yes
Chicane	Curving Lane Configuration	Speed and Volume	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$2,500 Up	Yes

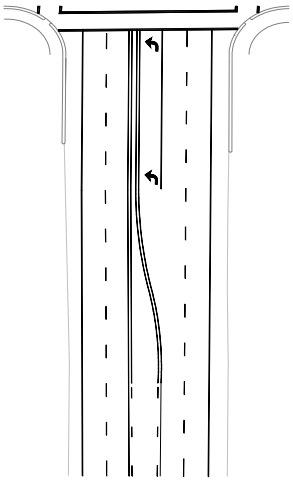
TABLE 1
NEIGHBORHOOD TRAFFIC CALMING PROGRAM
Category III (Continued)

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Resident Approval or Removal Rate	Cost	Afte Stud
Traffic Circles	Raised Circular Islands at Intersections	Speed	Yes	At the Discretion of the Public Works Director, with Resident Approval, and with City Council Approval	67%	$2,500 Up	Yes
Traffic Signals	Assign Right of Way for Vehicles, Pedestrians, and Bicyclists at Arterial Intersections	No	Yes	At the Discretion of the Public Works Director with City Council Approval	N/A	$130,000	No

CITY OF MANTECA

NEIGHBORHOOD TRAFFIC CALMING DEVICES
Category I
Simple Devices to be Installed at the Discretion of the Public Works Director

PAVEMENT MARKINGS



Pavement markings are longitudinal or horizontal lines patterns, words, colors, or other devices applied to, or set into the pavement or curb surface for the purpose of regulating, warning, or guiding vehicular and pedestrian traffic. Mainly, markings channelize or guide the traffic into the proper positions on the roadway, but they also supplement other regulatory and warning devices. Other functions of markings include barriers for opposing traffic, warning devices for sight distance restrictions and supplementary information for turning movement, school zones, and railroad crossing. As an aid to pedestrians, they channelize movement into crosswalks. In general, pavement markings aid motorist, but do not cause them to divert their attention from the roadway.

Markings are used to supplement other devices or are used alone to convey certain messages that would otherwise not be understood. Pavement markings can be paint, thermoplastic, raised pavement markers, delineators, and colored or textured concrete, brick, or asphalt concrete.

Usage:

Pavement markings are installed at the discretion of the Public Works Director according to State and Municipal Codes.

Approval:

At the discretion of the Public Works Director.

Removal:

Pavement markings are typically not removed; however, removal would also be at the discretion of the Public Works Director.

Cost:

Cost for pavement markings varies depending the type of device and scope of the project.

SPEED AND WARNING SIGNS

Speed and warning signs are the easiest and simplest of the techniques on the list. The purpose of posting the speed limit on a residential street is to inform the motorist of the prima facie speed limit of 25 miles per hour and to attempt to gain compliance with the speed limit. Warning signs provide information to the motorist. Fabrication and installation of a sign is a low-cost item. However, the effectiveness of the signs is short-lived and motorists who travel the area soon pay no attention to them. Also, a proliferation of signs could cause visual blight or visual pollution in some neighborhoods.

Usage:

Speed and warning signs are installed at the discretion of the Public Works Director according to State and Municipal Codes.

Approval:

At the discretion of the Public Works Director.

Removal:

Signs of this type would typically not be removed; however, removal would also be at the discretion of the Public Works Director.

Cost:

$150 per sign.

STOP SIGNS

The installation of stop signs as a technique to reduce speed or volume on neighborhood streets is not used. Stop signs at any location must meet State or City warrants. Stop signs are intended to assign the right-of-way at locations when traffic volumes meet specified levels and or there is a sight distance problem or high volume pedestrian traffic. Stop signs do not reduce the speed or volume of traffic and, in fact, result in increased speed, localized air pollution, and rolling stops through the intersection. So-called "jack-rabbit" starts from stop sign controlled intersections create a false sense of security for pedestrians, especially children, at controlled intersections.

Usage:

Stop signs are installed at the discretion of the Public Works Director according to State and adopted City criteria.

Approval:

At the discretion of the Public Works Director.

Removal:

Signs of this type would typically not be removed; however, removal would also be at the discretion of the Public Works Director.

Cost:

Cost is about $200 per sign and pavement legend.

DRIVE 25 SIGNS

Drive 25 signs are installed where other speed reduction techniques are not feasible. For example, if a neighborhood has had two unsuccessful attempts at the education and enforcement effort and other traffic calming measures are deemed inappropriate. Drive 25 signs would be install at or near the main entrance to the subject neighborhood.

Usage:

Drive 25 signs are installed at the discretion of the Public Works Director upon request by the neighborhood. These signs are installed at the main entry points to a neighborhood, under no circumstances will this device be employed on a street by street basis.

Approval:

At the discretion of the Public Works Director.

Removal:

Signs of this type would typically not be removed; however, removal would also be at the discretion of the Public Works Director.

Cost:

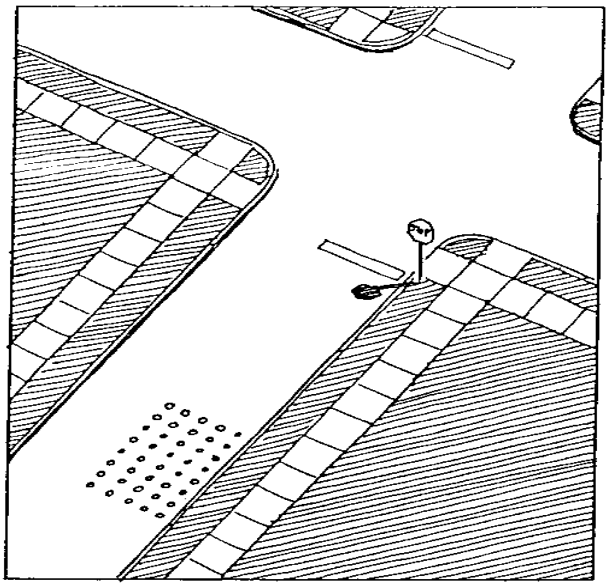
Cost is about $150 per sign.

CITY OF MANTECA

NEIGHBORHOOD TRAFFIC CALMING DEVICES
Category II
Devices to be Installed at the Discretion of the Public Works Director and with Resident Approval

RUMBLE STRIPS

Rumble strips consist of raised pavement markers originally designed to mark centerlines and lane lines. On local streets their purpose is to reduce speed. This alternative has had negative results where it has been implemented. The objection to the rumble strips lies in the noise that is created by vehicles traveling over the strips. Bicyclists find the rumble strips to be objectionable, therefore, they are not recommended on a bicycle route. Increased maintenance may also be required.



Rumble Strips

Usage:

Rumble strips are not normally used in residential areas due to noise concerns.

TURN RESTRICTIONS

The purpose of turn restrictions is to prohibit certain turning movements to block cut-through traffic on residential streets. The success of these signs depends on obeyance by the drivers and on the level of enforcement. After time these signs are often ignored, just as are speed and warning signs. Traffic volume reduction is potentially significant, but a high violation rate reduces their effectiveness. Speed and noise may or may not be reduced with these prohibitions. A trip diversion of about 10 percent on each of the adjacent neighborhood streets should be the maximum expected. Diversion to collector streets is encouraged. Criteria that must be met to implement this type of traffic calming device include:

- Excessive cut-through or nonresident traffic (above 25 percent of the total street traffic) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study.

Usage:

Turn restriction signs may be installed based on the established criteria described above.

Approval:

At the discretion of the Public Works Director and with an approval of 67 percent of the affected residents/property owners.

Removal:

Upon request, within 18 months, 67 percent approval of the residents/property owners on the street with restricted access signage.

Cost:

Cost is about $150 per sign.

STREET TREES

The purpose of planting trees is to give the impression of a narrower street and thus slow traffic. Trees have no impact on volume of traffic but have minor impact on speed. To be effective, trees must be planted consistently along street frontages at a rate of about one every 30 to 50 feet and will need time to mature. Tree planting has sometimes been criticized as merely a "beautification project" rather than a traffic calming project. While trees most definitely also improve the aesthetics of roadways, they do provide value in traffic calming. Criteria for the installation of street trees includes the following:

- Other traffic calming devices are not acceptable to the emergency services.
- The neighborhood is opposed to other measures or other measures previously installed are not as effective as desired.
- The neighborhood is deficient in street landscaping.
- Existing conditions, such as right-of-way and sidewalks, allow for installation of trees.

Usage:

Street trees may be used when all other methods are not available. It is also possible for residents/property owners to implement this alternative themselves through a concerted neighborhood effort.

Approval:

At the discretion of the Public Works Director and Director of Parks and Recreation with an approval of 67 percent of the affected residents/property owners.

Removal:

Planted trees would not be removed unless they were deemed a safety hazard.

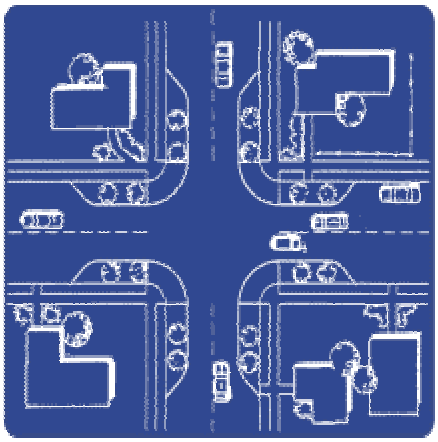
Cost:

Cost is about $400 per 24-inch box tree.

CITY OF MANTECA

NEIGHBORHOOD TRAFFIC CALMING DEVICES
Category III
Devices that Require Approval of Staff as to Safety and Technical and Financial Feasibility, Approval of the Public Works Director, Approval of the Residents, and City Council

CHOKERS AND BULB-OUTS



Necked intersections are also referred to as chokers and bulb-outs and may be installed at either the intersection or at the mid-block or both. The purpose of the narrowing is to reduce the width of the traveled way and thus both slow and reduce traffic. The narrowing is usually accomplished by extending the curb line into the street, whether for a bulb-out or as a simple narrowing. Chokers and bulb-outs reduce traffic volumes if they narrow the travel lanes so that they "feel" very tight to the motorist or are installed frequently along a considerable length of street. The intersection is narrowed with chokers and so decreases the crossing length for pedestrians. However, chokers bring vehicles close to the curbs, which could increase pedestrian hazards, and narrowing of the lanes forces vehicles and bicycles together. Some or all parking may be eliminated, depending upon the extent of the bulb-outs.

Chokers and bulb-outs may or may not be landscaped but should always be constructed with a raised curb. Painting only of chokers and bulb-outs is not effective. Increased maintenance will be required for street sweeping, gutter clearing and landscaping. Chokers and bulb-outs also may have a fairly significant impact on on-street parking, especially if they are installed for some distance along a street. Criteria for installation of chokers and bulb-outs includes the following:

- Average daily traffic (ADT) on the affected street should be between 800 and 3,500 vehicles.
- Street must be at least 750 feet long.
- The speed limit may not be greater than 30 miles per hour.
- The 85th percentile speed must be at least 32 milers per hour.
- The street must be a local street; it may not be an arterial or collector.
- Excessive cut-through or non-residential traffic (above 25 percent) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or by an origin and destination study.
- Adequate provisions for emergency vehicles must be provided.

CHOKERS AND BULB-OUTS (Continued)

Usage:

Chokers and bulb-outs are used in situations that appear to require more action than other types of speed and volume controls discussed previously.

Approval:

At the discretion of the Public Works Director, an approval rate of 67 percent of the affected resident/property owners and with City Council approval.

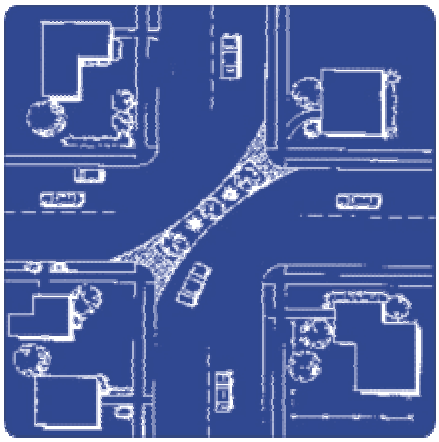
Removal:

Upon request, within 24 months, 67 percent approval of the affected residents/property owners.

Cost:

The cost range from $2,500 for a simple raised curb to $40,000 for low maintenance/high aesthetic landscaped islands, per set (one on each side of the street).

FORCED CHANNELIZATION



Forced channelization consists of one or more traffic islands designed to prevent traffic from making certain movements at an intersection. A diagonal diverter usually forces all traffic onto the intersecting street, thus breaking up through routes and making travel through neighborhoods more difficult. Speed may also be reduced, especially near intersections, and reduces or eliminates drivers that formally used the route as a cut-through. Noise is also lessened due to fewer vehicles on the street. Emergency vehicles may not be able to continue through the intersection, depending upon the type of device used to channelize traffic. A potential decrease in response time could result. Before proceeding with this traffic control device, a turn restriction sign should be implemented for a minimum nine-month trial period. The turn restriction sign is much less expensive and may be effective enough to alleviate the problem. A trip diversion of about 10 percent on each of the adjacent neighborhood streets should be expected. Diversion to collector streets is encouraged.

Criteria that must be met to implement this type of traffic calming device include:

- A turn restriction sign must have failed to alleviate the problem of excessive cut-through traffic on the affected street.
- Excessive cut-through or non-residential traffic (above 25 percent) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study.
- Adequate provisions of access for emergency vehicles.

Usage:

Forced channelization is used only in circumstances where other measures, such as turn restriction signs, have failed to adequately address the problems of speed and volume.

Approval:

With staff approval as to safety, technical feasibility and financial feasibility, an approval rate of 67 percent of the residents/property owners and with City Council approval.

Removal:

Upon request, within 18 months, 67 percent approval of the residents/property owners on the street with channelization.

FORCED CHANNELIZATION (Continued)

Cost:

The cost range from $1,000 for a simple raised curb to $40,000 for low maintenance/high aesthetic landscaped island.

ONE-WAY STREETS

One-way streets legally limits travel on a street to one direction only and can be used to reduce cut-through traffic, either in isolated applications or in combination that creates maze-like routes. This use of one-way streets is entirely different from the pairing of one-way streets for the purpose of improving traffic flow, which may increase traffic speeds.

One-way streets may result in some traffic diversion. Other designs at intersections also result in the same restriction of movement, including chokers and bulb-outs. Before proceeding with this traffic calming measure, a turn restriction sign should be implemented for a minimum nine-month trial period. The turn restriction sign is much less expensive and may be effective enough to alleviate the problem. Criteria that must be met to implement this type of traffic calming device include:

- A turn restriction sign must have failed to alleviate the problem of excessive cut-though traffic on the affected street.
- Excessive cut-through or non-residential traffic (above 25 percent) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study.
- Adequate provisions of access for emergency vehicles.
- Area streets must be a grid pattern.

Usage:

One-way streets are the least preferred alternative for decreasing volume of traffic.

Approval:

With staff approval as to safety, technical feasibility and financial feasibility, an approval rate of 67 percent of the residents/property owners and with City Council approval.

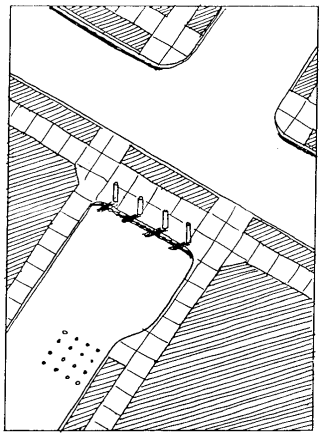
Removal:

Upon request, within 18 months, 67 percent approval of the residents/property owners on the affected street.

Cost:

The cost range from $1,000 for a simple signage to $40,000 for low maintenance/high aesthetic landscaped islands and signage.

STREET CLOSINGS (Cul-de-Sac)



Cul-de-Sac/Street Closures

A street closure is a complete closure of a street at an intersection or mid-block and may result in the creation of a cul-de-sac. Access of emergency vehicles can be a critical issue with certain types of street closures as response times could be dramatically impacted. Bicycle and pedestrian access can usually be maintained. This device is the most extreme traffic calming measure, but can be the most effective measure at reducing the volume of traffic. They may or may not reduce speed, depending on the length of the street. Some on-street parking may be lost at the closure. The street closure will reduce noise and traffic accidents in the immediate vicinity. Signage is required and the aesthetics of the closure will depend upon the type of closure island.

Very specific criteria for the installation of street closings are required. The criteria include:

- Street must be a local neighborhood street only; no arterial or collector may be closed.
- A majority of the daily traffic volume must be cut-through or non-residential traffic (above 50 percent) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study.
- The street must have a turnaround at some location along its length if the street is greater than 150 feet long. This requirement is necessary so that emergency vehicles may turn around once they enter a cul-de-sac street. The street must have a minimum of a 50-foot right of way. Streets also my not be greater than 300 feet long.
- Fire department and the police department must concur in with the street closure and its design.

Usage:

Initially, only simple removable street closures will be employed on a trial basis for a one-year period. This measure is more dramatic, which requires more evaluation.

Approval:

With staff approval as to safety, technical feasibility and financial feasibility, an approval rate of 67 percent of the residents/property owners and with City Council approval.

STREET CLOSINGS (Cul-de-Sac) (Continued)

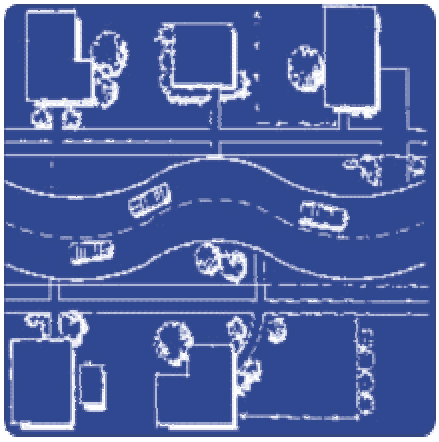
Removal:

Upon request, within 24 months, 67 percent approval of the residents/property owners on the affected street. This device requires an additional condition of a five-year waiting period should resident/property owners again reverse themselves and wish to reinstall the device.

Cost:

The cost range from $1,000 for a simple removable bollards to $40,000 for low maintenance/high aesthetic landscaped island. City staff to determine the most appropriate permanent closure design. Temporary installation of freeway or construction type barriers, sometimes referred to as K-rails, is considered less expensive and is recommended for the trial period.

CHICANES



A chicane is an artificially created series of tight turns over a short section of roadway. They are similar in construction to chokers and bulb-outs but protrude more substantially into the street. Chicanes may be used at intersections or mid-block and be used as a one-way device on local streets and a two-way device on collectors. Chicanes shall not be employed on arterial streets. The purpose of chicanes is to reduce the speeds by 25 percent and volume of traffic by 35 percent. Some noise may be generated by braking and accelerating in the chicane area, however, overall noise should be reduced due to lower speeds and fewer vehicles. Some parking is lost at the location of each chicane.

The islands created by a chicane may be landscaped, but warning signs and reflectors would be required. Maintenance would be increased for landscaping, street sweeping and gutter cleaning. Criteria for the installation of a chicane include the following:

- Street must be a least 750 feet in length.
- The speed limit may not be greater than 25 miles per hour on local neighborhood streets and 30 miles per hour on collector streets.
- The 85th percentile must be at least 7 miles per hour over the posted speed limit.
- A majority of the daily traffic volume must be cut-through or non-residential traffic (above 50 percent) as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study.
- Adequate provisions for emergency vehicles must be provided.

Usage:

Simple removable chicanes are allowed and are initially installed on a trial basis of a one-year trial. This measure is more extreme than some of the other measures and will require some evaluation to determine its appropriateness.

Approval:

With staff approval as to safety, technical feasibility and financial feasibility, an approval rate of 67 percent of the residents/property owners and with City Council approval.

CHICANE (Continued)

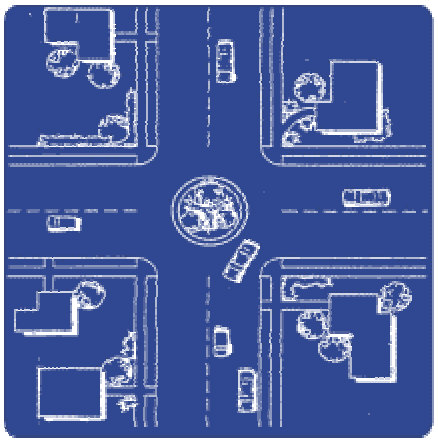
Removal:

Upon request, within 24 months, 67 percent approval of the residents/property owners on the affected street. This device requires an additional condition of a five-year waiting period should resident/property owners again reverse themselves and wish to reinstall the device.

Cost:

The cost range from $2,500 for a simple removable bollards to $40,000 for low maintenance/high aesthetic landscaped island. City staff to determine the most appropriate permanent closure design. Temporary installation of freeway or construction type barriers, sometimes referred to as K-rails, is considered less expensive and is recommended for the trial period.

TRAFFIC CIRCLES



Traffic circles are relatively small circular islands, usually landscaped, placed at the center of intersections of local residential streets. The purpose of traffic circles is to reduce speeds along a length of street, if used in a series, and to reduce accidents at problem intersections. Normally, they are used without stop signs; however, stop sign may be installed if they met warrants. Some series of traffic circles have reduced traffic volume by up to 20 percent; however, a single traffic circle may have little effect on traffic volume. The location of a traffic circle or circles in the center of the street creates the impression from a distance that the street is not through, thus having a psychological impact on the driver that may cause them to seek an alternative route.

Speed is reduced for about 100 to 200 feet before and after the circle, compared to no circle. Circles can reduce speed from 2 miles per hour to 9 miles per hour, but smaller circles reduce speed less. Emergency vehicles response times may be slightly effected. Increased maintenance is required for landscaping, but there is no impact on drainage or street sweeping. Criteria for the installation of traffic circles is as follows:

- Documented accident problem.
- Traffic control signs, such as stop or yield signs, consistently ignored or only partially obeyed.
- Traffic circles are more effective when installed on shorter grid pattern streets.
- Adequate width at each intersection to accommodate the appropriately sized circle.
- The speed limit may not be greater than 25 miles per hour.
- The 85th percentile speed must be at least 32 per hour.

Usage:

Traffic circles may be used at locations that experience accidents at a series of either uncontrolled intersections or a series of intersections with sign controls. Single traffic circles may also be used at individual intersections with similar concerns. Simple removable traffic circles are allowed and are initially installed on a trial basis of a one-year trial.

Approval:

With staff approval as to safety, technical feasibility and financial feasibility, an approval rate of 67 percent of the residents/property owners and with City Council approval.

TRAFFIC CIRCLES (Continued)

Removal:

Upon request, within 24 months, 67 percent approval of the residents/property owners on all cross-streets for removal of one or more traffic circles. This device requires an additional condition of a five-year waiting period should resident/property owners again reverse themselves and wish to reinstall the device.

Cost:

The cost range from $2,500 for a simple removable bollards to $40,000 for low maintenance/high aesthetic landscaped island. City staff to determine the most appropriate permanent closure design. Temporary installation of raised tube type delineators is considered less expensive and is recommended for the trial period

TRAFFIC SIGNALS

The purpose of traffic signals is to control the flow of traffic and to assign vehicular right-of-way. Traffic signals are similar to stop signs and should not be used as traffic calming devices. They are excessively expensive for traffic calming purposes and are inappropriate for the purpose. They do not decrease the speed or volume of traffic and, in fact, can actually increase the volume on certain roads as motorists divert to certain routes without signals to avoid other routes with signals. Signals also have many of the effects the stop signs have, they can cause quick start from the signal and running of unwarranted signals.

Usage:

Traffic signals are installed in accordance with City standards and the State of California Department of Transportation warrants.

Approval:

Recommendation of the Public Works Director and approval by the City Council. No unwarranted signal should be installed.

Removal:

Traffic signals are rarely removed once installed and concerns for liability and safety result from the removal of any signal.

Cost:

Depending on the complexity of the signal, cost could range from $130,000 to $150,000 per signal. Traffic signal would require a Capital Improvement Program budget request.

GLOSSARY

Access	The ability to enter and or exit a property, street or neighborhood; includes both ingress and egress.
ADT	Average daily traffic, or number of vehicles that travel a roadway in one 24-hour weekday period.
Chokers and Bulb-Outs	An extension of the curb towards the center of a street, either in the mid-block or at the intersection, used to narrow the roadway to slow traffic.
Chicane	An artificial curve added to an otherwise straight street.
CIP	The City's Capital Improvement Program, used to schedule and budget major capital projects.
Cul-de-Sac	A dead-end street.
Forced Channelization	Similar to a diverter; used to force traffic to turn right or left.
General Plan	The City General Plan is the planning document for the City of Manteca. It contains several chapters that describe and discuss various important aspects of the City and sets goals, policies and actions. The Transportation Chapter applies to traffic and transportation.
Grade	A vertical incline; can be either uphill or downhill.
ITE Trip Generation Handbook	The Institute of Transportation Engineers (ITE) professional manual that complies surveys of the amount of vehicles trips generated by land use type.
Ingress and Egress	The ability to enter (ingress) and exit (egress) a property, street or neighborhood, such as a driveway into a parking lot.
Mid-Block	Any point between successive intersections along a street.
NTCP	Neighborhood Traffic Calming Program.
One-Way Streets	Legally limits travel on a street to one direction only.

Prima Facie Speed Limit	The apparently obvious speed limit on a street with no posted speed limit, such as 25 miles per hour on a local residential street.
Rumble Strips	Lines of small raised pavement markers used to slow or alert drivers to certain road conditions.
Safe Stopping Distance	Also safe sight distance. A distance of sufficient length such that a driver can avoid striking an unexpected obstacle on the roadway.
Speed Survey	A survey of vehicles performed with radar or hose type traffic counters to determine the speed at which they are traveling. The 85th percentile speed is commonly used as the indicator of the appropriate roadway speed (see 85th Percentile). Radar may be used to enforce a speed limit set with a radar survey.
Speed and Warning Signs	Regulatory signs and warning signs advising motorist of traffic conditions such as schools, turn restrictions, and speed limits.
Sight Distance	The maximum distance at which a driver can clearly see an oncoming vehicle, a stopped vehicle or an obstacle in the roadway; this distance is often reduced by the vertical and horizontal alignment of a roadway.
Traffic Calming	A technique for reducing the speed and volume of traffic on residential streets that uses various traffic control devices.
Traffic Control Devices	A general category of physical devices used to direct and slow traffic, such as traffic circles, signs, pavement markings, chokers and bulb-outs.
Turn Restrictions	The prohibition of right and or left turns from one street to another by means of signage, diverter or forced channelization.
Traffic Circle	A landscaped or hardscaped raised circular median island placed in the center of an intersection used to slow traffic by requiring a maneuver around the circle. Also known as roundabouts and islands.
85th Percentile	The speed at or below which 85 percent of vehicles surveyed travel. This measurement is one criteria used to set speed limits on roadways.