



**CITY OF LOS ALTOS
NEIGHBORHOOD TRAFFIC
MANAGEMENT PROGRAM**

APRIL 2005

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INTRODUCTION

The citizens of Los Altos place a high value on the “livability” of their neighborhoods. One of the intrusions that can negatively impact this livability is excessive speed on local streets such that residents feel unsafe. Another similar intrusion involves traffic that seems to be “cutting through” their neighborhood unnecessarily.

Traffic congestion is an important issue throughout the region and is having an increasing impact on residential streets in Los Altos. Given the residential nature of Los Altos, most of our streets, even the high volume ones, have homes fronting on them. A growing number of people are concerned about the conflicts they see arising between the automobile and the other uses of their streets and neighborhoods.

This Traffic Calming Program is part of your city’s commitment to the safety and livability of residential neighborhoods. Under this program, city staff works closely with residents within neighborhoods to identify the type and severity of traffic problems on their streets. Identified problems are first tackled using traditional enforcement and education techniques/measures. Should the more traditional measures prove to be ineffective in dealing with the problem, a variety of traffic calming measures are available.

A crucial part of resolving traffic issues is working with the residents to identify a traffic-calming device that is both acceptable to the residents and has a reasonable likelihood of solving or minimizing the problem. If the required approval by residents and City Council is obtained, the city installs traffic calming devices in an effort to better manage the speed/flow of neighborhood traffic, a summary of possible traffic calming options is presented in Table I of the appendix. Traffic information and answers to commonly asked questions are also in the appendix.

POLICY GUIDELINES ELEMENT

The following policy guidelines are recommended as a guide to the implementation of neighborhood traffic management projects:

- The first traffic management tool of the Neighborhood Traffic Management Program (NTMP) is education and enforcement.
- The primary purpose of the NTMP is to address neighborhood concerns and to reduce the speed and volume of traffic on neighborhood streets. The NTMP is focused primarily on “local” streets. Local streets provide direct access to adjacent properties only, while collector streets also carry traffic from local streets to other collector and arterial streets. (See map from General Plan)
- Traffic management measures on collector streets, if appropriate, will be designed primarily to address speed. Traffic diversion devices are not typically used on collector streets.
- Potential traffic diversion from a “traffic-managed” street to an adjacent street will be analyzed as part of the proposal.
- Through traffic should be encouraged to use arterial streets that are designed for such purposes.
- Emergency vehicle access and response times will be considered when evaluating traffic management measures.
- Pedestrian and bicycle access should be maintained on streets with traffic management plans.
- Removal of some on-street parking spaces may be necessary to install some traffic management devices. Parking loss at specific locations will have to be balanced with the neighborhood's desire for the traffic management device.
- Due to excessive noise, no rumble strips will be installed.
- Installation of stop signs and traffic signals will be used when State warrants are met.
- A combination of education, enforcement and engineering methods is typically used to manage traffic. Traffic management measures/devices will be planned, designed and used in keeping with sound engineering and enforcement practices. The Public Works Director will direct the installation of traffic control devices (such as signs, markings and speed humps) as needed to accomplish traffic control and traffic management projects, in compliance with the State of California Vehicle Code and with the approval of City Council. The Chief of Police shall direct the implementation of traffic enforcement measures.
- Requests for traffic management devices will normally be taken on a first-come, first-served basis. Implementation will be based on an evaluation of the request, neighborhood approval, staff recommendation, Traffic Commission recommendation, and Council approval of the proposed traffic calming measures, and limits of funding approved by the City Council.
- Only approved signs from the State of California Traffic Manual and the Manual on Uniform Traffic Control Devices, or signs approved by the City, shall be installed.

TRAFFIC ENFORCEMENT PROGRAM

Traffic enforcement duties are the primary responsibility of the City's Traffic Unit. Directed traffic enforcement is handled by the traffic unit, supported by uniformed patrol personnel who assist when not responding to other calls for service.

Traffic complaints received by the Police Department are reviewed by the Field Services Division Commander, logged for future reference and then assigned to the Traffic Unit for resolution. The Administrative Sergeant assigns the complaint to a motorcycle officer who personally contacts the reporting party to discuss the matter and hopefully agree on a resolution. Solutions can include education, measures such as radar/lidar speed enforcement, use of the radar speed display trailer, or a combination of enforcement and traffic engineering modifications such as roadway markings or signage. Enforcement can result in a traffic citation, which is forwarded to the Courts for disposition. In some cases a "Courtesy Citation," or a verbal warning may be issued in lieu of a formal citation. The enforcement strategy generally involves education (on page 4), enforcement, and engineering components.

After the Traffic Unit and patrol officers have worked the problem area for two or three weeks, a memorandum is prepared for file detailing the results of the efforts. These reports, which may include a current radar speed survey, are used for future reference to determine if the problem has been resolved.

The Department also deploys the "DUI Trailer," obtained through an Office of Traffic Safety grant, eight times a year. The program is part of an ongoing effort to educate the motoring public about driving under the influence of alcohol and/or drugs and the proper use of seat belts and child restraints.

In summary, the City's Traffic Unit and uniformed patrol officers handle traffic complaints. Reporting parties are contacted by a Traffic Officer to work on a collaborative solution to the problem, with an emphasis on the three "E's" – education, enforcement and engineering. Traffic enforcement tools currently available to police personnel include the radar speed display trailer, DUI trailer, citations (including courtesy citations), and hand-held radar or lidar units.

TRAFFIC EDUCATION PROGRAM

The following are tools and/or programs developed to educate the motoring public about traffic safety issues in the community:

Radar Trailer - Speed display device, which is placed on streets experiencing speeding problems.

School Presentations - Traffic safety presentations conducted by the School Resource and Traffic Officers in elementary, middle, and high schools in the community.

Publicity - Traffic safety information presented to the community through local newspapers, City Communiqué and cable TV broadcasts.

D.U.I. - Annual holiday season participation in the County-wide “Avoid the Thirteen” drinking driver campaign; High School participation in the “Sober Graduation” anti-alcohol campaign; D.U.I. and seatbelt checkpoints conducted eight times annually.

TRAFFIC MITIGATION MEASURES NOT CURRENTLY EMPLOYED

Photo Radar - Stationary radar speed measuring device used in conjunction with a camera system that is set up to monitor the speed of passing vehicles. Photos are taken of vehicles exceeding a predetermined speed and citations are sent by mail to the registered owner of the vehicle.

Pros – Very efficient citation generator. Can measure the speed of all passing vehicles, without the need to physically stop the motorist. A high volume of citations can be issued without the need to deploy a sworn police officer.

Cons - Relatively expensive purchase/lease and operational costs. Approximate cost is \$100,000 annually. Involves large commitment of PD and signal maintenance labor hours.. Does not allow for any discretion. Citations issued to all vehicles exceeding a preset speed. Issuance of citations through the use of photo radar not supported by the courts; no penalty for failure to appear or pay fine.

Radar Drones - A radar device that is mounted on a utility pole or in a parked vehicle, which emits a constant radar signal intended to activate radar detectors used by motorists to avoid speeding citations.

Pros - Relatively inexpensive devices that do not require constant monitoring by police personnel. Will encourage compliance with speed laws by drivers using radar detectors.

Cons - Of little value in metropolitan areas due to the limited effectiveness of radar detectors in high-volume traffic environments. The common use of radar equipment by municipal police, sheriff and Highway Patrol departments in these areas provides fairly constant propagation of radar signals that activate radar detectors regardless of whether radar is being used in the immediate area for speed measuring purposes.

Summary of Planning Process

Attachment 1

- #1 **Complaint**
 - Staff Response – Enforcement and/or Engineering
 - Initial Evaluation
 - Identify Problem
 - Enforcement
 - Review Striping
 - Review Signage
 - Review Visibility
 - Radar Trailer
 - Send NTMP Informational Packet
- #2 **Staff Defines the Neighborhood Area**
 - Attachment No. 1
 - Attachment No. 2
- #3 **Petition from Neighborhood Area**
- #4 **Initial Meeting**
 - Obtain Service Fee
- #5 **Conduct Technical Study**
 - Speed
 - Volume
 - Accident History
- #6 **Second Meeting**
 - Staff Presents Recommended Plan, Receives Comments/Input from Neighborhood
- #7 **Third Meeting**
 - Finalize Neighborhood's Plan
- #8 **Neighborhood Vote**
- #9 **Traffic Commission Comment and Recommendation**
- #10 **City Council Consideration of Plan and Funding**
- #11 **Neighborhood Obtains Funds for Traffic Calming Devices**
- #12-15 **Implementation, Evaluation, and Possible Removal of Devices**

PLANNING PROCESS/PUBLIC PARTICIPATION ELEMENT

Procedure

The City of Los Altos believes that it is important for neighborhood traffic management planning to be responsive, responsible, and efficient. A diligent effort has been made to streamline this procedure while still including the vital elements of education and citizen and City Council participation. It should be noted that any traffic control devices or measures implemented will impact residents and non-residents alike. Careful evaluation of the impacts to neighborhood traffic patterns, safety, resident's convenience in accessing their neighborhood, service and emergency vehicle access, and travel time must be considered.

Planning Process

The Neighborhood Traffic Management Program (NTMP) necessarily includes a structured planning process. The resulting management plan should be responsive to the needs of the residents of a given neighborhood. An education and enforcement component is the initial traffic management response to any request. The main components of the traffic management planning process are:

1. An inquiry is received from a single resident or property owner: (a) if an incidental request (i.e. speeding, complaint, sight distance issues, etc.), then the appropriate city staff will address the issue without further requirements; (b) if a larger issue, then City staff will send out a NTMP informational packet to the resident.
2. Staff will assist in defining the neighborhood area.
3. Staff will request a petition from the area property owners. A basic petition form is included in the appendix. A single resident or property owner complainant would be encouraged to obtain signatures of 30% of the households in the affected area.
4. City staff calls an initial meeting with property owners in the affected area.
 - Staff reviews the neighborhood traffic management planning process and solicits input from property owners.
 - Staff requests that the neighborhood obtain a \$300 service fee prior to conducting a traffic study of affected area.
5. Once the service fee is provided, staff will begin a technical study by collecting data such as vehicle counts, speed surveys, or, accident history as may be required.
 - If the 85th percentile speeds are less than 32 MPH or volumes are not between 800 and 3,500 VPD, street does not qualify for traffic calming. The project ends and the full amount of the service fee is refunded.
 - If the 85th percentile speeds are equal to or greater than 32 MPH or volumes are between 800 and 3,500 VPD, street qualifies for traffic calming.
6. Staff will conduct a second meeting with the residents in the affected neighborhood area to present data, traffic calming device options, and costs.
 - Staff develops a recommended plan for traffic calming in the affected area prior to the meeting.
 - Staff solicits input and recommendations on the plan from the residents in the neighborhood area.
 - If neighborhood decides to terminate project at the meeting, 50% of the service fee will be refunded.
7. City staff conducts a third meeting with the residents in the affected neighborhood area to finalize the neighborhood's plan.

PLANNING PROCESS/PUBLIC PARTICIPATION ELEMENT (Continued)

- If the neighborhood decides to terminate project at this meeting, any remaining portion of the service fee will not be refunded.
 - If the neighborhood decides to proceed to a neighborhood vote on the neighborhood's plan, notices will be mailed to all property owners in the affected area; a consensus of 55% of all votes cast of property owners impacted and 66 2/3% of property owners adjacent to a proposed device directly impacted by noise or parking issues as determined by staff will be necessary to approve the proposed plan.
 - If the neighborhood vote fails, the project ends and any remaining portions of the service fee will not be refunded.
8. Neighborhood votes on the plan. If the neighborhood vote is successful, staff will send notification to potentially impacted residents in the adjacent neighborhoods to inform them of this neighborhood's traffic calming plan.
 9. Staff brings the neighborhood's plan to the Traffic Commission for comment and recommendation.
 10. Staff will bring the neighborhood's plan to the City Council for consideration.
 - If neighborhood's plan does not receive Council approval, project ends and the service fee will be refunded in full.
 - If Council approves the neighborhood's plan, the neighborhood will be required to obtain their share of the money for either temporary or permanent traffic calming devices. The property owners will pay 100% of the cost of installation materials and removal of the temporary traffic calming devices if they choose to install temporary devices. The temporary traffic calming devices will be installed for a period of six (6) months and at which time they will be removed by the City. The service fee will be applied to the neighborhood's share of the cost of either temporary or permanent traffic control devices.
 - If the neighborhood chose the temporary traffic calming device option, at the conclusion of the six (6) months trial period, the neighborhood will be required to obtain their 50% cost share of the permanent traffic calming devices.
 11. When the neighborhood's 50% of the construction costs are obtained, City will request City's share of funding from City Council and authorization to advertise the project for construction contract bids. The full service fee is applied to neighborhood's share of construction costs if it has not been fully spent on temporary traffic calming.
 12. Following receipt of bids, staff will verify that adequate funding is available. If favorable bids are received and adequate funding exists, staff will seek Council approval to award the contract. If unfavorable bids are received or there is not adequate funding available from either the neighborhood and/or the City, staff will evaluate how to proceed, either by rejecting all construction contract bids and rebidding the project, or by securing additional funding per the 50% City, 50% property owner ratio. The neighborhood's plan is implemented.
 13. Following implementation, staff conducts an evaluation to measure the effectiveness of the project. The results of this evaluation are then communicated to the affected neighborhood. Any left over funds from the neighborhood share will be returned.
 14. A second vote will be required for the removal of a device. Removal costs and the cost to restore the street to its original configuration will be shared per the 50% City, 50% property owner ratio.
 15. If removal is approved by the neighborhood, staff will seek comments from the Traffic Commission and approval from City Council for authorization to proceed and appropriation of the City's share of the funding.

FUNDING ELEMENT

The costs associated with implementing physical traffic calming devices vary significantly from just over \$100 for installing a speed limit sign to \$10,000 or more for a landscaped island in the middle of an intersection. In cities with extensive financial resources, there is a tendency to have the city incur most, if not all, of the expenses for installing physical traffic calming devices. Some cities (i.e. Mountain View) budget a set amount of funds each year for installing temporary and permanent devices and expend these funds on a first come first served basis until that year's funds are exhausted.

The City of Los Altos lacks the financial resources to commit a significant amount of funds to the installation (or removal) of traffic calming devices. Given these circumstances, the following policies apply to NTMP projects.

Policies:

1. The City will pay 50% of the cost of design and installing or removing permanent traffic calming devices.
2. The property owners will pay 100% of the cost of installing and removing temporary traffic calming devices intended to test the effectiveness of devices if requested. The typical temporary installation would be in place for approximately six months before making a determination to either replace it with a permanent installation or to restore the street to its original condition.
3. Exceptions to the funding element policy may be approved by the City Council.

NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES BY CATEGORY

Category I

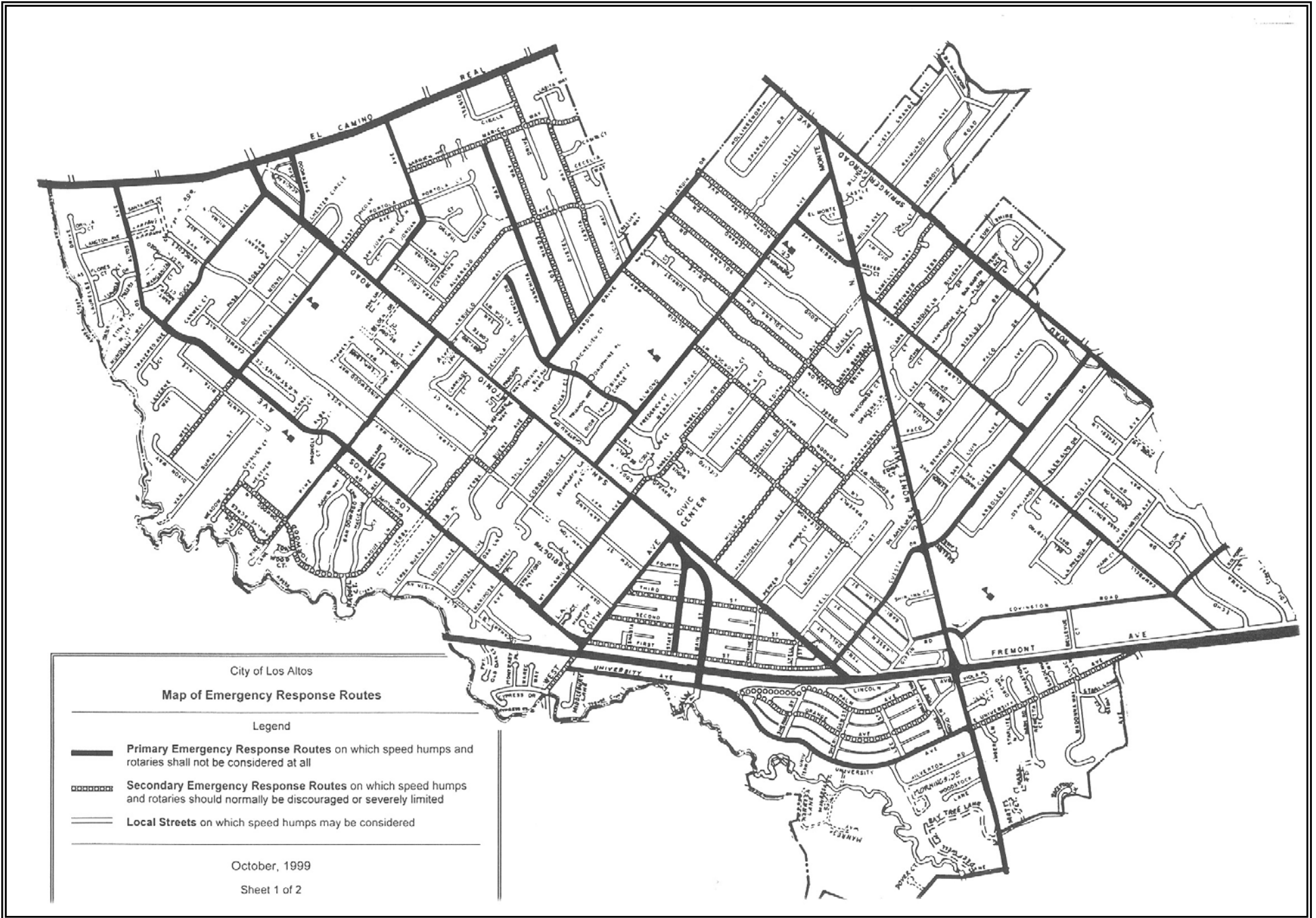
- Speed Limit and Warning Signs
- Stop Signs (must meet standard warrants)
- Painted Islands

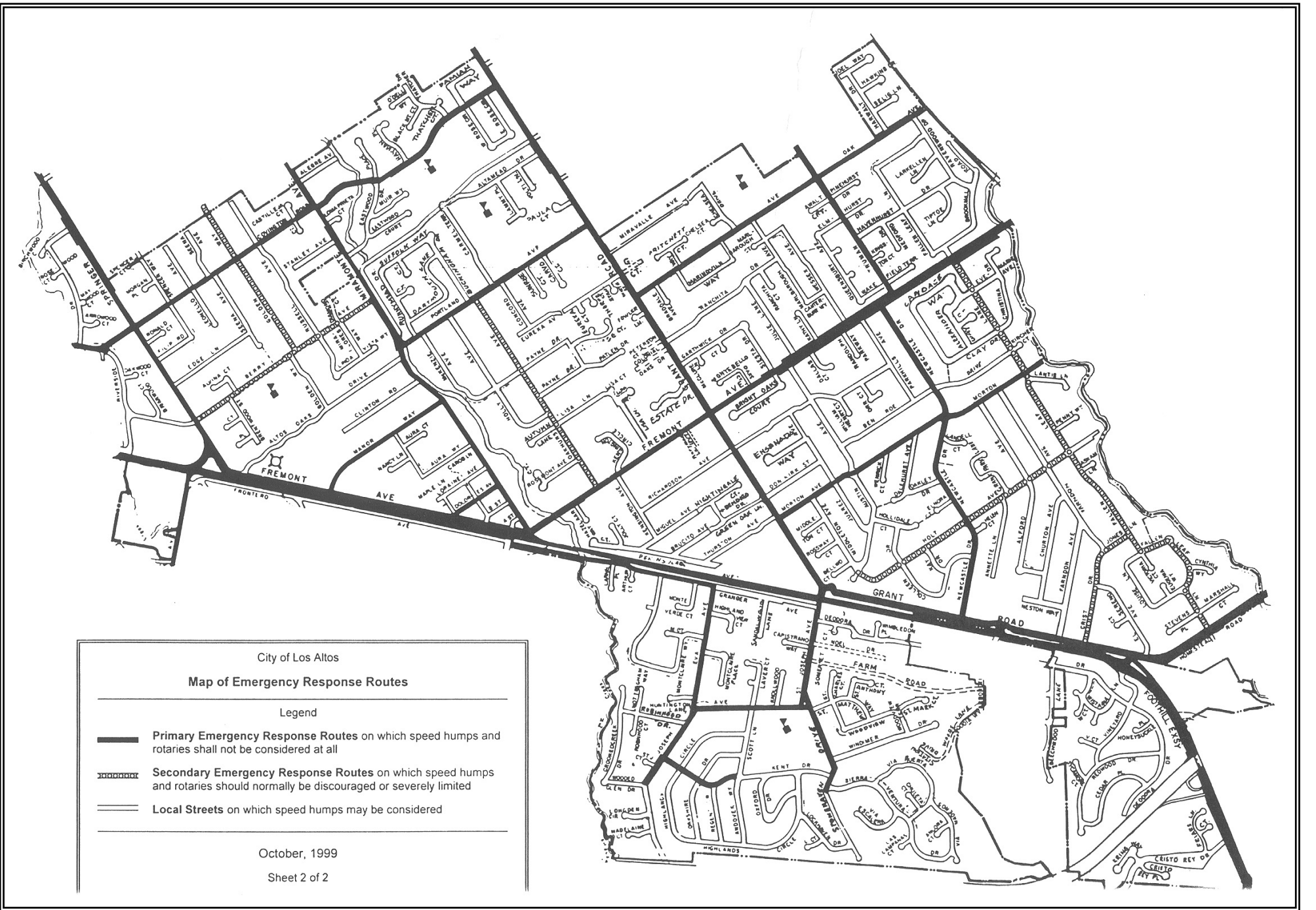
Category II

- Turn Restriction Signs
- Street Trees

Category III

- Chokers and Bulb-Outs
- Forced-Turn Channelization
- One-way Entrances and/or Exits to two-way Streets
- Speed Humps
- Street Closings (cul-de-sacs)
- One-Way Chicanes
- Rotaries (Traffic Circles/Roundabouts)
- Curbs and Gutters (to narrow streets)








City of Los Altos

Map of Emergency Response Routes

Legend

-  Primary Emergency Response Routes on which speed humps and rotaries shall not be considered at all
-  Secondary Emergency Response Routes on which speed humps and rotaries should normally be discouraged or severely limited
-  Local Streets on which speed humps may be considered

October, 1999

Sheet 2 of 2

APPENDIX

TRAFFIC INFORMATION & COMMONLY ASKED QUESTIONS

SPEED LIMIT

“WHEN WILL A LOWER SPEED LIMIT BE POSTED ON MY STREET?”

A common belief is that posting a speed limit will influence drivers to drive at that speed. The facts indicate otherwise.

Research conducted in many parts of this county over a span of several decades has shown that drivers are influenced more by the appearance of the roadway itself and the prevailing traffic conditions than by the posted speed limit.

California’s Basic Speed Law requires that:

“No person shall drive a vehicle upon a highway at a speed greater than is responsible or prudent having due regard for weather, visibility, the traffic on, and the surface and width of the highway, and in no event at a speed which endangers the safety of persons or property.”

Speed limits are called *prima facie* limits, which “on the face of it” are safe and prudent under normal conditions. Certain *prima facie* limits are established by law and include the 25-MPH limit in business districts and residential neighborhoods, the 15-MPH limit in alleys, at blind intersection and blind railroad crossing and a part-time 25-MPH limit in school zones when children are going to and from school. These speeds are not always posted but all California motorists are required to know these basic 15 and 25 mile per hour speed laws.

Local authorities on the basis of traffic engineering surveys may establish speed limits. These surveys include an analysis of roadway conditions, accident records, and the prevailing speed of prudent drivers. If speed limit signs are posted for a lower limit than is needed to safely meet these conditions, many drivers will simply ignore the signs. At the same time, other drivers will stay within the posted limits. This generally increases the conflicts between faster and slower drivers, reduces the gaps in traffic which could be safely used and increases the difficulty for pedestrians to judge the speed of approaching vehicles. Studies have shown that where uniformity of speed is not maintained, accidents generally increase.

CROSSWALKS

“WHEN IS A CROSSWALK UNSAFE?”

Apparently, whenever it is painted on the street!

Marked crosswalks serve two purposes: (1) they tell the pedestrian the best place to cross; and (2) they clarify that a legal crosswalk exists at a particular location.

Marked crosswalks are one tool to get pedestrians safely across the street. When considering marked crosswalks at uncontrolled locations, the question should not simply be: "Should I provide a marked crosswalk or not?" Instead, the question should be: "Is this an appropriate tool for getting pedestrians across the street?" Regardless of whether marked crosswalks are used, there remains the fundamental objective to get pedestrians safely across the street.

In most cases, marked crosswalks are best used in combination with other treatments. (e.g., curb extensions, raised crossing islands, traffic signals, roadway narrowing, enhanced overhead lighting, traffic calming measures, etc.) Think of marked crosswalks as one of a progression of design treatments. If one treatment does not adequately accomplish the task, then move on to the next one. Failure of one particular treatment is not a license to give up and do nothing. In all cases, the final design must address the goal of getting pedestrians across the road safely.

A number of years back, the city of San Diego published some startling results of a very extensive study of the relative safety of marked and unmarked crosswalks. San Diego looked at 400 intersections for five years (without signals or four-way stops) that had a marked crosswalk on one side and an unmarked crosswalk on the other. About two and one half times as many pedestrians used the marked crosswalks, but about six times as many accidents were reported in the marked crosswalks! Long Beach studied pedestrian safety for three years (1972 through 1974) and found eight times as many reported pedestrian accidents at intersections with marked crosswalks than at those without. One explanation of this apparent contradiction of common sense is the false security pedestrians feel at the marked crosswalk. Two painted lines do not provide protection against an oncoming vehicle and the real burden of safety has to be on the pedestrian to be alert and cautious while crossing any street. A pedestrian can stop in less than three feet, while a vehicle traveling at 25 MPH will require 60 feet and at 35 MPH approximately 100 feet.

The California Vehicle Code says that a crosswalk exists at all intersections unless signs prohibit pedestrian crossing. Some of these crosswalks are marked with painted lines, but most of them are not. Pedestrian crosswalk marking is a method of encouraging pedestrians to use a particular crossing. Such marked crossing may not be as safe as an unmarked crossing at the same location. Therefore, crosswalks should be marked only where necessary for the guidance and control of pedestrians, to direct them to the safest of several potential routes.

Mid-block crosswalks or crosswalks between intersections are to be avoided because they are unexpected by the motorist. Pedestrians should be encouraged to cross only at intersections so that they are crossing at a location where drivers will have the expectation of pedestrians and other vehicles being around.

CHILDREN AT PLAY

“WHY WON’T THEY PUT UP “CHILDREN AT PLAY” SIGNS?”

An often-heard neighborhood request concerns the posting of generalized warning signs with “SLOW – CHILDREN AT PLAY” or other similar messages. Parental concern for the safety of children in the street near home, and a misplaced but widespread public faith in traffic signs to provide protection often prompt these requests.

Although some other states have posted such signs widely in residential areas, no factual evidence has been presented to document their success in reducing pedestrian accidents, operating speeds or legal liability. Studies have shown that many types of signs attempting to warn of normal conditions in residential areas have failed to achieve the desired safety benefits. If signs encourage parents and children to believe they have an added degree of protection, which the signs do not and cannot provide, a great disservice results.

Because of these serious considerations, California law does not recognize, and Federal Standards discourage, use of “Children at Play” signs. Specific warnings for schools, playgrounds, parks, and other recreational facilities are available for use where clearly justified.

Children should not be encouraged to play within the street travelways. The sign has long been rejected since it is a direct and open suggestion that this behavior is acceptable.

STOP SIGN

“WHY DON’T THEY PUT IN MORE STOP SIGNS?”

A stop sign is one of our most valuable and effective control devices when used at the right place and under the right conditions. It is intended to help drivers and pedestrians at an intersection decide who has the right-of-way.

One common misuse of stop signs is to arbitrarily interrupt through traffic, either by causing it to stop, or by causing such an inconvenience as to force the traffic to use other routes. Where stop signs are installed as “nuisances” or “speed breakers,” there is a high incidence of intentional violation. In those locations where vehicles do stop, the speed reduction is effective only in the immediate vicinity of the stop sign, and frequently speeds are actually higher between intersections. For these reasons, it should not be used as a speed control device.

A school crossing may not appear to be a significant enough installation, causing parents to demand a stop sign to halt traffic. However, a vehicle, which had been a problem for 3 seconds while approaching and passing the intersection, becomes a problem for a much longer period of time. A situation of indecision is created as to when a pedestrian should cross or when a motorist should start. Normal gaps in traffic through which crossing should be made safely no longer exist. An intersection which previously was not busy now looks like a major intersection. It really isn’t –it just looks like it. It doesn’t even look safer and it usually isn’t.

Most drivers are reasonable and prudent with no intention of maliciously violating traffic regulations; however, when an unreasonable restriction is imposed, it may result in flagrant violations. In such cases, the stop sign can create a false sense of security in a pedestrian and an attitude of contempt in a motorist. These two attitudes can and often do conflict with tragic results.

Well-developed, nationally recognized guidelines or warrants help to indicate when such controls become necessary. These guidelines take into consideration, among other things, the probability of vehicles arriving at an intersection at the same time, the length of time traffic must wait to enter, and the availability of safe crossing opportunities. Since stop signs address motor vehicle right-of-way, many motorists do not recognize pedestrians’ rights at these installations. Therefore, stop signs should only be installed at intersections that meet the established criteria.

TRAFFIC SIGNAL

“DOES SOMEBODY HAVE TO BE KILLED BEFORE A TRAFFIC SIGNAL WILL BE INSTALLED?”

No. However, traffic signals don't always prevent accidents. They are not always an asset to traffic control. In some instances the total number of accidents and severe injuries have increased after signals were installed. Usually, in such instances, right angle collisions were reduced by the traffic signals, but the total number of collisions, especially the rear-end type, increased.

There are times when the installation of signals results in an increase in pedestrian accidents. Many pedestrians feel secure with a painted crosswalk and a red light between them and an approaching vehicle. The motorist, on the other hand, is not always so quick to recognize these “barriers.”

When can a traffic signal be an asset instead of a liability to safety? In order to answer this, traffic engineers have to ask and answer a series of questions:

1. Are there so many cars on both streets that signal controls are necessary to clear up the confusion or relieve the congestion?
2. Is the traffic on the main street so heavy that drivers on the side street will try to cross when it is unsafe?
3. Are there so many pedestrians trying to cross a busy main street that confusing, congested or hazardous conditions result?
4. Are there so many school children trying to cross the street at the same time that they need special controls for their protection? If so, is a traffic signal the best solution?
5. Are signals at this location going to help drivers maintain a uniform pace along the route without stopping unnecessarily?
6. Does the collision history indicate that signal controls will reduce the probability of collisions?
7. Do two arterials intersect at this location and will a signal help improve the flow of traffic?
8. Is there a combination of the above conditions, which indicates that a signal will be an improvement rather than a detriment?

To aid them in answering these questions, engineers compare the existing conditions against nationally accepted minimum guidelines. Experienced traffic engineers established these guidelines (often called “Warrants”) from many observations at intersections throughout the county. Where the guidelines were not met, public compliance was reduced, and additional hazards resulted.

A traffic signal that decreases accidents and improves the flow of traffic is an asset to any community. On the other hand, an ill-advised or poorly designed signal can be a source of danger and annoyance to all that use the intersection; pedestrian, cyclists, and drivers alike.

The cost to install a traffic signal generally ranges between \$150,000 and \$200,000.

TABLE 1

SUMMARY OF NEIGHBORHOOD TRAFFIC MANAGEMENT MEASURES

TRAFFIC MANAGEMENT DEVICES/DESCRIPTIONS BY CATEGORY

SEE ATTACHMENT 2 FOR VOTING CRITERIA FOR VARIOUS DEVICES

TABLE 1
Summary of Neighborhood Traffic Management Measures

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Property Owner Approval or Removal Rate	Cost (2004)	Criteria for Installation
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Category I

Speed and Warning Signs	Speed and Warning Signs and Legends	Speed	Yes	City Council	None Required	\$200	Manual on Uniform Traffic Control Devices
Stop Signs	Stop Signs	Neither	Not Recommended as Traffic Management Device	City Council	N/A	\$200 per sign and legend	Must Satisfy Warrants
Painted Islands	Delineation	Neither	Yes	City Council	N/A	\$6 per lineal foot	Accident History

Category II

Turn Restriction Signs	Turn Restriction Signs Only	Volume	Yes	City Council and may require Property Owner Approval	55% of all votes cast	\$150	<ul style="list-style-type: none"> Local Streets 25% or More Cut-Through Traffic
Street Trees	Street Trees Every 30' to 50' at Curb Without curb may have parking impacts	Speed	Yes	City Council	N/A	\$150 per Tree	<ul style="list-style-type: none"> Local Street Other Devices Not Acceptable to Fire Department Neighborhood Opposed to Other Devices Neighborhood Deficient in Trees Favorable Road Conditions
Radar Speed Signs	Electronic Warning Device	Speed	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$5,000 to \$8,000 per sign	<ul style="list-style-type: none"> Collector or Arterial Street Light Intrusion into Neighborhood
Crosswalk Flashing Devices	Electronic Warning Devices	Speed	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$10,000 to \$15,000	<ul style="list-style-type: none"> Collector or Arterial Street Light Intrusion into Neighborhood

Category III

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Property Owner Approval or Removal Rate	Cost (2004)	Criteria for Installation
Traffic Signals	Traffic Signals	Neither	Not Recommended as Traffic Management Device	City Council Approval	N/A	\$150,000 to \$200,000	Must Satisfy Warrants
Speed Humps and Speed Tables	3" X 20' Speed Hump Across the Roadway	Speed	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$4,000 to \$9,000 Each	<ul style="list-style-type: none"> Local Street with curbs Adequate Provision for Emergency Vehicles 750' Street Length Minimum 25 mph Speed Limit >32 mph 85th Percentile Speed Not recommended in Los Altos
Necked Intersections (Chokers and Bulb Outs)	Narrowed Intersections	Speed	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$2,000 Up Each Intersection	<ul style="list-style-type: none"> Local Street 25% or More Cut-Through Traffic Adequate Provision for Emergency Vehicles 750' Street Length Minimum 25 mph Speed Limit 32 mph 85th Percentile Speed
Street Closings (cul-de-sac Creation)	Complete Closure of Street at Intersection or mid-block	Speed and Volume	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$1000 Up	<ul style="list-style-type: none"> Local Street 50% or More Cut-Through Traffic Turn Around Area for Emergency Vehicle
One Way Entrances/ Exits	Turn Prohibition	Volume	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$1000 Up	<ul style="list-style-type: none"> Local Street 25% or More Cut-Through Traffic Turn Restriction Signs Failed Adequate Provision for Emergency Vehicles

Device	Description	Speed or Volume	Staff Recommendation	Final Implementation Approval	Property Owner Approval or Removal Rate	Cost (2004)	Criteria for Installation
Forced Channelization	Left or Right-Turn Prohibition with Islands	Volume	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$1000 Up	<ul style="list-style-type: none"> Local Street 25% or More Cut-Through Traffic Turn Restriction Signs Failed Adequate Provision for Emergency Vehicles
One Way Chicane	Curving One-Way Street	Speed and Volume	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$4,000 Up	<ul style="list-style-type: none"> Local Street 50% or More Cut-Through Traffic Adequate Provisions for Emergency Vehicles 750' Street Length Minimum 25 mph Speed Limit 32 mph 85th Percentile Speed
Rotaries (Traffic Circles/Roundabouts)	Circles at Intersections	Speed	Yes	Property Owner Approval and City Council Approval	55% of all votes cast 66 2/3% adjacent property owners affected by noise or parking as determined by staff	\$4,000 Up	<ul style="list-style-type: none"> Local Street 25 mph Speed Limit 32 mph 85th Percentile Speed Accident Problem at Intersection Stop Signs Ignored Grid Street Pattern Adequate Intersection Width

NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES

Category I

Simple Devices

SPEED AND WARNING SIGNS

Speed and warning signs, including street delineation, are the easiest and simplest of the techniques on this 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 little attention to them. Also, a proliferation of signs could cause visual blight or visual pollution in some neighborhoods, which could effect property values.

Usage:

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

Approval:

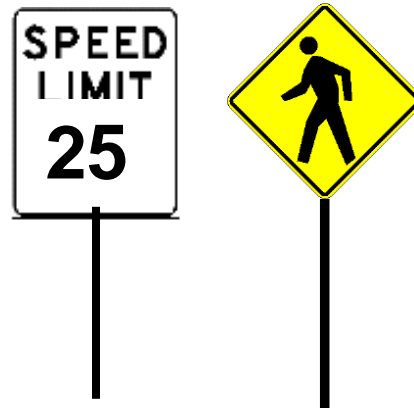
City Council.

Removal:

Signs and legends of this type would typically not be removed; however, removal would also be at the discretion of the City Council.

Cost:

\$200 per new sign and legends.



Category I (continued)**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 with a preponderance of right-angle broadside collisions, and/or there is a sight distance limitation. Stop signs do not reduce the speed or the volume of traffic and, in fact, result in increased localized air pollution, higher speeds between stop signs, rolling stops through intersections, so-called "jack-rabbit" starts from stop sign controlled intersections and 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:

City Council.

Removal:

Signs of this type would typically not be removed; however, removal would be at the discretion of the City Council.

Temporary installations are not an alternative because of the potential for increased accidents (stop signs are not typically removed). Motorists become used to having traffic stop at a location and will not be aware that the conflicting stop control has been removed. Motorists will presume that conflicting approaching traffic will stop and enter the intersection in front of the conflict. The resulting broadside accident is especially dangerous and may result in injuries.

Cost:

Cost is about \$200 per sign and legend.



Category I (continued)

PAINTED ISLANDS

The purpose of painted islands on streets is to direct traffic through an area that may be confusing. Traffic volume & speed are not significantly impacted by painted islands. Rather, the paint is to properly direct traffic flow. Since they are not physical barriers, the success of painted islands depends on the cooperation of drivers.

Usage:

Striping is installed according to State and adopted City criteria.

Approval:

City Council.

Removal:

Striping of this type would typically not be removed; however, removal would also be at the discretion of the City Council.

Cost:

Cost is about \$6 per lineal foot.

NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES

Category II

TURN RESTRICTION SIGNS

The purpose of turn restriction signs is to prohibit certain vehicular turning movements to discourage cut-through traffic on residential streets. It is possible to address only certain hours of the day. The success of these signs depends on the cooperation of drivers and on the level of enforcement. These signs are often ignored, especially during commute hours where there is high volume traffic, just as are the 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. This restriction will divert traffic to other streets, 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 item 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:

Requires an approval rate of 55 percent of all votes cast of the affected property owners, and City Council approval.

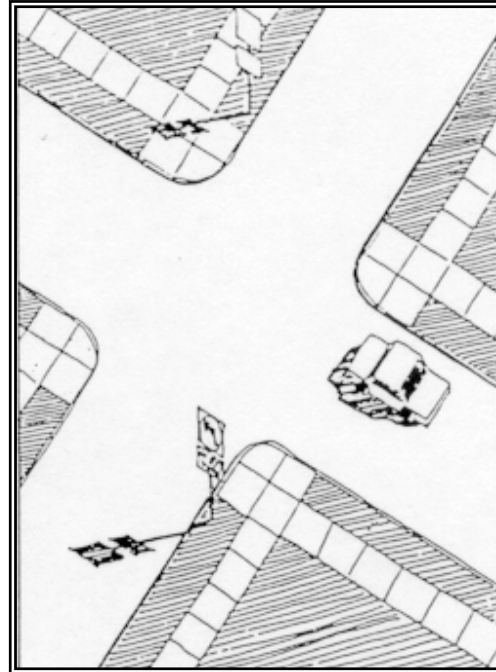
Removal:

55% approval of all votes cast of the property owners on the street with restricted access signage, and City Council approval.

Cost:

\$100 per new sign and post.

Turn Prohibitions



N. BOUND EL MONTE @MILVERTON



Category II (continued)STREET TREES

The purpose of planting trees in front of homes on a residential or collector street is to give the impression of a narrower street and thus to slow traffic. Streets with a virtual canopy formed by trees have much more residential appearance/feeling. It follows that trees become more effective as they reach maturity. The trees act as a buffer zone between motorists and residents and also provide a visual barrier between the two. Trees have no impact on the volume of traffic but may have a 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' and will need time to mature. Tree planting has sometimes been criticized as merely a "beautification project" rather than a traffic control project. While trees most definitely improve the aesthetics of roadways, they also contribute to traffic calming. Criteria for the installation of trees includes the following:

- Other traffic management devices are not acceptable to the emergency response 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 right-of-way space allows for the installation of trees without significantly restricting the availability of on-street parking.

Usage:

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

Approval:

Approval of affected property owners and City Council approval.

Removal:

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

Cost:

For the City to purchase and plant 15-gallon trees, the cost is currently about \$150 per tree (2004).

Note: It may take 5 to 8 years to get the full effect of this benefit.

SANTA BARBARA DRIVE, LOS ALTOS



NEIGHBORHOOD TRAFFIC MANAGEMENT DEVICES

Category III

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 of traffic on certain roads as motorists divert to routes without signals. In other cases, traffic may be attracted to the minor street because the signal provides a safe access to the major street. Signals also have many of the effects that stop signs have; they can cause quick starts from the signal and running of unwarranted signals. Traffic signals are generally not considered traffic management devices and are not recommended.

Usage:

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

Approval:

City Council. No unwarranted signal should be installed.

Removal:

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

Cost:

Depending on the complexity of the signal, cost could range from \$150,000 to \$200,000 per signal.



Category III (continued)

SPEED HUMPS

Speed humps are not recommended for use in Los Altos. The City prides itself on its unique “village” character. Speed hump installations require substantial striping and signage, detracting from the rural character that sets Los Altos apart from others. The following narrative is provided for information.

Certain types of speed humps (also referred to as pavement undulations or speed bumps) may be effective at slowing traffic and also may have an impact on the amount of cut-through traffic on local neighborhood streets. Speed humps range in height from about 3" to 4" and are approximately 20' long and extend across the entire width of the street, (they are not the older style speed bump that is much shorter in width and sometimes much taller). The older style speed bumps are ineffective at slowing traffic as many motorists have realized that it is actually easier to cross them at higher speeds than at slower speeds.

Speed bumps are not recommended for use in the NTMP; but speed humps can be considered. They should not be installed indiscriminately, however. Very specific criteria for their use has been developed by other cities, including roadway classification, traffic volume, traffic speed, whether or not the roadway is an emergency route, on-street parking conditions, whether or not the roadway is a bicycle route, the location of schools and sidewalks, and other criteria. The criteria have been simplified for our use and are described below.

The disadvantages of speed humps include complaints from residents of neighboring streets due to diversion of traffic onto area streets, emergency vehicle travel time, street sweeping, and bike route impacts. Also, like unwarranted stop signs, motorists will accelerate between humps and decelerate at the hump resulting in very significant noise and air pollution. There is also noise associated with vehicles going over the speed hump.

In Los Altos, neighborhoods without sidewalks or pedestrian pathways along the street, speed humps become a unique hazard to pedestrians, especially during evening hours, in areas without street lights.

Speed humps should be placed a minimum of 175' to 200' from the intersection and should be spaced a minimum of 200' apart and a maximum of 500' apart, but more typically about 300' to 400' apart to be effective. Some streets will require multiple speed humps. Criteria for installation of speed humps include the following:

- The street must be a local street and should have a defined edge such as a curb or some physical device to prevent motorists from driving onto the shoulder to avoid the speed hump.
- The street must be at least 750' long.
- The speed limit may not be greater than 25 miles per hour.
- The 85th percentile speed must be at least 32 miles per hour.
- At least 55 percent of all votes cast of the street's property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff must approve the speed humps.
- Adequate provision of access for emergency vehicles must be provided.

Category III (continued)

SPEED HUMPS (continued)

Usage:

Speed humps are one of the alternatives for slowing traffic and slightly decreasing the volume of traffic. They should not be installed on arterials or collector streets.

Traffic Control

Speed humps shall be accompanied by standard 30" W37 (BUMP) signs facing each direction of traffic, placed adjacent to or slightly in advance of each hump. Advance warning W37 signs placed on each approach direction at least 200 feet in advance of the first hump in a series (or a sole hump). The signs may be accompanied by supplementary signs indicating "x miles ahead" or "next X miles" or an advisory speed sign. The speed humps shall be marked with 12-inch reflective white stripes set parallel to the centerline on 6-foot centers with the center-most stripe 3-feet from the centerline. The word "BUMP" in 8-foot white reflective letters shall be placed 50 feet in advance on each approach to each hump.

Installation Details

Speed humps shall not be located over utility manholes, valves, pullboxes, vaults, at driveways, fire hydrants or drainage problem areas. They should be located downstream from drainage inlets. If installed on roadways without vertical curb defining the edge of road, it may be necessary to consider measures to discourage drivers from attempting hump avoidance maneuvers outside the traveled way. When possible, speed humps should be placed to take advantage of street lighting.

Approval:

55 percent approval of all votes cast of the neighborhood property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

55 percent of all votes cast of the neighborhood property owners and City Council approval.

Cost:

Cost estimates range from \$ 4,000 to \$ 9,000 for each speed hump, including signing and striping.

Note:

There may be a significant "scar" left at the speed hump location after the removal process.

VIEW STREET, MOUNTAIN VIEW



Category III (continued)

NECKED INTERSECTIONS: CHOKERS AND BULB-OUTS

Necked intersections are also referred to as chokers or bulb-outs that may be installed at intersections. 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 speeds 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 curb, which could increase pedestrian hazards, and narrowing of the lanes forces motor 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 the 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 have an asphalt width of 22'.
- The speed limit may not be greater than 25 miles per hour.
- The 85th percentile speed must be at least 32 miles per hour.
- The street may not be a two-lane (each direction) roadway.
- Adequate provisions for emergency vehicles must be provided.

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:

Approval rate of 55 percent of all votes cast of the affected property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

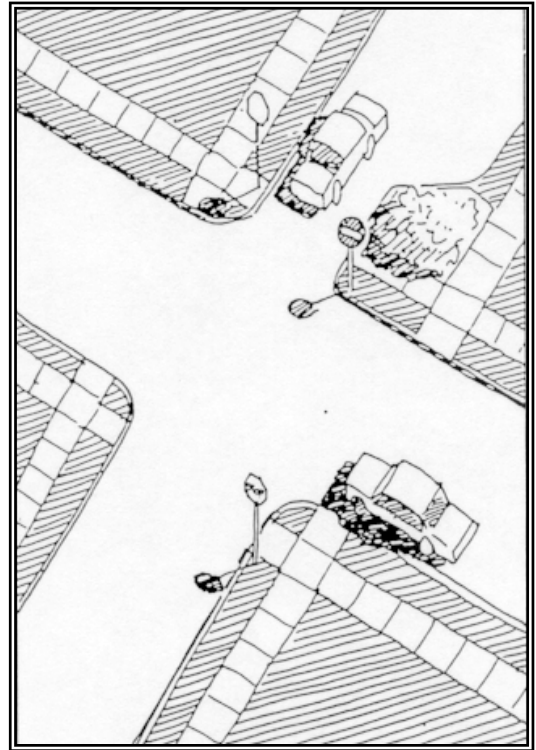
Removal:

Upon request, 55 percent approval of all votes cast of the neighborhood property owners.

Cost:

The cost ranges from \$2,000 for a simple raised berm to \$40,000 for low maintenance/high aesthetic landscaped islands, per set (one on each side of the street). Cost of landscape maintenance will be the responsibility of the neighborhood.

CHOKERS/NARROWING



SYLVAN AVENUE, MOUNTAIN VIEW



Category III (continued)

STREET CLOSINGS

A street closure is a complete closure of a street at an intersection or mid-block. It will result in the creation of a cul-de-sac. Access for emergency vehicles can be provided through certain styles of closures. Emergency response times could be impacted. Bicycle and pedestrian access usually is maintained. This device is the most extreme traffic calming measure, but can be the most effective measure at reducing the volume of traffic. It may also have an impact on the speed of traffic. 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 installed.

Very specific criteria for the installation of street closings or cul-de-sacs are required. The criteria include:

- Street must be a local neighborhood street only; no collectors or arterials may be closed.
- A majority of the daily traffic on the street must be non-neighborhood or cut-through traffic as determined by the ITE *Trip Generation Manual* or a license plate survey (origin and destination study).
- The street must have a turnaround at some location along its length if the street is greater than 150' long. This requirement is necessary so that fire trucks may turn around once they have entered a dead-end or cul-de-sac street. The street must be at least 50' at the property line for fire trucks to turn.
- Fire District and the Police Department must concur on closure and in closing design.
- This Plan must address the traffic diversion issue of its implementation.

Approval:

An approval rate of 55 percent of all votes cast of the property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

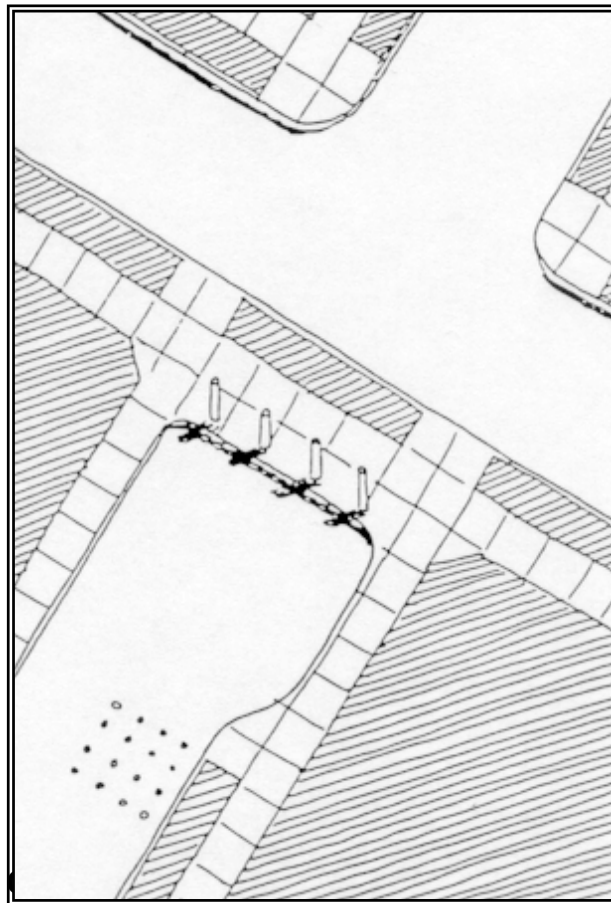
Upon request, 55 percent approval of all votes cast of the neighborhood property owners for removal of a permanently installed street closure.

Cost:

Approximate cost ranges from a low of \$1,000 for simple removable bollards to \$40,000 for a landscaped island. City staff to determine most appropriate type of permanent closure. Temporary installation of freeway or construction type barriers is considerably less expensive and is recommended for a trial demonstration. Cost of landscape maintenance will be the responsibility of the neighborhood.

Category III (continued)STREET CLOSINGS (continued)CUL-DE-SACS

Cul-de-sacs successfully reduce the volume of through traffic on neighborhood streets. They may or may not reduce speed, depending on the length of the street. However, cul-de-sacs can rarely be created on neighborhood streets that do not impede some amount of circulation. Cul-de-sacs are the same technique as street closures. Because of the need to purchase right-of-way to create a cul-de-sac, the cost to do so is usually prohibitive. See the discussion above of street closings for more information.



Category III (continued)**ONE-WAY ENTRANCES AND/OR EXITS TO TWO-WAY STREETS**

One-way entrances and/or exits to two-way streets are accomplished through various devices that prevent motorists from turning in a specified direction. An example of a variation of this situation can be seen at Houghton Avenue and Dana Street in the City of Mountain View. Both Houghton Avenue and Dana Street can only turn right in and right out. This technique can be quite effective in limiting the volume of traffic on a particular street. Some designs of these devices are more effective than other designs. It may be necessary to install different devices at different locations.

One-way entrances and exits do not slow traffic. They may result in some traffic diversion. Other designs at intersections also result in the same restriction of movement, including bulb-outs and chokers. 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 item include:

- Excessive cut-through or non-resident 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 (license plate survey).
- Adequate provisions for emergency vehicles must be provided.

Usage:

One-way entrances and/or exits are preferred alternatives for decreasing traffic volumes.

Approval:

An approval rate of 55 percent of all votes cast of the property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

Upon request, 55 percent approval of all votes cast of the neighborhood property owners on the street with restricted access.

Cost:

\$2,000 minimum to \$20,000 for a large landscaped device. Cost of landscape maintenance will be the responsibility of the neighborhood.

HOUGHTON AVENUE AT DANA STREET, MOUNTAIN VIEW



Category III (continued)

FORCED-TURN CHANNELIZATION

Forced-turn 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 a neighborhood more difficult. Speed may also be reduced, especially near the intersection. Also, this may discourage some drivers that formerly 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. Emergency response times could be impacted. 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 item include:

- Excessive cut-through or non-resident traffic as calculated from the expected generation based on the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* or an origin and destination study (license plate survey).
- Adequate provisions for emergency vehicles must be provided.

Usage:

Forced-turn 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:

An approval rate of 55 percent of all votes cast of the property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

Upon request, 55 percent approval of all votes cast of the property owners on the street with channelization.

Cost:

Costs range from \$2,000 for a simple berm to \$40,000 for a low-maintenance landscaped island. Cost of landscape maintenance will be the responsibility of the neighborhood.

PARK BLVD. @ MARGARITA AVENUE, PALO ALTO



Category III (continued)

ONE-WAY CHICANES (“SHI-KANE”)

A one-way chicane is an artificially created series of tight turns with only enough width for one-way travel through a short section. They are similar in construction to chokers or bulb-outs but protrude more substantially into the street. While chokers merely reduce the width of streets, chicanes eliminate one lane. The purpose of a one-way chicane is to reduce both the speed and volume of traffic. One-way chicanes may be effective. Braking and accelerating in the chicane area, however may generate some noise. Overall noise however, may be reduced due to lower speeds and fewer vehicles. Some parking is lost at the location of each chicane. There would be a substantial delay to emergency vehicles if a chicane is very long. Access to the entire street is maintained, however.

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

- Street must be at least 750' long and have existing curbs.
- The speed limit may not be greater than 25 miles per hour.
- The 85th percentile speed must be at least 32 miles per hour.
- The street must be a local street; it may not be a two-lane (each direction) roadway or a collector.
- A majority of the daily traffic on the street must be non-neighborhood or cut-through traffic as determined by the ITE *Trip Generation Manual* or a license plate survey.
- Adequate provisions for emergency vehicles must be provided.

Usage:

One-way chicanes may be used to reduce both the speed and volume of traffic . This measure is more extreme than some of the other measures and will require significant evaluation to determine its appropriateness.

Approval:

An approval rate of 55 percent of all votes cast of the property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

55 percent approval of all votes cast of the property owners to remove a permanently installed chicane.

Cost:

For a chicane with two installations similar to chokers, the cost ranges from \$4,000 for simple berms to \$80,000 for low maintenance/high aesthetic islands. City staff to determine most appropriate type of installation. Cost of landscape maintenance will be the responsibility of the neighborhood.



Category III (continued)

ROTARIES (Traffic Circles/Roundabouts)

A Roundabout is a relatively small circular island, usually landscaped, placed at the center of an intersection of a local residential street. A traffic circle is a large, higher speed facility. The purpose of Rotaries is to reduce speeds along a length of street, if used in a series, and to reduce accidents at problem intersections. They are used without stop signs; however, yield signs may be installed if they meet warrants. Some series of rotaries have reduced traffic by up to 20 percent; however, a single rotary may have little effect on traffic volume. A single rotary would be used to reduce the accident potential at an intersection. The location of a 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 unaccustomed driver that may cause them to seek an alternative route.

Speed is reduced for about 100' to 200' before and after the rotary. Rotaries can reduce speed from 2 miles per hour to 9 miles per hour, but smaller ones reduce speed less. Emergency access is also slowed but is not blocked completely. Emergency vehicles would have to slow at an intersection to pass through it anyway. Increased maintenance is required for landscaping but there is no impact on drainage or street sweeping. Criteria for the installation of rotaries follows:

- Documented accident problem.
- Traffic control signs, such as stop or yield signs, consistently ignored or only partially obeyed.
- Shorter streets on a grid-type street system are more appropriate for installation of rotaries since they are more effective at those locations.
- Adequate width at each intersection must exist to accommodate the appropriately sized rotary.
- The speed limit may not be greater than 25 miles per hour (roundabout).
- The 85th percentile speed must be at least 32 miles per hour (roundabout).

Usage:

Rotaries may be used at locations that experience accidents at a series of either uncontrolled intersections or at a series of intersections with sign control. Single rotaries may also be used at intersections with an accident potential or history.

Approval:

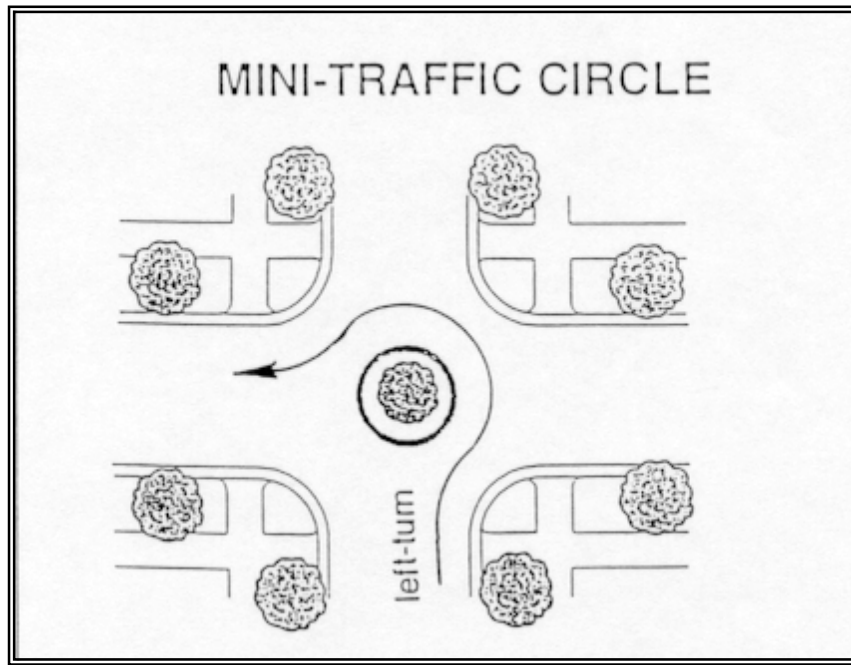
An approval rate of 55 percent of all votes cast of the property owners and 66 2/3% of property owners adjacent to the solution directly impacted by noise or parking issues as determined by staff, and with City Council approval.

Removal:

Upon request, 55 percent approval of all votes cast of the property owners on all cross-streets for removal of the entire group of permanently installed traffic circles.

Cost:

The cost ranges from \$2,000 for a small roundabout constructed with simple berming to \$30,000 for a large traffic circle with landscaping. However, large islands are rarely recommended. Cost of landscape maintenance will be the responsibility of the neighborhood.



VIEW STREET @ CALIFORNIA, MOUNTAIN VIEW (TEMPORARY INSTALLATION)



VIEW STREET, MOUNTAIN VIEW (TEMPORARY INSTALLATION)



LINCOLN AVENUE @ BRYANT STREET, PALO ALTO (PERMANENT INSTALLATION)



GLOSSARY

Access	The ability to enter and/or exit a property, street or neighborhood; includes both ingress and egress.
ADT	Average daily traffic, or the 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 midblock or at the intersection, used to narrow the roadway to slow traffic.
Chicane (“Shikane”)	An artificial curve added to an otherwise straight street.
CIP	The City's Capital Improvement Program, used to schedule and budget major capital projects.
<i>Communiqué</i>	The City of Los Altos news publication, distributed three times per year.
Cul-de-sac	A dead-end street with a paved circular area to allow motorists to turn around.
Delineation	Paint or plastic applied to street pavement to supplement regulations or warnings.
Forced Channelization	Similar to a diverter; used to force traffic to right or left.
General Plan	The City General Plan is the planning document for Los Altos. It contains several chapters that describe and discuss various important aspects of the City and sets goals, policies and actions. The Circulation 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 compiles surveys of the amount of vehicle 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.
License Plate Survey	A “local” O&D study developed by recording license plate data as traffic travels through a neighborhood.
Lidar	Laser speed measuring device

GLOSSARY (Continued)

Mid-block	Any point between successive intersections along a street.
Neighborhood Traffic Advisory Program	Program of a process and procedures for addressing traffic problems in the City of Los Altos.
Necked Intersection	Similar to a choker or a bulb-out placed at an intersection; used to narrow the intersection to slow traffic.
NTMP	Neighborhood Traffic Management Program.
One-Way Entrance and Exit	Similar to a diverter; used to prohibit entrance into or exit out of a street or neighborhood.
Origin & Destination Study	("O&D study") is a study of the beginning and ending of vehicle, pedestrian, and/or bicycle trips.
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.
Rotary	A landscaped or hardscaped 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 traffic circles.
Roundabout	A relatively small rotary, usually landscaped, placed in the center of an intersection of local residential streets.
Rumble Strips	Lines of small ceramic bumps used to slow traffic or alert drivers to certain road conditions (very noisy, not for residential areas).
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 Humps	Often referred to as speed bumps or undulations. Speed humps are placed across the street and used to slow traffic. Approved speed humps are 3" to 4" in height, entire width of the street, and 20' long.
Speed Survey	A survey of vehicles performed with radar 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). Except for local residential streets, radar may only be used to enforce a speed limit set and periodically verified with a speed survey.

GLOSSARY (Continued)

Speed/Warning Signs	Speed limit signs and signs warning motorists of traffic and roadway conditions such as speed humps or schools, curves, etc.
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.
<i>Town Crier</i>	The local Los Altos newspaper, published weekly.
Traffic Calming	A technique for reducing the speed and volume of traffic on residential streets that uses traffic enforcement and various traffic control devices.
Traffic Circles	Large rotary that allows faster speed and greater traffic volumes than roundabouts.
Traffic Control Devices	A general category of physical devices used to direct and slow traffic, such as speed humps or rotaries.
Traffic Plan	Specific plan to address traffic concerns of a street/neighborhood.
Turn Restriction	The prohibition of right and/or left turns from one street to another by means of signage, diverters or forced channelization.
Warrant	Measurable guidelines to justify the installation of a traffic control device.
Woonerf	A European style of narrow street with uneven paving materials such as brick or cobblestone and a variety of activities on the street, including landscaping, parked cars, children's play area and bicycle access. The variety of activities and paving forces vehicles to travel slowly as they wind their way down the street.
85th Percentile	The speed at or below which 85 percent of vehicles surveyed travel. This measurement is one criteria used to set the speed limit on roadways.

OUR MISSION

The mission of our city staff, council, commissions, committees and volunteers is to foster and maintain the City of Los Altos as a great place to live and to raise a family.

To accomplish this we shall:

- assure responsive and reliable police, fire, sewer, garbage, cable TV and animal control services;
- maintain and improve city streets, parks, and municipal facilities;
- provide leadership and oversight in city-wide planning and construction to assure orderly, safe, and attractive development;
- encourage and regulate local businesses to provide the products and services needed by residents and property owners, where they need them;
- provide recreation facilities and services, especially for families and senior citizens;
- preserve our historical and cultural roots;
- maintain liaison and cooperation with local schools, organizations and agencies, neighboring cities, and the county, region, state, and federal governments to fulfill our obligations and take advantage of our opportunities; and
- nurture and promote the traditions of volunteerism, philanthropy, and participation that transform our city into a vibrant, caring community.

GENERAL PLAN GOALS

PRESERVE AND ENHANCE THE IDENTITY AND UNIQUE CHARACTER OF LOS ALTOS

RETAIN THE CHARACTER AND NATURAL APPEARANCE OF THE CONSTRUCTED ENVIRONMENT

MAINTAIN A SYSTEM OF MAJOR STREETS AND ROADWAYS BOUNDING BUT NOT PENETRATING RESIDENTIAL AREAS, SUPPLEMENTED BY A SYSTEM OF ACCESSIBLE REGIONAL RAPID TRANSIT, HIGHWAYS, EXPRESSWAYS, AND FREEWAYS.

Goal 1: Support development of an efficient regional transportation system.

Policy 1.2: Discourage regional and sub regional traffic from passing through the community.

Goal 2: Provide for convenient and safe vehicular travel throughout Los Altos.

Policy 2.9: Discourage traffic from using local streets to bypass congested intersections.

Policy 2.11: Achieve traffic volumes and speeds on collector and local streets that are compatible with the character of the adjacent land uses, the function of the street, and bicycle and pedestrian traffic.

Policy 2.16: Implement the NTMP and related traffic calming measures to reduce the speed and volume of traffic on local streets within the community, especially in residential areas and adjacent to schools.

Policy 2.19: Narrow street segments and intersection approaches at appropriate locations to improve pedestrian safety and reduce travel speeds.

Policy 2.20: Enhance driving safety in the community.

Los Altos General Plan

