

City of Menlo Park, California  
Transportation Division

# **Neighborhood Traffic Management Program**

City of Menlo Park  
Transportation Division  
November 16, 2004

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## INTRODUCTION

An increasing number of Menlo Park residents are concerned about vehicular traffic volumes and speeds in their neighborhoods. Safety conditions are of concern especially in the vicinity of schools. The City has responded to community concerns by installing traffic control devices, roadway features, as well as enforcement of traffic and parking regulations.

This Neighborhood Traffic Management Program (NTMP) is designed to provide consistent, citywide policies to neighborhood traffic management to ensure equitable and effective solutions. It represents the City of Menlo Park's commitment to enhance the safety and livability in its neighborhoods.

The information contained in this document aims at helping Menlo Park's residents in identifying appropriate traffic management measures to address neighborhood traffic issues. Traffic management measures consist of educational, enforcement, and physical measures used to influence the behavior of drivers (see TOOLBOX section in back of this document).

## PROGRAM PHILOSOPHY

- Stable residential neighborhood traffic requires efficient arterial and collector traffic flow to minimize incentives to cut through residential neighborhoods. The first line of defense against neighborhood traffic problems is an efficient arterial and collector grid.
- Streets are a community resource. Denial of public access by closing streets is not a goal of the Neighborhood Traffic Management Program (NTMP) except in cases of over-riding safety concerns. Furthermore, it is not the goal of the NTMP to modify traditional traffic patterns within a neighborhood or between neighborhoods.
- Residents of residential streets have a right to a safe and peaceful environment; right to a fair share of law enforcement resources; and, protection from disproportionate increases in undesirable traffic conditions.
- Residents of streets in the vicinity of traffic management project streets have a right to specified numerical limits to adverse consequences (traffic diversion or emergency vehicle delay, as an example) due to traffic controls on "project"



- streets. This includes limits on cumulative effects from multiple traffic management measures.
- The public at large has an equal right to access public streets free of hazardous features designed to impede vehicular traffic.

## **PROGRAM GOALS**

The City of Menlo Park established its Neighborhood Traffic Management Program (NTMP) with a number of goals as follows:

- The primary goal of the NTMP is to correct demonstrably unsafe conditions, with priority to locations with higher accident incidences and higher measured speeds.
- A secondary goal of the NTMP is to provide residents of residential streets with protection and relief from disproportionate traffic increases.
- Provide a NTMP format that is responsive to all neighborhoods in the City of Menlo Park.
- Improve local residents' sense of well-being about their neighborhood streets and enhance traffic safety in residential areas.
- Incorporate the preferences and requirements of community members into the design and operation of streets within their neighborhoods.
- Provide objective criteria to help City staff prioritize projects.
- Ensure the program is cost effective by encouraging high standards of acceptance before trials are started.
- Clearly state procedures to avoid neighborhood divisiveness.

## PROGRAM OBJECTIVES

- Provide a format for citizen involvement in identifying traffic concerns and objectives, as well as the traffic management measures that best suit their neighborhood needs.
- Provide a process that includes clear opportunities for members of the affected community to either support or change the course of action with regard to the recommended plan, as well as temporary and permanent implementation of features.
- Integrate engineering, enforcement and education initiatives to encourage positive driver behavior in residential neighborhoods.
- Improve neighborhood livability by encouraging compliance with designated speed limits, and by possibly reducing posted speeds.
- Discourage cut-through traffic within residential neighborhoods.
- Maintain capacity and facilitate traffic flow on the City's arterial and collector roadways network.
- Effectively balance public safety interests including traffic mitigations and emergency response. In other words, recommend neighborhood traffic management plans that clearly address provisions for emergency response.

## PROGRAM GUIDELINES

***Compatibility with City Plans:*** Neighborhood traffic management projects are to be compatible with overall City transportation goals and objectives as set forth in the City's General Plan, Bicycle Plan, and adopted area plans.

***Compliance with Operational and Design Guidelines:*** Recommended traffic management measures must comply with applicable operational and design guidelines, including state and federal Manuals on Uniform Traffic Control Devices (MUTCD), the Institute of Transportation Engineers (ITE) manual on traffic calming, Caltrans Traffic Manual and Caltrans Highway Design Manual, the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets, and the Americans with Disabilities Act requirements.



**City Liability:** Neighborhood traffic management plans must not result in unreasonable/unacceptable liability exposure for the City.

**Neighborhood Focus:** Implementation of traffic management plans will be undertaken on a neighborhood basis, rather than on a site or street specific basis, when excessive traffic volumes and/or speeds are expected to be shifted to other residential City streets.

**Cut-Through Traffic:** The NTMP is not used to upset traditional sharing of streets in neighborhoods or between adjacent neighborhoods. Neighborhood traffic management plans may be used to discourage extraordinary cut-through traffic from utilizing residential streets and route most through trips to state highways, as well as primary and minor arterial streets. This should be consistent with the functional roadway classifications identified in the City's General Plan. Cut-through traffic can be estimated based on an Origin-Destination (O-D) survey.

**Petitions and Surveys:** Definition of affected residents to include households and businesses of "project" streets, side streets within one block and streets likely to be adversely affected (i.e. diverted traffic, delayed emergency response, etc.) by traffic management measures, as determined by City staff.

- Petition to study: Supermajority of all Menlo Park households and businesses on "project" street as well as side streets within one block.
- Survey to test: Majority of all affected (as defined above) Menlo Park households and businesses, required before proceeding with installation.
- Survey to make permanent: Majority of all affected (as defined above) Menlo Park households and businesses is required.. This is done after 6-month trial period.

Surveys shall be mailed to each Menlo Park address within the study area. A follow up survey shall be mailed to those addresses that do not respond to the first survey. Only one survey from each household or business will count towards reported final results.

**Traffic Diversion:** All residential streets are protected by verifiable numeric limits to traffic diverted by NTMP projects, including cumulative diversion from a sequence of multiple projects. Verification requires that baseline volume counts be made for before/after comparison.



**Multi-Modal Traffic Movements:** Neighborhood traffic management plans and designs should integrate the travel needs of public transit, pedestrians and cyclists.

**Warrant Analysis:** Some traffic control devices, such as stop signs and traffic signals, may be installed when warrants are satisfied or when deemed appropriate by the City.

**On-Street Parking:** Some traffic management measures will require the removal of curb-side parking spaces. Parking loss at specific locations will be balanced with the neighborhood's desire to establish the traffic management measures.

**Commercial Vehicles:** Commercial vehicles and trucks will be routed onto the state highways and arterial streets per the City's adopted truck route map, even where such routing is not the shortest distance between two points.

**Emergency Response:** Emergency vehicle access and response should be preserved. To this end, the Fire District has developed a map shown on **FIGURE 1** indicating the primary routes of travel throughout the City of Menlo Park. The City will work with the Fire District to identify the potential delay (based on Fire District tests or generally accepted traffic engineering standards such as the ITE/FHWA Traffic Calming: State of the Practice's "Emergency Response Time Study Results") caused by each feature in the TOOLBOX, to be used for predicting net delay due to proposed projects. Predicted delays will take into account the range of possible profiles and dimensions of each feature in relation to the roadway and in relation to the characteristics of all vehicles to be affected. The net delay predicted for a project will be provided to residents along with other information on proposed installations. No project will be permitted which delays emergency response by more than one minute. The use of stop signs and all Level II features will be evaluated in consultation with the Fire District, and in consideration of the impacts on the Fire District's adopted emergency response times. Fire District officials will be notified if Level II measures are implemented on a trial or permanent basis. The same notification and consultation requirements shall apply to the Police Department

**Landscaping:** Agreements may be made with residents and/or neighborhood associations to pay for the landscaping and associated irrigation of Level II measures.

**Area Coverage:** The City may decide to combine two or more nearby projects in order to benefit a larger community, as well as to better investigate impacts throughout the neighborhood along with the most appropriate traffic management measures.

**Priority Ranking:** Level I projects will initially be carried out on a first-come first-served basis. Should a number of projects arrive around the same time, or as projects accumulate



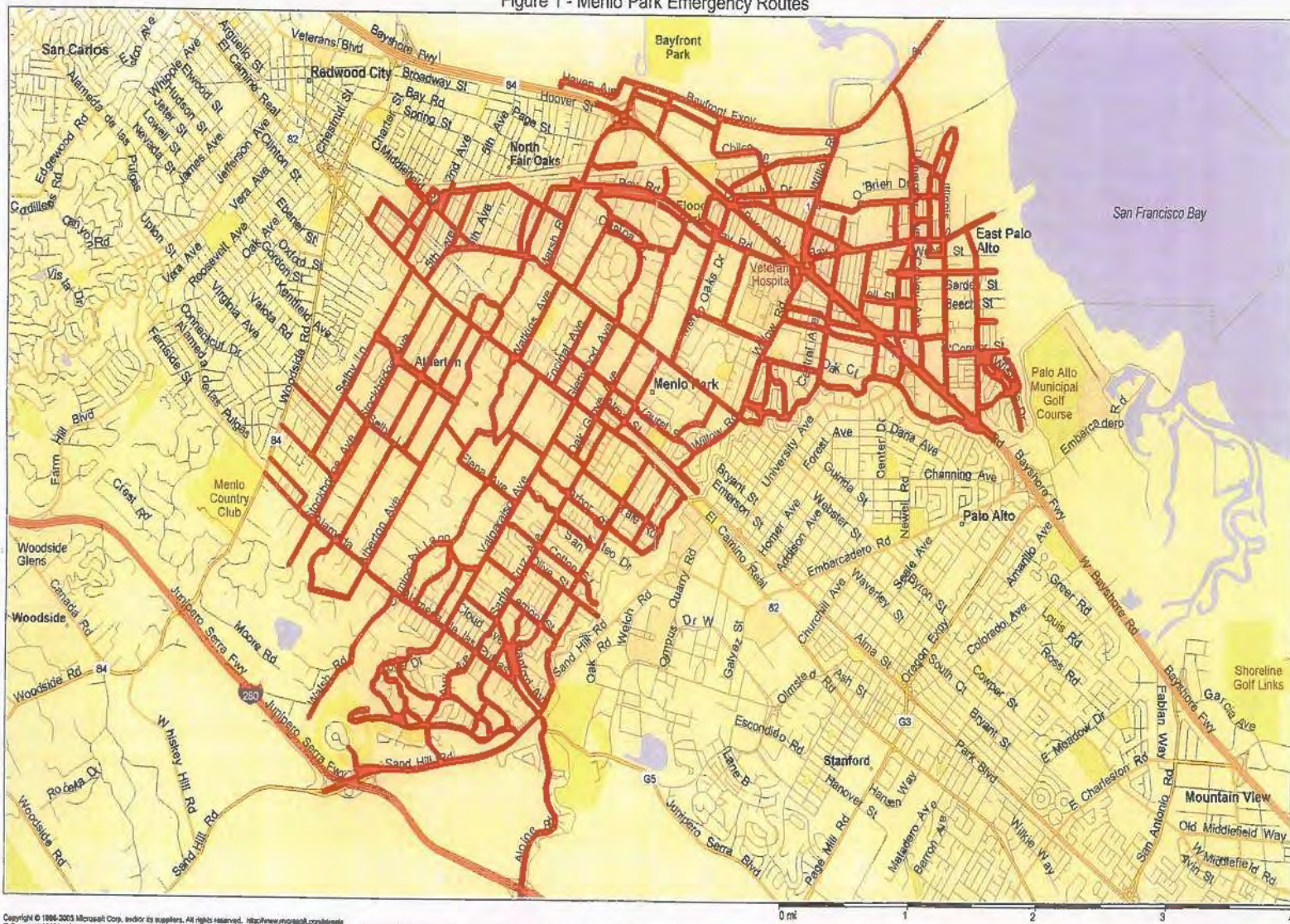


on the City's work program, a priority ranking system may be triggered. At this point, projects will be ranked based on priority criteria, later detailed in this document, that contain factors such as collision history, pedestrian activity, as well as vehicular traffic volumes and speeds. The City's General Plan also prioritizes streets that are deemed to have unusual conditions, such as limited visibility of pedestrians, irregular roadway design features, or indication of unreported crashes. Level II projects will be ranked based on the criteria listed on Page 14, using the Prioritization Worksheet on Page 49.

**Funding:** The City will pursue funding through grants where possible to fund the implementation of neighborhood traffic management plans. Funding availability may affect timing of project implementation. Based on availability of funds, the more expensive projects may have lesser priority ranking in terms of implementation. More detailed information is later provided under a separate section on FUNDING.



Figure 1 - Menlo Park Emergency Routes



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## GENERAL PLAN GUIDELINES

Traffic congestion usually occurs on highways and arterial roadways. In congested urban areas, vehicular traffic tends to cut-through residential streets to avoid the more congested main roadway network. The City of Menlo Park General Plan identifies a number of street classifications, namely freeways/expressways, primary arterials, minor arterials, collectors, and local streets. State freeways, expressways and arterials are designed for efficient movement of through traffic at speeds which are as high as can be reasonably allowed in view of safety considerations and, when applicable, the number of access locations (intersections, property driveways, etc.) being provided. Collector streets provide access to abutting land parcels and enable moderate quantities of traffic to move between local streets and the arterial street network. Local streets provide access to immediately adjacent properties and are typically designed to serve short trip lengths, and relatively low vehicular traffic volumes and speeds. This NTMP is intended for application on residential streets, which would include local and collector streets within the City of Menlo Park.

Policy II-A-7 of the City's General Plan states "All streets should operate with the Roadway Classification System Guidelines of the General Plan. To protect local streets, the City shall develop and implement a Residential Traffic Management Program that defines a process to initiate and evaluate neighborhood traffic issues, identifies acceptable levels of traffic volumes; speeds and diversion, and establishes a process whereby the City will use good faith efforts to implement all reasonable design and traffic management improvements to attain traffic volumes on local residential streets not to exceed 1,500 to 2,500 vehicles per day depending on the size and characteristics of the street. In order to determine priority of funding and urgency, the Residential Traffic Management Program shall include a point system that includes rating of streets based on such criteria as speed, volume, accidents, near-accidents, and pedestrian activities. Any proposed design or traffic management improvements should not divert a substantial volume of traffic to other Menlo Park streets of the same or lower classification. Any proposed design changes or traffic management improvements shall invite public input from all residents living on adjacent streets which might be affected by any traffic management improvements and/or design changes which could divert traffic onto their street".

Policy II-A-9 of the General Plan states "The City shall establish, as a priority, the protection of local streets in residential areas from excessive speeding and excessive volumes of through traffic. For the purposes of this policy 'through traffic' shall mean traffic having nor an origin nor a destination within the relevant neighborhood. Adequate capacity on arterial streets should be provided to encourage, to the extent possible, their use for Menlo Park residential traffic."



## TRAFFIC MANAGEMENT MEASURES

Depending on the nature of the request, City staff will recommend and/or assist the community in identifying appropriate traffic management measures. Selection of measures will be from one of two categories depending on the type and extent of the investigated issues. These two categories are as follows:

### Level I “Express”

Level I (a.k.a. “Express”) measures include education and enforcement initiatives. They also include engineering measures that are relatively low in cost and simple in their implementation. These engineering measures could be signing, striping, curb marking, changes in signal timing, and improvement in street lighting as listed below.

- Educational programs
- Targeted police enforcement
- Regulatory signs
  - Speed Limit signs
  - STOP signs
  - Truck restriction signs
  - Parking prohibition signs
- Static warning and specialty signs
  - High visibility signs
  - School Area signs
  - Pedestrian Crossing signs
  - Neighborhood information signs
- Special striping and markings
  - Reduced lane width/edge line
  - Marking of street narrowing features
  - High visibility crosswalks
  - Red curbs
- Dynamic speed signs
- Radar speed trailer
- Improvement to street lighting
- Addition or removal of turn lanes
- Changes in traffic signal timing
- Street Trees



## Level II

Level II measures are more restrictive traffic management features that may divert traffic and impact access to properties. Measures under this category are generally higher in costs and include the following:

- Flashing Beacons <sup>(1)</sup>
- Crosswalk Warning Systems <sup>(1)</sup>
- Textured pavement <sup>(1)</sup>
- Gateways and entry treatments
- Turn Prohibition signs
- Traffic circles
- Speed humps and cushions
- Speed tables and raised crosswalks
- Bulbouts, curb extensions, and chokers
- Median island slow points
- Chicanes and angle points
- Median barriers <sup>(2)</sup>
- Forced-turn channelization <sup>(2)</sup>
- Diagonal diverters <sup>(2)</sup>
- Half (one-way) street closure <sup>(2)</sup>
- Full street closure <sup>(2)</sup>

Notes:

(1) City staff has the discretion to take implementation of these features directly to City Council for approval without a neighborhood survey process.

(2) These Level II measures may cause significant traffic diversion to other roadways. These features are prohibited by the program philosophy statement barring use of the NTMP to modify traditional traffic patterns, except in cases of over-riding safety concern.

## GENERAL IMPACTS

Measures listed under Levels I and II are described in detail under the TOOLBOX section of this document. In addition to the information provided in the TOOLBOX,



general potential advantages and disadvantages associated with Level II features are listed below.

**Advantages:**

- Permanent solution with one time capital expenditure
- Reducing travel speeds
- Reducing traffic volumes
- Reducing pedestrian crossing distances
- Improving motorist-pedestrian visibility of each other
- Breaking-up driver sight-lines on straight streets
- Enhancing identity of residential neighborhoods
- Adding space for pedestrians, landscaping, or installation of decorative features
- Placing signs closer to driver's cone of vision
- Reducing the number and severity of collisions
- Reducing the need for police enforcement
- Discouraging commercial trucks from cutting-through residential neighborhoods

**Disadvantages:**

- Vertical features and sharp curves have negative impacts on response times of emergency vehicles, especially fire apparatus and ambulances
- Hindering the movements of transit buses and utility trucks
- May reduce vehicle or pedestrian visibility
- Inconveniencing local residents who are forced to drive longer and more circuitous routes to/from their homes
- Preventing left-turns at driveways and converting them to downstream U-turns
- Diverting vehicular traffic to other neighboring residential streets
- Increasing vehicle queue at intersections
- May increase risk to bicyclists, roller skaters, and physically challenged pedestrians
- Increasing traffic noise at the features due to vehicles braking, and driving over and around the physical features
- Loss of curb-side parking spaces adjacent to the features



- Liability exposure to the City that can be associated with vehicle damage, personal injury, or delay in response time of emergency vehicles
- May require reworking of surface drainage and other utilities
- Some features, such as speed humps, can cause negative visual impacts
- Expensive design and construction costs
- Increasing street maintenance costs that can be associated with landscaping, signing, markings, and replacement of damaged features

## QUALIFYING CRITERIA

Requests for neighborhood traffic management must satisfy at least one of the minimum qualifying criteria as noted below.

1. The 85<sup>th</sup> percentile speed must be in excess of the posted speed limit by more than 5 miles per hour (mph). The 85<sup>th</sup> percentile speed is the speed at, or below which 85% of motorists travel. In other words, this criteria aims at capturing the peak travel speeds.
2. The street is primarily residential in nature, is classified as a local street and has an average daily vehicular traffic volume that exceeds 1500 vehicles per day (vpd), or, is primarily residential in nature, is classified as a collector street and has an average daily vehicular traffic volume that exceeds 3000 vehicles per day (vpd).
3. Collision data during the last available 36 months demonstrates that the numbers of accidents are above the City-wide average for a similar type of street/intersection.



## LEVEL II PRIORITY CRITERIA

Level II projects will be prioritized based on the following qualifying criteria. (Level I projects will be completed on first-come first-served method. Should the City receive a number of projects around the same time, or as projects accumulate on the City's work program, a priority ranking system may be triggered.)

1. Collision History – Locations with a larger number of preventable collisions receive a higher priority ranking.
2. Travel Speeds - The greater the 85<sup>th</sup> percentile speed exceeds the designated speed limit by more than 5 mph, the higher the priority ranking.
3. Traffic Volumes - The greater the vehicular traffic volume the higher the priority ranking.
4. Pedestrian Facilities – Locations that lack pedestrian paths or sidewalks will receive a higher priority.
5. Schools and Activity Centers – Streets that serve as a primary route to schools and activity centers receive a higher priority ranking.

A sample prioritization worksheet describing the calculation of ranking points is attached for reference.

## NEIGHBORHOOD TRAFFIC MANAGEMENT PROGRAM PROCESS

Completion of a traffic management plan is described below.





### Process for Level I Measures (Express Process)

Implementation of Level I measures will follow the process described below.

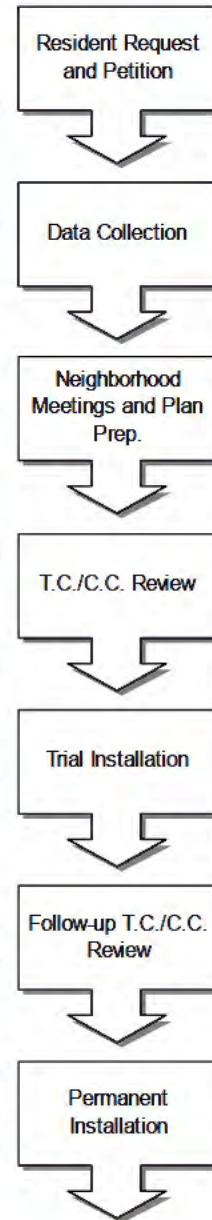
**Receipt of a Request:** A resident alerts the City about a problem area that involves speeding and/or large volumes of traffic, potentially associated with cut-through movements.

**Selection of Study Area and Submission of Neighborhood Action Request Form (NARF):** City staff will identify boundaries of the study area in consideration of the nature of reported traffic issues, requested corrective measures and areas potentially affected by diverted traffic, delayed emergency response or other consequences. At a minimum, the basic study area will include the project street and side streets within one block.

The person requesting the traffic management improvements will be responsible for completing a “Neighborhood Action Request Form” (NARF) which must include signatures from at least 60% of Menlo Park study area households and businesses. The completed form must include a written description of the location, nature of reported concerns, and requested corrective measures.

City staff may expand the study area/impacted area during any phase of the planning process prior to the implementation of features. This will take place if staff experience, gathered data or analysis results show that additional neighborhood streets may be impacted by any proposed feature. In some cases, the impacted area may include roadways under other City or county jurisdictions. In this situation, efforts will be made to coordinate with the other jurisdiction as appropriate to evaluate the plan impacts.

**Evaluation of NTMP Criteria:** City staff will undertake a cursory review of reported concerns including any needed data collection of collision statistics, and vehicular traffic volumes and speeds. This is to determine if raised traffic issues meet the NTMP qualifying criteria. If City staff determines that the reported traffic issues are not relevant to the NTMP, staff will either take no action or resolve issues without initiating the NTMP process. The contact resident will be notified if any action will be taken by the City.



**Project Prioritization:** Level I projects will be carried out on a first-come first-served basis in consideration of availability of City staff and availability of project funding.

**Transportation Commission Meeting:** The City’s Transportation Commission will schedule a neighborhood meeting for each selected project. The meeting will be held to discuss reported traffic concerns and issues. It is important that the Transportation Commission hears the different views and experiences of the neighbors, as well as results of the preliminary City staff evaluation. Through this process, a shared definition of the reported issues can be developed, along with desired outcomes and applicable solutions that can be further investigated. The Transportation Commission has the discretion to deny the request, recommend an alternative action, or continue to pursue Level I measures. Residents disagreeing with the decision of the Transportation Commission may appeal to the City Council.

**City Staff Review and Recommendation:** City staff will prepare an existing conditions traffic analysis report, and recommend feasible Level I measures. Staff recommendations will be based on multi-modal traffic data, visibility conditions, any performed traffic control warrant analyses, land uses within the impacted area, emergency service routes, public transit routes, etc. This review is essential to reduce the potential for plans being advanced that are not feasible or warranted, or the implementation of measures that may need to be removed at some future time.

**Transportation Commission Review:** The City’s Transportation Commission will review the staff report, and either deny or approve staff’s recommendations.

**City Council Review:** City Council will review the staff report and Transportation Commission recommendation. The Council will either deny, recommend plan revisions, or approve its temporary implementation for a minimum four-month trial period. If approved, the Council will also decide if recommended measures should have a follow-up review after at least four months of their implementation.

**Implementation of Level I Measures:** If approved by the City Council, Level I traffic management options such as the installation of signing or pavement markings will be implemented within six weeks of the Council’s meeting (whenever possible).

**Follow-Up Review:** In the case that the City Council’s decision included a follow-up review, City staff will perform “After” studies following at least four months of implementing the Level I measures. Based on these “After” studies, staff will recommend either removing or retaining the Level I measures and may also recommend continuing the process on a Level II basis.



**City Council Review:** The City Council will review the staff follow-up analysis and associated recommendations. The Council will either deny or approve the staff’s recommendations resulting in retaining the Level I measures on a permanent basis, removing the measures, or continuing the process associated with Level II features.

### Process for Level II Measures

Implementation of Level II measures will follow the process described below.

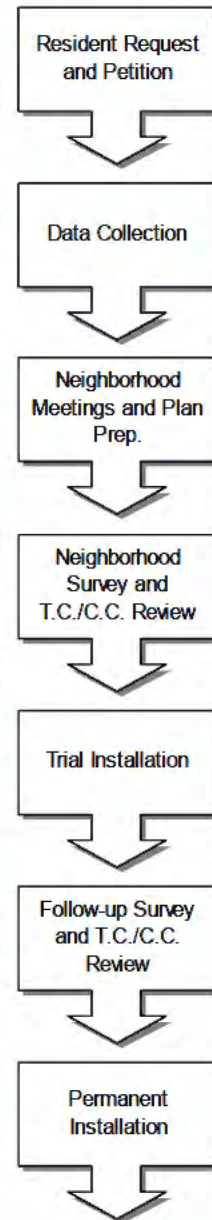
**Receipt of a Request:** A resident alerts the City about a problem area that involves speeding and/or large volumes of traffic, potentially associated with cut-through movements.

**Selection of Study Area and Submission of Neighborhood Action Request Form (NARF):** City staff will identify boundaries of the study area in consideration of the nature of reported traffic issues, requested corrective measures and areas potentially affected by diverted traffic, delayed emergency response or other consequences. At a minimum, the basic study area will include the project street and side streets within one block.

The person requesting the traffic management improvements will be responsible for completing a “Neighborhood Action Request Form” (NARF) which must include signatures from at least 60% of Menlo Park study area households and businesses. The completed form must include a written description of the location, nature of reported concerns, and requested corrective measures.

City staff may expand the study area/impacted area during any phase of the planning process prior to the implementation of features. This will take place if staff experience, gathered data or analysis results show that additional neighborhood streets may be impacted by any proposed feature. In some cases, the impacted area may include roadways under other City or county jurisdictions. In this situation, efforts will be made to coordinate with the other jurisdiction as appropriate to evaluate the plan impacts.

**Evaluation of NTMP Criteria:** City staff will undertake a cursory review of reported concerns including any needed data collection of collision statistics, and vehicular traffic volumes and speeds. This is to determine if raised traffic issues



meet the NTMP qualifying criteria. If City staff determines that the reported traffic issues are not relevant to the program, staff will either take no action or resolve issues without initiating the NTMP process. The contact resident will be notified if any action will be taken by the City.

***Project Prioritization:*** City staff will proceed to rank Level II projects based on the aforementioned priority criteria and attached prioritization worksheet. A ranking list of all Level II NTMP requests will be confirmed with the City's Transportation Commission on an annual basis. The Transportation Commission will schedule neighborhood meetings to address projects based on their approved priority ranking, availability of City staff, and availability of project funding.

***Transportation Commission Meeting:*** The City's Transportation Commission will schedule the first neighborhood meeting for each selected project. The meeting will be held to discuss reported traffic concerns and issues. It is important that the Transportation Commission hears the different views and experiences of the neighbors, as well as results of the preliminary City staff evaluation. Through this process, a shared definition of the reported issues can be developed, along with desired outcomes and applicable solutions that can be further investigated. The Transportation Commission has the discretion to deny the request, recommend an alternative action, or continue to pursue Level II measures. Residents disagreeing with the decision of the Transportation Commission may appeal to the City Council.

***Neighborhood Traffic Committee:*** Depending on the size of the project area and level of community participation, there may be a need to form a Neighborhood Traffic Committee (NTC) with representatives of the different community interests. This is to enable the community representatives to work closely with City staff, elected representatives, and other project stakeholders throughout the planning process. The public will be given notice of all meetings of the NTC. The meetings will be open to the public.

***Detailed Data Collection and Analysis:*** City staff will conduct detailed data collection that may include speeds, volumes, collision history, and other information needed to define the problem and later measure the success of the plan. The City may approach neighborhood representatives for volunteers to assist with the data collection. Enough data will be collected and evaluated to provide an accurate picture of the current conditions throughout the neighborhood. Performed analysis will help determine if/which Level II measures are warranted. This review will include items such as conformance with the state and federal laws, the City's General Plan, type and function of streets involved, compliance with engineering regulations, existing traffic conditions,



and projected traffic conditions, potential for traffic diversion to other residential streets and estimated delay of emergency vehicles.

**Consultation with Project Stakeholders:** Consultation with Police and Fire Departments will take place to determine if the street is a critical emergency vehicle response route, and therefore not eligible for certain features. Consultation will also take place with Santa Clara Valley Transportation Authority (VTA), SamTrans, school district, and any other service provider affected by the requested traffic management plan. Should the plan area contain designated bicycle routes or streets that are heavily used by pedestrians, this task may also involve consultation with bicycle and pedestrian activists.

**Development of Draft Traffic Management Plan (TMP):** City staff with the help of qualified consultants, if needed, will develop a draft neighborhood traffic management plan (TMP) based on the information gathered and desires of residents and other project stakeholders. The TMP will be based on the NTMP Program Goals, Objectives, and Guidelines, as well as approved measures included in the traffic management TOOLBOX.

**Neighborhood Meeting(s):** Once a draft TMP is prepared, City staff will hold a meeting with the NTC and other project stakeholders in order to obtain input on the level of their acceptance and needed plan changes. More than one neighborhood meeting may be held as necessary.

**Resident Survey for Trial Installation:** A survey describing the investigated issues and proposed TMP will be circulated to Menlo Park households and businesses throughout the study area. Goals, benefits, estimated costs, and potential delay to emergency vehicles will be stated in the survey. Support by at least 51% of households and businesses, based on the total number of surveys sent, must be demonstrated through this process prior to considering plan implementation. A second survey shall be circulated to those addresses that do not respond to the first survey. If supported by 51% of households and businesses as described above, the TMP will proceed for review by the City's Transportation Commission.

**Transportation Commission Review:** The City's Transportation Commission will review the TMP, and recommends either plan revisions, or Council approval for temporary implementation of the plan on a six-month trial basis. Based on the Commission's decision, necessary revisions will be made to the TMP.

**City Council Review:** City Council will review the prepared TMP along with its background information. The Council will either deny, recommend plan revisions, or



approve its temporary implementation for a six-month trial period. Based on the Council's direction, necessary revisions will be made to the TMP.

**Temporary Installation:** Subject to Council approval, recommended Level II measures will be installed using temporary materials at City expense for a trial period of six months when appropriate environmental clearances have been obtained. Emergency response access will be tested for various design options in the field using a response apparatus. Modifications will be made if necessary to ensure conformance to emergency response delay limits (stated elsewhere in this document). Depending on the type of traffic management feature, temporary materials may not be available that sufficiently replicated the permanent measure. Therefore, the trial installation may be constructed of permanent materials with the provision that it may be removed at the end of the trial period.

**Follow-up Review:** "Interim" studies will be conducted within six months of the installation of temporary features. The "Interim" studies should be comparable with the initial data collection and may include speed surveys, volume counts, and if feasible, an origin-destination survey. These follow-up studies will be conducted to evaluate the measures of success defined in advance by the NTC and to learn more about how individual features and a system of features affect drivers' behavior. This information can be used to determine whether the NTC's desired outcomes have been achieved. The follow-up studies will also be used to determine if the traffic problem has shifted to other neighborhood streets.

The Portland Impact Threshold Curve will be used to determine acceptability of diverted traffic. On each street receiving diverted traffic, acceptability will be based on the net diverted traffic from the current project plus all preceding projects under the NTMP. If the current project causes the net cumulative diverted traffic on any street to exceed the limit, the installation of temporary features will be modified to reduce the cumulative diversion to within acceptable limits.

Traffic volume shifts that exceed the thresholds contained in Menlo Park's Transportation Impact Analysis Guidelines regarding local streets may be considered potentially significant environmental impacts and may require additional environmental studies.

**Resident Survey for Permanent Installation:** At the conclusion of the trial period, a survey will be sent to study area households and businesses to determine whether they consider the Level II traffic management plan measures to be successful and if they wish them to be implemented on a permanent basis. Results of the "After" studies, including numerical results, will be conveyed to study area households and businesses to assist them in making this decision. The survey language will explain and graphically show the



location and nature of proposed changes. Support by at least 51% of households and businesses, based on the total number of surveys sent, must be demonstrated through this survey process prior to considering permanent implementation. A second survey shall be circulated to those addresses that do not respond to the first survey.

**Transportation Commission Review:** After reaching community consensus in favor of the permanent implementation of features, the City's Transportation Commission will vote to approve or deny this recommendation. The Commission recommendation for permanent implementation will proceed to the City Council.

**City Council Review:** City Council will review the Commission's recommendation and decide to either deny or approve the permanent establishment of measures. Based on the Council's decision, the temporary traffic management features will be either removed or replaced with permanent features.

**Permanent Implementation:** If permanent implementation is decided, detailed design drawings are prepared either in-house or by a qualified consultant. As part of the approval process of these design plans, consultation takes place with utility companies. The final engineering drawings will be made available to the neighborhood prior to the actual construction to ensure that they represent what was agreed to by the NTC. This is important to ensure that there are no surprises once construction starts. Residents also need to be aware in advance of the impacts of construction (noise, dust, potential traffic rerouting, etc.) and the anticipated construction schedule to minimize frustrations during the actual construction. Once funding is secured, permanent construction of the Level II measures can then take place by an approved contractor under an encroachment permit from the City. Twelve months after the measures have been implemented the City will again evaluate the measures to determine how individual features and a system of features affect drivers' behavior.

## REMOVAL OF PERMANENT FEATURES

Removal of a previously approved traffic management plan will require the same process be followed that was used to install the plan initially. If a 51% majority of households and businesses, based on the total number within the study area, decide later that the permanent features are not desirable, staff will present the removal request to the City Council for final approval.

If the feature conflicts with access to a new development, it will be the responsibility of the developer to modify, relocate or remove the feature. Removal in this case should be a last resort and a replacement for public benefit will be required.



## **PROGRAM REVIEW PROCESS**

The planning process itself is important to the success of the overall Neighborhood Traffic Management Program. Therefore, it must be flexible and adaptive to communities needs. After the completion of any TMP, the City may review the planning process and identify appropriate changes that would enhance and improve the process.

## **FUNDING**

Multiple requests for nearby locations may be combined by staff into a single request for a neighborhood project. If staff determines that a project will be too large for the available budget, the project may be divided into increments if practical. If a large project exceeds the budget and is not divisible, the project will be placed on the next capital fund request list for approval of budget by City Council. Staff may also seek outside funding, such as state and federal grants, for the project.

The City has determined that high aesthetic/low maintenance designs are preferred to reduce the future burden on City forces to maintain traffic management features. These types of features could, for example, be decorated with colored stones/bricks. As an alternative, they could include landscaping and irrigation systems, both of which require continuous maintenance in perpetuity. If the community desires that measures be landscaped, individuals or groups of property owners may fund the construction of landscaping and irrigation.





## GLOSSARY

**Access** – Ingress and egress movements at a property, street, or neighborhood

**Cut-Through Traffic** – Volume or percentage of traffic originating outside of the neighborhood and going to a destination outside of the neighborhood.

**Mid-block** – Any point between successive intersections along a street.

**mph** – Miles per hour

**MUTCD** – Federal Manual on Uniform Traffic Control Devices

**NARF** – Neighborhood Action Request Form

**NTC** – Neighborhood Traffic Committee

**NTMP** - Neighborhood Traffic Management Program

**O-D Survey** – Survey typically used to determine the volume or percentage of cut-through traffic on a particular street, or within a neighborhood. For example, two count stations can be set at each end of a studied street. Depending on the directional traffic volumes, one or two persons can write down the time and license plate of each vehicle accessing the count stations. By comparing the data from the two stations, it can be determined the percentage of cut-through traffic (vehicles that entered at one end of the street and exited at the other end within a short time interval without having intermediate stops).

**Speed Survey** – Survey of vehicles to determine the speeds at which motorists travel. Speed surveys can be carried out using a radar gun, or Automatic Traffic Recorders (ATRS) commonly known as count tubes.

**TMP** – Traffic Management Plan. Concept for a specific geographic study area, developed in conformity with the NTMP to address traffic management concerns of a neighborhood.

**vpd** – Vehicle per day



## TRAFFIC MANAGEMENT MEASURES TOOLBOX

Traffic management is the combination of educational, enforcement, and physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, improve safety for non-motorized street users, and improve neighborhood livability. Public education aims at changing behaviors of drivers, pedestrians and bicyclists through enhancement of their knowledge, awareness, courtesy, and sense of responsibility. Enforcement enlists the assistance of the Police Department to focus enforcement efforts on problem areas and increase public awareness of speeding problems. Engineering includes design and implementation of roadway features and physical elements such as speed humps and street narrowing features. Of the three traffic management areas, public education and enforcement should be implemented before engineering improvements.

The following pages describe and illustrate traffic management plan measures that may be used on residential local and collector streets in Menlo Park. Not all measures that may be acceptable are desirable in all situations. For example, some measures are not acceptable for use on collector streets or on some local streets determined by the Fire District to be important emergency response routes. The determination of which measure best suits which application will be worked out between neighborhood residents, the city, and Fire District, following the guidelines and qualifying criteria described in the Neighborhood Traffic Management Program document. Many of the measures described herein may be used in combination with each other, and there are also many design variations of each measure.

Traffic management measures in this inventory are listed generally in order of increasing effectiveness at reducing the volume of shortcutting traffic and/or speeds. The least effective measures are usually passive in nature, meaning that drivers can choose whether or not to obey them. The most typical examples of passive measures are traffic signs and striping. The next level includes active measures that physically constrain the driver to certain paths or areas in the roadway. The most desirable and effective active measures are those that force drivers into horizontal or vertical movement, therefore causing drivers to reduce speed--the primary objective of traffic calming. Reduced speed generally translates into increased safety and civil driving, as well as increased travel time that, in turn, may decrease traffic volumes because drivers may abandon a slower route. Some examples of these measures are traffic circles and speed humps. The most drastic active measures are those that partially or completely block traffic movements, with dramatic effects on traffic volume and the incidence of speeding. Forced-turn channelization, median barriers, diverters, one-way closures, and full street closures are examples of this type of measure. Dramatic active measures will generally not be considered or permitted except in cases of over-riding safety concern. Furthermore, their



use may require amendments to the City's General Plan, environmental impact analysis, or other forms of detailed and lengthy investigation and approval requirements.

## **PUBLIC EDUCATION**

In addition to Engineering and Enforcement, traffic management through neighborhoods can sometimes be achieved through public education. Common driver behavioral issues include speeding within school zones, red light running, violations of stop control, and violation of pedestrian right-of-way at crosswalks. Pedestrians also jaywalk and violate drivers' right-of-way. Some bicyclists, for example, choose to ride their bicycles on sidewalks, thereby endangering pedestrians' safety.

Many public education programs are already conducted within the City of Menlo Park which includes:

- Bicycle rodeos at local schools sponsored by the Transportation Division and Police Department
- Free helmet programs sponsored by the Transportation Division and Police Department
- Bicycle safety classes sponsored by members of the Bicycle Commission
- Bike to Work Day/Week
- Bike/Walk to School Day and workshops

The following are sample of education initiatives that could be implemented.

- Media advertisements in radio, newspaper press releases and cable TV broadcasts. Other publicity efforts could occur at community events, neighborhood signing, flyers to constituents, postings at bus shelters and on buses, and online information.
- Presentations and circulation of information at neighborhoods, business groups and community organizations.
- School safety education at elementary, middle and high schools. Safety education at elementary schools could consist of classroom and field training for students, as well as circulation of educational materials for parents. The focus of these initiatives would be pedestrian and bicycle safety, safety patrol training, proper student pick-up and drop-off practices, comply with reduced speed limits in school zones, etc. Middle and high school presentations, could be undertaken by traffic safety officers, are geared towards developing in new drivers a proper



- respect for traffic laws and understanding the dangers of inappropriate driving behavior.
- Neighborhood pledge program. Residents are asked to sign a pledge on safe and courteous driving. Each resident is also given a bumper sticker identifying him/her as a “pace” car driver. By setting the example for proper driving, the vehicle sets the pace or speed for other vehicles on the road by requiring cars behind the pace car to also drive within the speed limit.
  - Enlisting corporate sponsorships.
  - Encouraging surrounding cities and other public agencies to partner in educational initiatives.

Possible educational messages could be:

- For motorists to choose walking, bicycling, or riding transit as an alternative to driving
- For pedestrians to cross only at intersections and marked crosswalks.
- For pedestrians to step into the street only after checking of upcoming traffic including turning vehicles.
- For pedestrians to walk facing vehicular traffic along roadways that do not have sidewalks.
- For pedestrians and cyclists to wear bright colors and carry a flashlight/bicycle light when walking or cycling in the dark.
- For pedestrians to watch for entering and exiting cars at parking lots.
- For pedestrians not start crossing at signalized intersections when a flashing “DON’T WALK” is displayed.
- For drivers to slow down if they cannot see clearly because of poor lighting or weather conditions.
- For drivers to give the right-of-way for pedestrians crossings even if the crosswalk is not marked.
- For drivers to obey posted speed limits.
- For drivers to be especially attentive around schools and parks.
- For drivers to stop at red lights and stop signs.
- For cyclists to share the road with vehicular traffic and not cycle on sidewalks or against traffic.

Examples of Enforcement and Engineering measures follow. The photos and graphics are provided for the purpose of illustrating the different types of measures. They do not constitute engineering design recommended for any specific location in Menlo Park.

# TARGETED POLICE ENFORCEMENT

**Description:**

Enforcement enlists the assistance of the Police Department to focus enforcement efforts on problem areas and increase public awareness of speeding problems.



## Traffic Management Toolbox

**Advantages:**

- Can be easily implemented
- Immediate impact on vehicle speeds
- Easily moved to other problem locations



**Disadvantages:**

- Effects are short lived
- Only effective when officer/vehicle is present
- General lack of police resources



**Impact on Speed:**

High

**Impact on Volume:**

Low

**Nearby Locations:**

- Citywide



**Approximate Cost:** N/A

# REGULATORY SIGNS

**Description:**

Regulatory signs are used to inform motorists of selected traffic laws and regulations, and may be used as part of a traffic management plan. Examples include signs for stop, speed limit, turn prohibition, truck restrictions, and parking prohibition. They should only be installed when appropriately warranted and in conformance with the Manual on Uniform Traffic Control Devices.

**Advantages:**

- Inexpensive
- Can be installed quickly and easily
- No effect on emergency vehicles

**Disadvantages:**

- Effect of the sign wears off over time.
- Signs alone have little effect on speed or volume
- Can contribute to visual street clutter
- May require regular police enforcement

**Impact on Speed:**

Low - Moderate

**Impact on Volume:**

Low - High

**Nearby Locations:**

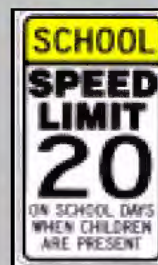
- Citywide

**Approximate Cost:**

\$150 per sign



## Traffic Management Toolbox



# STATIC WARNING AND SPECIALTY SIGNS

**Description:**

Warning signs are standard signs prescribed by the state to warn of obstacles and conditions such as curves, humps, crossings, etc. Many traffic calming features require installation of warning signs to alert drivers of the impediment. Specialty signs are non-standard but may be needed to warn of an unusual condition or roadway feature.

**Advantages:**

- Inexpensive
- Can be installed quickly and easily
- Reinforces presence of obstacle or condition
- No effect on emergency vehicles

**Disadvantages:**

- Effect of the sign wears off over time.
- Signs alone have little effect on speed or volume
- Can contribute to visual street clutter
- May require regular police enforcement

**Impact on Speed:**

Low

**Impact on Volume:**

Low

**Nearby Locations:**

- Citywide

**Approximate Cost:**

\$150 per sign



## Traffic Management Toolbox



# SPECIAL STRIPING AND MARKINGS

### Description:

Striping and pavement markings can be used to reinforce the presence of other traffic calming features such as directing vehicles around a traffic circle or alerting motorists of a speed hump ahead. They can also be used to visually narrow the road or form the outline of a feature. May have little long term effect because drivers are not physically forced to change their behavior.

### Advantages:

- Inexpensive
- Can be installed quickly and easily
- Often less objectionable than other measures

### Disadvantages:

- Effect wears off over time
- May have little effect on speed or volume
- May require regular police enforcement

### Impact on Speed:

Low

### Impact on Volume:

Low

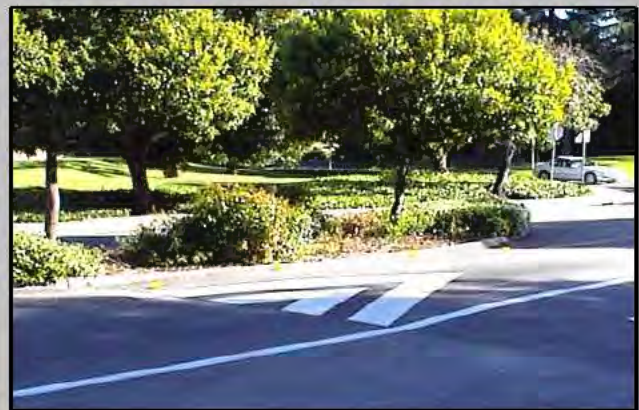
### Nearby Locations:

- Citywide

Approximate Cost: Varies



## Traffic Management Toolbox





# DYNAMIC SPEED SIGNS

**Description:**

Permanently (or semi-permanently) mounted electronic display that informs drivers of their speed compared to the speed limit.



## Traffic Management Toolbox

**Advantages:**

- Immediate impact on vehicle speeds
- No effect on emergency vehicles



**Disadvantages:**

- May Lose effectiveness over time
- May detract from neighborhood character
- Not-self enforcing
- Prone to vandalism



**Impact on Speed:**

Moderate

**Impact on Volume:**

Low

**Nearby Locations:**

- Embarcadero Road, Palo Alto

**Approximate Cost:**

\$8,000 - \$10,000

# RADAR SPEED TRAILER

**Description:**

Radar trailers are used to monitor and influence driver speed on residential streets. Placement of the trailer is commonly based on citizen requests for speed enforcement.



## Traffic Management Toolbox

**Advantages:**

- Can be easily implemented
- Immediate impact on vehicle speeds
- Easily moved to other problem locations

**Disadvantages:**

- Not self-enforcing
- Effects are short lived
- Only effective when trailer is present

**Impact on Speed:**

Moderate

**Impact on Volume:**

Low

**Nearby Locations:**

- Citywide

**Approximate Cost:**

\$8,000 - \$12,000 each



# CROSSWALK WARNING SYSTEM

## Description:

A crosswalk warning system is used to increase safety at crossings. A pedestrian activates flashing lights using a push button or may be detected automatically by a microwave sensor. Lights are embedded on each side of a crosswalk to alert drivers. Normally, the crosswalk system is activated only when the crosswalk is in use. Lower cost flashing beacons w/ signs can also be used.

## Advantages:

- Increases visibility of pedestrian crossing
- Improves safety
- Drivers more likely to yield to pedestrians

## Disadvantages:

- Generally more expensive than other measures
- Automatic sensors and lights may malfunction
- In-pavement lights are a tripping hazard

## Impact on Speed:

Low, Moderate, High

## Impact on Volume:

Low, Moderate, High

## Nearby Locations:

- N/A

## Approximate Cost:

\$40,000 for in-pavement system



## Traffic Management Toolbox



# TEXTURED PAVEMENTS

**Description:**

Street surfaces that are paved with brick, pavers, stamped asphalt or concrete, or other material that increase the bumpiness of the roadway surface.

**Advantages:**

- Visual/audible indicator to driver
- Increases driver awareness of surroundings
- Has minimal impact on emergency vehicles

**Disadvantages:**

- Little effect on traffic speeds or volumes
- May increase noise
- More difficult to maintain than standard paving

**Impact on Speed:**

Low

**Impact on Volume:**

Low

**Nearby Locations:**

- Willow Road

**Approximate Cost:** \$20 - \$40 per square foot. High range is for individually placed pavers or cobbles.



## Traffic Management Toolbox



# GATEWAYS AND ENTRY TREATMENTS

### Description:

Special architectural or roadway feature that identifies the entrance to a neighborhood. It may incorporate monuments, islands, textured pavements, signs or other features to provide a dramatic identity to the neighborhood's entrance.

### Advantages:

- Creates identity for neighborhood
- Increases driver awareness of surroundings
- Has minimal impact on emergency vehicles
- May create opportunity for landscaping

### Disadvantages:

- Little affect on traffic speeds or volumes
- May increase noise if textured pavement
- May require localized removal of parking
- May create a physical obstruction

### Impact on Speed:

Low

### Impact on Volume:

Low

### Nearby Locations:

- Oakdell Drive
- University Drive
- Fair Oaks Avenue

**Approximate Cost:** \$1,000 - \$100,000. High range for highly aesthetic architectural feature. Simple wooden fence approximately \$1,000.



## Traffic Management Toolbox



# TRAFFIC CIRCLES

## Description:

Raised islands, placed in intersections, around which traffic passes. Their size and shape are intended to cause vehicles to slow down while traveling clockwise around the raised circular island. Circles should not be confused with modern roundabouts that are much larger and located on higher volume streets.

## Advantages:

- Reduces accidents compared to stop signs
- May eliminate need for stop signs
- Reduces speeds
- Can provide space for landscaping
- Provides visual obstruction

## Disadvantages:

- May cause vehicle to encroach on bike lanes
- May inhibit emergency vehicle response time
- May create a safety hazard on grades over 8%
- May require localized removal of parking

## Impact on Speed:

Moderate

## Impact on Volume:

Low - Moderate

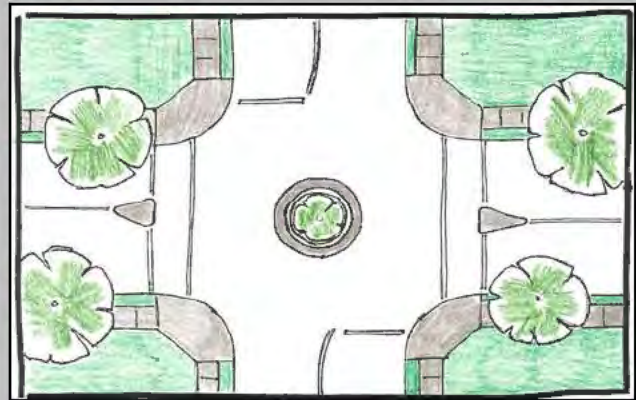
## Nearby Locations:

- Fair Oaks Avenue
- Chester Street

**Approximate Cost:** \$10,000 - \$35,000. High range includes landscaping and irrigation.



## Traffic Management Toolbox



# SPEED HUMPS AND CUSHIONS

### Description:

Feature that creates a gradual rise and fall in the pavement surface. The length across the top and the height of the hump/cushion dictate the travel speed over the feature. Humps generally span the width of the roadway. Cushions are centered in the travel lanes and can often permit vehicles with wide wheelbases to pass over without significant slowing.

### Advantages:

- Reduces speeds
- Better when used in a series
- Does not require parking removal
- Cushions have less impact to emergency veh.

### Disadvantages:

- May inhibit emergency vehicle response time
- Less attractive than other measures
- Creates a safety hazard on grades over 8%
- May increase noise
- Less aesthetically pleasing than other features
- May affect people with spinal problems

### Impact on Speed:

Moderate - High

### Impact on Volume:

Low - Moderate

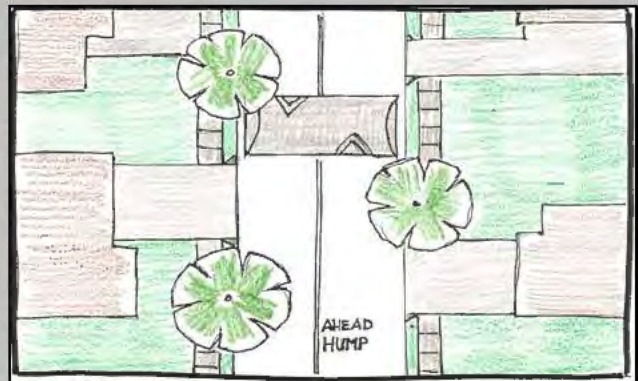
### Nearby Locations:

- Willow Road
- Bay Road
- Van Buren Road

**Approximate Cost:** \$5,000 - \$10,000 for asphalt or preformed cushions.



## Traffic Management Toolbox



# SPEED TABLES AND RAISED CROSSINGS

**Description:**

Feature that is similar to a flat-topped speed hump. When located at an intersection it can function as a raised crosswalk. The raised crosswalk reinforces the location of the pedestrian crossing and causes the vehicle to slow down over the crossing.

**Advantages:**

- Reduces speeds
- Better when used in a series
- Delineates location of crossing

**Disadvantages:**

- May inhibit emergency vehicle response time
- Less attractive than other measures
- Creates a safety hazard on grades over 8%
- May affect persons with spinal problems

**Impact on Speed:**

Moderate - High

**Impact on Volume:**

Low - Moderate

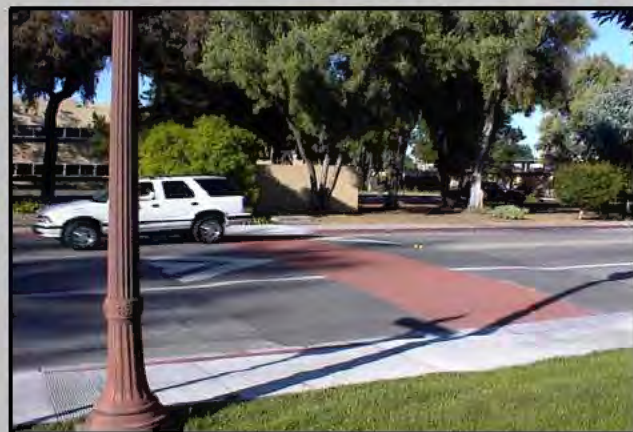
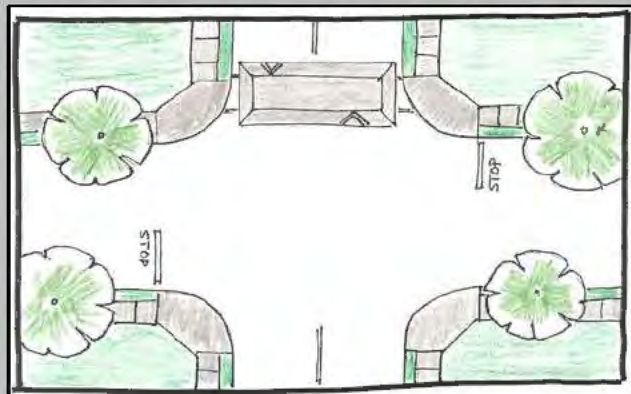
**Nearby Locations:**

- Laurel Street
- Willow Road

**Approximate Cost:** \$8,000 - \$20,000. High range for concrete or other decorative paving.



## Traffic Management Toolbox





# BULBOUTS, EXTENSIONS AND CHOKERS

### Description:

Features that narrow the street by extending the curbs at an intersection or mid-block. Curbs generally extend into the street approximately the width of a parked vehicle and can reduce pedestrian crossing distance if used at an intersection. Features may or may not be attached to the adjacent curb.

### Advantages:

- Regulates parking
- Protects parked vehicles near curb features
- Reduces pedestrian crossing distances
- Can provide area for landscaping
- Has minimal impact on emergency vehicles

### Disadvantages:

- Most effective when very narrow opening
- Only partially effective as a visual obstruction
- May limit turns for large vehicles at intersections
- May require localized removal of parking
- May direct bicycles into the vehicle lane

### Impact on Speed:

Low - Moderate

### Impact on Volume:

Low - Moderate

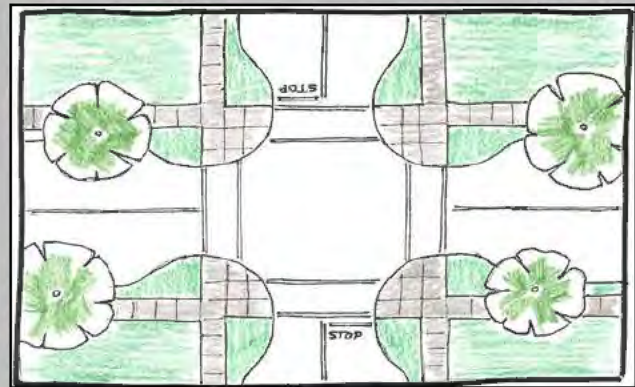
### Nearby Locations:

- Park Boulevard, Palo Alto

**Approximate Cost:** \$20,000 - \$40,000 per pair for short lengths. High range is attached to curb. Longer lengths proportionately higher in cost.



## Traffic Management Toolbox



# MEDIAN ISLAND SLOW POINTS

### Description:

Raised islands installed along the centerline of the street, narrowing the street and lane widths, either at intersections or midblock. Traffic approaching the feature is horizontally shifted towards the curb resulting in a decrease of travel speed. Center islands may be used in conjunction with other features such as curb extensions.

### Advantages:

- Reduces speeds and volumes
- Less impact on emergency vehicles
- Provides space for landscaping
- Provides visual obstruction

### Disadvantages:

- May cause vehicle to encroach on bike lanes
- Increase maintenance if landscaped

### Impact on Speed:

Low - Moderate

### Impact on Volume:

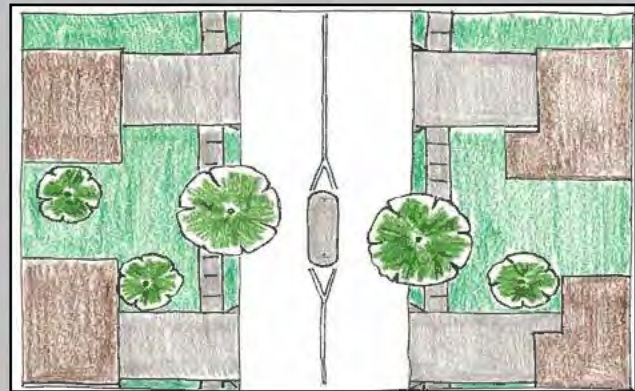
Low - Moderate

### Nearby Locations:

**Approximate Cost:** \$10,000 - \$25,000 for short island. High range includes landscaping and irrigation.



## Traffic Management Toolbox



# CHICANES AND ANGLE POINTS

## Description:

Typically curb modifications that alternate from one side of the street to the other, forming an S-shaped curve. Their serpentine shape causes vehicles to slow down while traveling through the reversing curves. Angle slow points are typically a more abrupt form of a chicane. Feature may require a median to prevent vehicles from "straightening out the curve."

## Advantages:

- Reduces speed
- Provides space for landscaping
- Provides visual obstruction
- Low impact on emergency vehicles

## Disadvantages:

- May require localized removal of parking
- Vehicles may drive on wrong side of street
- May create hazard for cyclists

## Impact on Speed:

Moderate

## Impact on Volume:

Low - Moderate

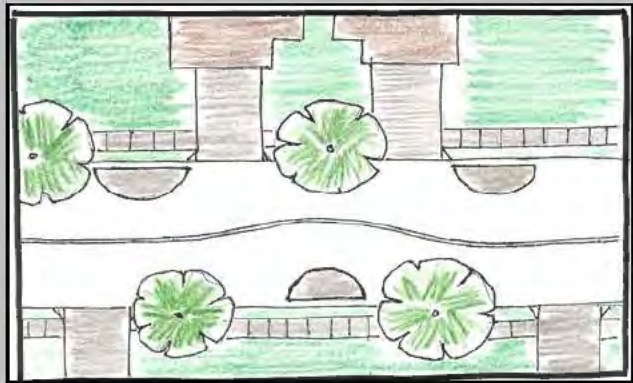
## Nearby Locations:

- Fair Oaks Avenue neighborhood

**Approximate Cost:** \$15,000 - \$40,000 per pair for short lengths. High range is attached to curb. Longer lengths proportionately higher in cost.



## Traffic Management Toolbox



# MEDIAN BARRIERS

**Description:**

Raised feature often located along the centerline of the street or through an intersection to limit turning movements or block through movements across an intersection. Median barriers can also be used as a pedestrian refuge at a crosswalk.

**Advantages:**

- Creates opportunity for landscaping
- Reduces through traffic or specific movements
- Provides a refuge for pedestrians
- Can reduce accident potential at feature

**Disadvantages:**

- Inconvenient for residential access
- May inhibit emergency vehicle access
- May shift traffic to other nearby streets
- May require localized removal of parking

**Impact on Speed:**

Low - Moderate

**Impact on Volume:**

Moderate - High

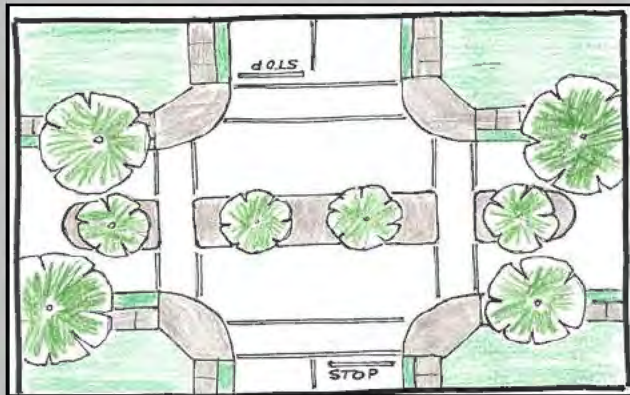
**Nearby Locations:**

- Park Boulevard, Palo Alto

**Approximate Cost:** \$10,000 - \$25,000 for short median at intersection. High range includes landscaping and irrigation.



## Traffic Management Toolbox



# FORCED TURN CHANNELIZATION

**Description:**

Physical features that block specific traffic movements to cause circuitous travel through the neighborhood, thus discouraging cut-through traffic. Similar to impact of diverters.

**Advantages:**

- Eliminates through traffic
- Provides area for landscaping
- Reduces intersection conflicts
- Increases pedestrian safety
- Can allow bicycle through movements

**Disadvantages:**

- Inconvenient for residential access
- May inhibit emergency vehicle access
- May shift traffic to other nearby streets

**Impact on Speed:**

Low - Moderate

**Impact on Volume:**

Moderate - High

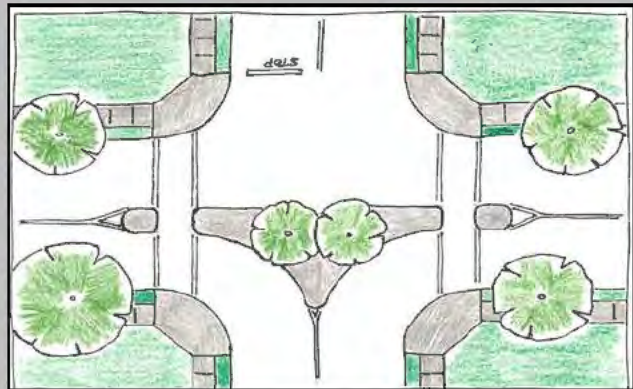
**Nearby Locations:**

- None

**Approximate Cost:** \$10,000 - \$40,000. High range includes landscape and irrigation.



## Traffic Management Toolbox



# DIAGONAL DIVERTER

**Description:**

Physical feature that blocks specific traffic movements to cause circuitous movements through the neighborhood, thus discouraging cut-through traffic. Similar to impact of forced turn channelization.

**Advantages:**

- Eliminates through traffic
- Provides area for landscaping
- Reduces intersection conflicts
- Increases pedestrian safety
- Can allow bicycle through movements

**Disadvantages:**

- Inconvenient for residential access
- May inhibit emergency vehicle access
- May shift traffic to other nearby streets

**Impact on Speed:**

Low

**Impact on Volume:**

Moderate - High

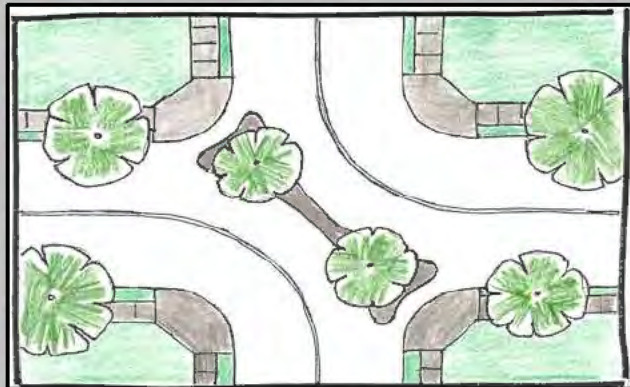
**Nearby Locations:**

- Park Boulevard, Palo Alto

**Approximate Cost:** \$15,000 - 40,000. High range includes landscaping and irrigation.



## Traffic Management Toolbox



# ONE-WAY STREET CLOSURE

**Description:**

Barriers placed across the roadway to partially close the street, usually leaving only one-way traffic. The sidewalk or bicycle accesses remain open.

**Advantages:**

- Reduces cut-through traffic
- Provides area for landscaping
- Reduces intersection conflicts
- Increases pedestrian safety
- Can include bicycle pathway connection

**Disadvantages:**

- Inconvenient for residential access
- May shift traffic to other nearby streets
- May inhibit emergency vehicles

**Impact on Speed:**

Moderate - High

**Impact on Volume:**

High

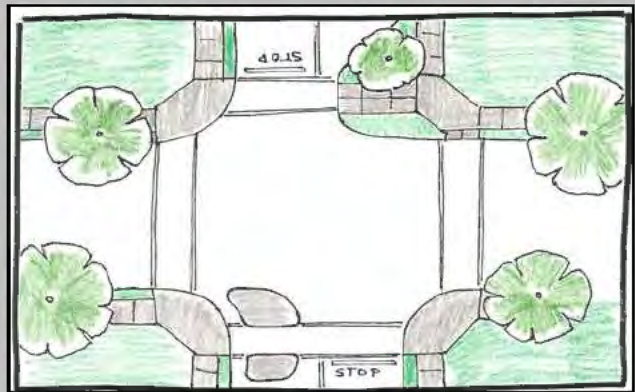
**Nearby Locations:**

- Park Boulevard, Palo Alto

**Approximate Cost:** \$10,000 - \$20,000. Higher range is for feature attached to curb or with landscaping and irrigation.



## Traffic Management Toolbox



# FULL STREET CLOSURE

**Description:**

Barriers placed across the roadway to close the street completely, usually leaving only the sidewalk or bicycle accesses open.

**Advantages:**

- Eliminates cut-through traffic
- Provides area for landscaping
- Reduces intersection conflicts
- Increases pedestrian safety
- Can include bicycle pathway connection

**Disadvantages:**

- Inconvenient for residential access
- May inhibit emergency vehicle access
- May shift traffic to other nearby streets

**Impact on Speed:**

Moderate - High

**Impact on Volume:**

High

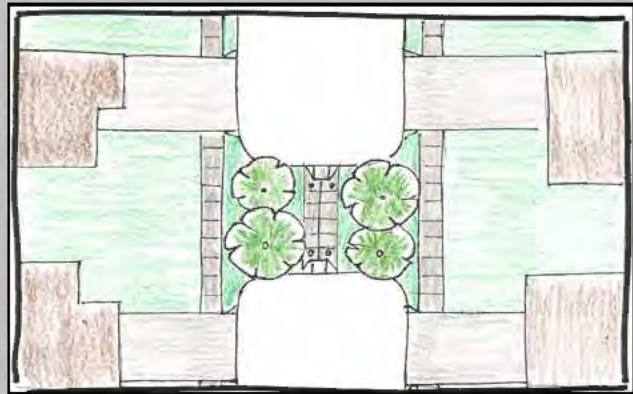
**Nearby Locations:**

- Cornell Street, Palo Alto
- Columbia Street, Palo Alto

**Approximate Cost:** \$15,000 - \$100,000. High range includes street reconstruction, landscaping and irrigation.



## Traffic Management Toolbox





**NEIGHBORHOOD ACTION REQUEST FORM**  
**Neighborhood Traffic Management Program (NTMP)**

Contact Name: \_\_\_\_\_ Organization (if applicable) \_\_\_\_\_.

Day Phone: \_\_\_\_\_ E-Mail: \_\_\_\_\_ Today's Date: \_\_\_\_\_.

Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_.

Affected Area is Bounded by: \_\_\_\_\_.

Location of Concern: \_\_\_\_\_.

Description of Concerns Reported at this Location:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Suggested Change or Improvement (signs, striping, curb marking, enforcement, parking prohibition, etc.). Please refer to Levels I and II of the City's NTMP.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Location Map Attached       Sketch of Problem Area Attached

FOR STAFF USE ONLY		Date Received:	Tracking Number:
Review Action:	<input type="checkbox"/> Forward to Engineer Review	<input type="checkbox"/> Forward to Transportation Commission	
Action Taken:	<input type="checkbox"/> Staff Action	<input type="checkbox"/> Transportation Commission Action	<input type="checkbox"/> City Council Action
Action Description:			
W/O Number:		Requested on:	
Applicant Notified of Outcome on:		Completed on:	

## **INSTRUCTIONS FOR COMPLETING NARF PETITION**

Staff will prepare the petition for the applicant by completing the following:

- 1 - Staff to fill in the description of concerns from NARF application.
- 2 - Staff to attach a map of the project study area and a sketch of the problem area.

NTMP applicant will complete the following:

- 1 - Make multiple copies of the petition sheet as needed.
- 2 - Circulate petitions to obtain signatures from at least 60% of households and businesses in project study area identified on the attached map
- 3 - Only one petitioner per household or business is permitted.
- 4 - Ensure that the petitioner includes their printed name, address, signature and date. Each petitioner must also initial the last column to signify they have read the entire petition and reviewed the attached map. Telephone number is optional but is requested if needed to verify petition information.
- 5- Deliver the original copy of completed petition to the City's Transportation Division at 701 Laurel Street, Menlo Park, CA 94025-3483.



**CITY OF MENLO PARK  
 NEIGHBORHOOD ACTION REQUEST FORM PETITION  
 Neighborhood Traffic Management Program (NTMP)  
 Level I Traffic Management Features**

Signature Collector Name: \_\_\_\_\_ Day Phone: \_\_\_\_\_  
 Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_

We, the undersigned, request a Transportation Commission meeting to address the following traffic concern described below and located within the geographic area shown on the attached map.

**CITY STAFF TO INSERT DESCRIPTION OF CONCERNS FROM NARF**

	Print Name	Address	Phone (Optional)	Initial *
	Signature		Date	
1.				
2.				
3.				
4.				
5.				

\* By initialing the last column, I certify that I have read this entire petition including maps of the proposed traffic management features.

**CITY OF MENLO PARK  
 NEIGHBORHOOD ACTION REQUEST FORM PETITION  
 Neighborhood Traffic Management Program (NTMP)  
 Level II Traffic Management Features**

Signature Collector Name: \_\_\_\_\_ Day Phone: \_\_\_\_\_

±

Address: \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_

±

We, understand that by signing this petition that we are initiating a process that may result in significant changes to local streets. We request a Transportation Commission meeting to address the following traffic concern described below and located within the geographic area shown on the attached map.

**CITY STAFF TO INSERT DESCRIPTION OF CONCERNS FROM NARF**

	Print Name	Address	Phone (Optional)	Initial *
	Signature		Date	
1.				
2.				
3.				
4.				
5.				

\* By initialing the last column, I certify that I have read this entire petition including maps of the proposed traffic management features.

**PRIORITIZATION WORKSHEET**  
**Neighborhood Traffic Management Program (NTMP)**

This worksheet will be completed by the City of Menlo Park staff in accordance with the City’s NTMP. It will be used to prioritize the potential initiation of specific neighborhood traffic management processes. The highest scoring residential street will get the highest ranking and so forth.

Date: \_\_\_\_\_  
Name of Neighborhood: \_\_\_\_\_  
Limits of Study Area: \_\_\_\_\_  
Total Estimated Score: \_\_\_\_\_

**COLLISION HISTORY:**

- 1 to 3 preventable collisions in a 3-year period = 6 points
- 4 to 5 preventable collisions in a 3-year period = 9 points
- More than 5 preventable collisions in a 3-year period = 12 points -----

**RESIDENTIAL TRAFFIC VOLUMES:**

**A Local Street**

**A Collector Street**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Less than 1,500 vpd = 0 points</li> <li>• 1,500 to 2000 vpd = 4 points</li> <li>• 2,000 to 2,500 vpd = 8 points</li> <li>• Greater than 2,500 vpd = 12 points -----</li> </ul> | <ul style="list-style-type: none"> <li>• Less than 3,000 vpd = 0 points</li> <li>• 3,000 to 3,500 vpd = 4 points</li> <li>• 3,500 to 4,000 vpd = 8 points</li> <li>• Greater than 4,000 vpd = 12 points -----</li> </ul> |
|---|--|

**TRAVEL SPEEDS:**

- 85<sup>th</sup> percentile speed > 57mph over the speed limit = 5 points
- 85<sup>th</sup> percentile speed > 10 mph over the speed limit = 10 points -----

**PEDESTRIAN FACILITIES:**

- The pedestrian space is substantially usable = 0 points
- The pedestrian space needs improvement = 3 points
- There is no pedestrian space available = 6 points -----

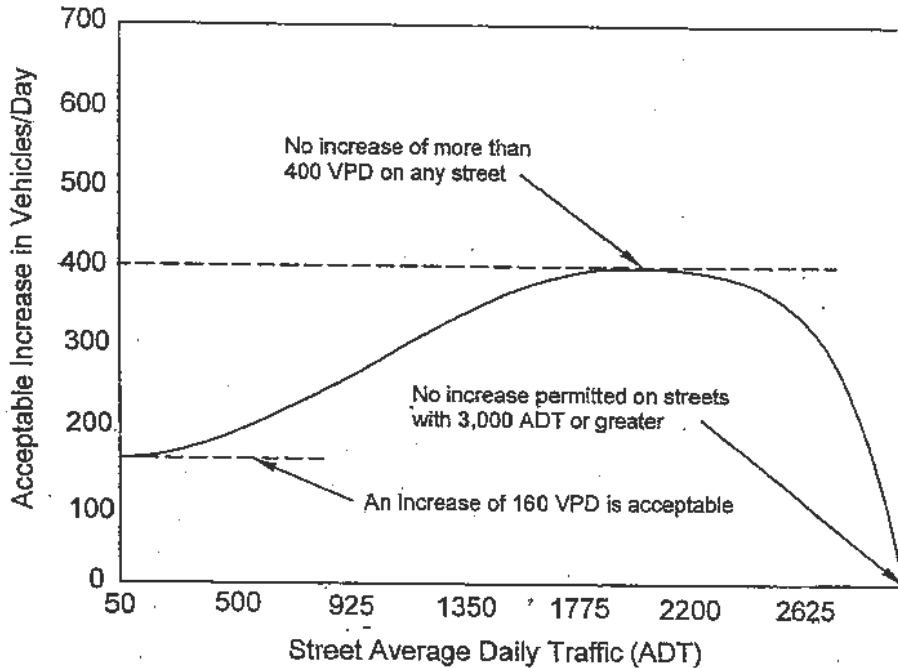


**SCHOOLS AND ACTIVITY CENTERS:**

- The street is a primary access route to public transit = 2 points
- The street is a primary access route to an activity center = 4 points
- The street is a primary route to a school = 6 points -----

**TOTAL PROJECT POINTS**

### Acceptable Increases in Traffic on Neighborhood Streets\*



The purpose of an impact threshold curve is to help determine whether the "secondary" impacts of diversions caused by traffic calming projects are acceptable. The curve specifically addresses impacts in the form of increased traffic on adjacent, non-project, local service streets. The impact threshold curve identifies the range of traffic diversion that is acceptable. Impact limitations are expressed as a curve because the level of impact that is considered acceptable will vary, depending on the characteristics of the street that is affected by the project.

Use of the curve assures residents of adjacent non-project streets that traffic problems on one local service street will not be solved simply by shifting the problem to other local service streets. The impact curve provides a quantifiable and objective standard for measuring secondary impacts of diversions.

The following guidelines are followed in establishing numeric impact limitations on non-project local service streets:

1. The standard impact curve is expressed in terms of total traffic volume-i.e., vehicles per day (vpd). The parameters of the curve are:

a) There is a floor of at least 150 vehicles per day. In other words, an increase of up to 150 vehicles per day as a result of a calming project is acceptable on any local service street (subject to the restriction in "c", below), regardless of its prior volume.

b) There is a ceiling of no more than 400 vehicles per day-i.e., no increase of more than 400 vpd is acceptable on any local service street.

c) The resulting traffic volume on any local service street should not exceed 3,000 vehicles per day

2. Because of the margin of error inherent in traffic volume data (resulting from machine error and daily volume fluctuation), a range of plus or minus 50 vehicles per day, or 10 percent of the measured pre-calming volume, whichever is greater, is allowed. An increase in traffic volume that falls between the curve and the lower margin of error would ordinarily be acceptable. An increase that falls between the curve and the upper margin of error might possibly be acceptable. An increase that falls above the upper margin would clearly not be acceptable.

## Portland Impact Threshold Curve



## CREDITS

### **NTMP STEERING COMMITTEE MEMBERS:**

Rhoda Alexander, Menlo Park Transportation Commission  
Don Brawner, Menlo Park Transportation Commission  
Eric Doyle, Menlo Park Transportation Commission  
David Roise, Menlo Park Bicycle Commission  
Randy Shurson, Menlo Park Fire Protection District

#### City of Menlo Park Staff:

Bruce Goitia, Menlo Park Police Department

Kent Steffens, Director of Public Works  
Jamal Rahimi, Transportation Manager  
Rene Baile, Transportation Engineer

#### Consultant:

James E. West, Kimley-Horn and Associates, Inc.

